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The Value of Small-Scale Projects  
in Biodiversity Conservation and Sustainable Rural Development  
in the Ecuadorian Chocó

A dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Philosophy  
in Geography

by

Sarah Haidée Fernández

2013

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2013

ABSTRACT OF THE DISSERTATION

The Value of Small-Scale Projects  
in Biodiversity Conservation and Sustainable Rural Development  
in the Ecuadorian Chocó

by

Sarah Haidée Fernández

Doctor of Philosophy in Geography

University of California, Los Angeles, 2013

Professor Stephen A. Bell, Co-chair

Professor Judith A. Carney, Co-chair

The humid forests of the Chocó biogeographic region are characterized by high biodiversity and species endemism, as well as rapid habitat loss. This is especially the case of the Chocó forests within Ecuador. Since the second half of the twentieth century, the Ecuadorian Chocó has been reduced to less than 4% of its original forest cover, particularly as a consequence of logging, the expansion of African oil palm plantations and changing forms of land tenure since the late 1960s. Following a request from an international conservation NGO, fieldwork for this dissertation began with the aim to determine the route for a viable ecological corridor between the two largest Chocó fragments remaining in the country, the ecological reserves of Mache-Chindul and

Cotacachi-Cayapas. In response to a series of incongruities observed between the NGO's assumptions and realities on the ground, this dissertation employs a matrix ecology approach and challenges deeply-entrenched notions in traditional conservation by attempting to devise more effective strategies for biodiversity conservation and sustainable development that include local populations in design and implementation. It does so through the use of two case studies, Río Muchacho and Fundación Golondrinas, which are representative of a widespread emergence of local, small-scale conservation/rural development/ecotourism projects in the landscape matrix in the Ecuadorian Chocó (and rural Ecuador in general). A detailed qualitative assessment of these projects, their relationship with members of surrounding communities and their different approaches to achieving their stated conservation and development goals is complemented by remote sensing analysis of land cover changes over the last 12 years in these study sites. Based on the aforementioned qualitative and quantitative analyses undertaken in this dissertation, a few major factors are analyzed in terms of their potential for success: ecotourism, social capital in the form of local organizations with effective networks linking to outside markets, and the formulation of any program within an appropriate local spatial context. Applications of these findings are subsequently considered in wider-ranging strategies for the development of an ecological corridor between Mache-Chindul and Cotacachi-Cayapas.

The dissertation of Sarah Haidée Fernández is approved.

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University of California, Los Angeles

2013

*To my parents, Sarah Hope and Carlos Julio,  
y a toda esa gente linda del Chocó.*

## TABLE OF CONTENTS

<b>LIST OF FIGURES AND TABLES</b> .....	ix
<b>ACRONYMS</b> .....	xi
<b>ACKNOWLEDGMENTS</b> .....	xii
<b>VITA</b> .....	xv
<b>INTRODUCTION</b> .....	1
Research Focus.....	4
Research Methods.....	5
Chapter Organization.....	7
<b>CHAPTER I. HISTORY, EVOLUTION AND ENDURANCE OF WESTERN IDEAS     OF CONSERVATION</b> .....	11
1.1 Traditional Conservation.....	14
The “wilderness” concept.....	14
The creation of national parks.....	16
1.2 The Growing Emphasis on Biodiversity in Conservation.....	18
1.3. The Introduction of Sustainable Development in Conservation.....	21
1.4 The Endurance of Traditional Conservation.....	23
Biodiversity and the wilderness ideal.....	23
The role of local communities.....	26
1.5 Approaches to “Sustainable” Use.....	31
The idea of co-management.....	32
Defining “sustainable use”.....	35
The ecotourism concept.....	37
Ecotourism: a win-win.....	40
1.6 Ecotourism as Conservation Strategy.....	44
<b>CHAPTER II. THE ECUADORIAN CHOCÓ:     BIOGEOGRAPHICAL AND CULTURAL HISTORY</b> .....	48
2.1 The Chocó Biogeographic Region.....	49
The Ecuadorian Chocó.....	50



2.2 Distinct Cultural Histories of the Chocó.....	52
<b>CHAPTER III. BIODIVERSITY CRISIS IN THE ECUADORIAN CHOCÓ: CONTEXT AND CAUSES.....</b>	<b>61</b>
3.1 Railroads and Logging.....	62
3.2 Land Reform and Changing Patterns of Land Tenure.....	64
3.3 The Impact of African Oil Palm Cultivation.....	69
<b>CHAPTER IV. FOREST FRAGMENTS AND SMALL-SCALE CONSERVATION IN THE ECUADORIAN CHOCÓ: CASE STUDIES.....</b>	<b>73</b>
4.1 Research Approach.....	74
4.2 Methodology.....	76
4.3 Case Studies.....	77
Río Muchacho.....	78
Environmental education.....	80
Tourism.....	83
Relationship with local communities.....	84
Fundación Golondrinas.....	89
Environmental education.....	92
Farmer associations.....	95
Tourism.....	100
Relationship with local communities.....	101
Spatial differences in outreach dynamics.....	102
Success?.....	106
<b>CHAPTER V. REMOTE SENSING ANALYSIS.....</b>	<b>110</b>
5.1 Focus of study.....	110
5.2 Challenges.....	110
5.3 Methodology.....	111
5.4 Results.....	117
<b>CHAPTER VI. IMPORTANT FACTORS FOR CONSIDERATION IN STRATEGIES FOR BIODIVERSITY CONSERVATION AND SUSTAINABLE DEVELOPMENT IN THE ECUADORIAN CHOCÓ.....</b>	<b>120</b>

6.1 Ecotourism as Conservation Panacea for the Ecuadorian Chocó?.....	121
Agri-and eco-tourism in Río Muchacho.....	122
Agri- and eco-tourism in Fundación Golondrinas.....	126
Copycat projects.....	128
6.2 The Role of Globalization and Social Capital.....	133
Local organization and networks.....	134
International linkages.....	135
6.3 The Importance of Underlying Outreach Dynamics.....	138
6.4 Final Considerations.....	139
<b>CHAPTER VII. CONCLUSION.....</b>	<b>141</b>
7.1 Factors to Consider.....	142
7.2 Additional Long-Term Considerations.....	145
Environmental education.....	145
The prospect of a wildlife corridor.....	148
<b>REFERENCES.....</b>	<b>150</b>

## LIST OF FIGURES AND TABLES

Figure 1.1: Map of protected areas of Ecuador.....	2
Figure 2.1: Tumbes-Chocó-Magdalena biodiversity hotspot.....	50
Figure 2.2: The Ecuadorian Chocó.....	51
Figure 2.3: Sites of the two 16th-century shipwrecks.....	56
Figure 2.4: <i>Mulatos de Esmeraldas</i> , by painter Adrián Sánchez Galque, 1599.....	55
Figure 3.1: Classification of vegetation cover in Ecuador.....	62
Figure 4.1: Sites of the two case studies.....	77
Figure 4.2: Entrance to the Río Muchacho project.....	78
Figure 4.3: Students of the Escuela Ambiental Río Muchacho during a visit to the project's farm.....	81
Figure 4.4: Foreign tourists and volunteers posing with Proaño and Mears.....	83
Figure 4.5: Map showing some of the communities participating in Fundación Golondrinas projects.....	90
Figure 4.6: Children in Guallupe signing up with Manteca to receive fruit tree seedlings for their home gardens.....	94
Figure 4.7: SECAP technician instructing ACBG farmers on practical coffee bean fermentation techniques.....	97
Figure 4.8: ACBG's farmer's compost pile in the community of Espejo.....	99
Figure 4.9: Outreach dynamics between Río Muchacho and local community members.....	104
Figure 4.10: Outreach dynamics between Fundación Golondrinas and local community members.....	106
Figure 5.1: Image corresponding to the MOD13Q1 tile containing the Río Muchacho site.....	113

Figure 5.2: Image corresponding to the MOD13Q1 tile containing the Fundación Golondrinas site.....	114
Figure 5.3: Panoramic view of area adjacent to Río Muchacho, and livestock grazing as common land use among communities in the area.....	115
Figure 5.4: View of bridge over the Mira River connecting the Golondrinas communities of Espejo and Chinambí, and subsistence agriculture as common land use among communities in the vicinity.....	116
Table 5.1: Mean EVI and SD for the two sites over the last 12 years.....	118
Figure 5.5: Changes in vegetation indices over time for both Río Muchacho and Fundación Golondrinas sample sites.....	119
Figure 6.1: Sign and map for Finca Agroturística El Paraíso.....	130
Figure 6.2: A view of the agricultural ecosystem managed by Finca Agroturística El Paraíso.....	131
Figure 6.3: Manteca paying a visit to the owner of Finca Agroturística El Paraíso and his project.....	132
Figure 7.1: Schoolchildren from two different communities in the Golondrinas-managed region volunteering to plant citrus trees in their gardens.....	147

## ACRONYMS

ACBG	Asociación de Cafeteros Bosque Golondrinas
CBD	Convention on Biological Diversity
EVI	Enhanced Vegetation Index
IERAC	Instituto Ecuatoriano de Reforma Agraria y Colonización
INDA	Instituto Nacional de Desarrollo Agrario (now MAGAP)
INEFAN	Instituto Ecuatoriano Forestal y de Áreas Naturales
IUCN	International Union for Conservation of Nature and Natural Resources
MAE	Ministerio del Ambiente
MAGAP	Ministerio de Agricultura, Ganadería, Acuacultura y Pesca
MODIS	Moderate Resolution Imaging Spectroradiometer
NDVI	Normalized Vegetation Index
NGO	Non-Governmental Organization
ROI	Region of Interest
SD	Standard Deviation
SECAP	Servicio Ecuatoriano de Capacitación Profesional
SENPLADES	Secretaría Nacional de Planificación y Desarrollo
TEK	Traditional Ecological Knowledge
UNCED	UN Conference on Environment and Development

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### **PRESENTATIONS**

Fernández, S.H. (February 2012) “Looking at the Small Picture: Local Conservation Initiatives in the Ecuadorian Chocó.” Association of American Geographers Annual Conference, New York.

Fernández, S.H. (April 2007) “Losing the Indigenous Links: An Historical Geography of Coca in Ecuador.” Association of American Geographers Annual Conference, San Francisco.

Fernández, S.H. (March 2006) “Coca Cultivation and Eradication: Effects on Culture and Environment in Ecuador.” Association of American Geographers Annual Conference, Chicago.

## INTRODUCTION

At the end of 2010, I was contacted by an international conservation NGO seeking help in an ambitious project to establish a wildlife corridor between the two largest forest fragments in the Chocó region of Ecuador.<sup>1</sup> These forest fragments correspond to the ecological reserves of Mache-Chindul and Cotacachi-Cayapas, both located at least in part within the northwestern province of Esmeraldas (Figure 1.1). The Chocó is a classification of a distinct ecological zone that encompasses some of South America's wettest regions. It is characterized by extreme pluviosity – receiving on average eight meters of rainfall per year – and highly diverse wet broadleaf forests. These forests are currently under threat by a variety of processes, most prominently the expansion of privately owned oil palm plantations. The two ecological reserves of Mache-Chindul and Cotacachi-Cayapas were established in 1996 and 1968, respectively, with the aim to protect the abundant biodiversity of the forests contained within them. However, they increasingly appear as islands in a rapidly changing twenty-first century landscape. The existence of smaller fragments of Chocó forests, mostly in secondary stages, between these two reserves has encouraged plans by the aforementioned conservation NGO to reforest these areas in an attempt to link them ecologically. My task was to devise the best potential route for integrating the forest fragments into a viable wildlife corridor between the two reserves.

The method utilized to carry out this assessment represented a terrestrial application of island biogeography theory. Originally based on the study of island

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<sup>1</sup> On account of my ongoing working relationship with several individuals still associated with this NGO, it will remain anonymous throughout the dissertation.

ecosystems, conservationists have increasingly applied the theory to terrestrial ecosystems. Since the 1960s, forest fragments have been treated as marine islands, and



**Figure 1.1** Map of protected areas of Ecuador, highlighting Mache-Chindul and Cotacachi-Cayapas. The northernmost protected area is the comparatively small Cayapas-Mataje, which also falls within the Chocó eco-region. It does not currently form part of the wildlife corridor project. Adapted from [www.goecuador.com](http://www.goecuador.com)

researchers have anticipated similar outcomes. In its original formulation for marine islands, the theory holds that the smaller an island is, the lower species richness (diversity) contained within it (MacArthur and Wilson 1967). A second proposition is

that the risk of extinctions is more likely on smaller and remote islands, given that there is little space for species mobility, or the ability of a species to migrate to a new area. In its actual marine context, the theory's predictions are often correct. However, the application of island biogeography theory by conservationists to terrestrial landscapes, as I learned, is far more problematic. Forest fragments surrounded by human-altered landscapes indeed appear as "islands" in the theory's classical formulation. The term "matrix" is used to refer to the mix of background or disturbed environments that engulf forest fragments. The matrix surrounding these forest islands – agricultural fields, secondary forests, pastures, degraded soils, human settlements – may be conceptualized as barriers in the way that oceans are to islands. However, the attempt to draw upon island biogeography theory for conservation goals has become deeply problematic as wildlife corridors are viewed as incompatible with the presence of people. Island biogeography's application to forest fragments and surrounding landscape matrix for species protection is largely centered on non-human species for protection, and has often viewed local people as detrimental to biodiversity conservation. Traditional concepts of wildlife corridors take root in island biogeography theory: the only way to ensure species survival is by creating corridors between fragments/islands, and these corridors should be people-free in order to be effective (Western and Wright 1994; Harmon 1987).

Once I was in the field, it quickly became apparent that there were incongruities between the NGO's assumptions and what was in fact occurring on the ground. The NGO had a large-scale vision of conservation for this region, and in the process paid little notice to the existence of numerous small-scale conservation projects going on within the landscape matrix in the approximately 130-kilometer corridor between Mache-Chindul

and Cotacachi-Cayapas. These were projects that included forest regeneration, ecotourism, volunteer programs, internships, environmental education and community development programs. There certainly seemed to be much more taking place at the local scale in terms of forest conservation than suggested by the NGO. I was surprised that the organization's conservation biologist in charge of the wildlife corridor project was not aware of these projects, even those in place for more than a decade. It seemed important to discern the impact that these programs were having within the larger matrix between the Mache-Chindul and Cotacachi-Cayapas ecological reserves.

### **Research Focus**

This dissertation constitutes a departure from my original task and line of study in that its aim is the development of more effective strategies for biodiversity conservation and sustainable rural development – one that includes local populations in design and implementation. It is of critical importance that the undeniable presence human populations and their reliance on local natural resources (such as water, timber, agricultural products) in these areas, I argue, is critical for achieving conservation goals and project sustainability. Sustainable rural development and environmental conservation are intertwined and indispensable components of effective strategies for the Chocó eco-region. This dissertation explores current land use in the northwestern Chocó eco-region of Ecuador, arguing that protection of biodiversity can only be effective through the extension of conservation efforts beyond the limited confines of protected areas or reserves to include surrounding populations (Zimmerer 2006).

This study employs recent research in matrix ecology to make the case for the integration of anthropogenic systems in conservation (Vandermeer and Perfecto 2006,

2008). Matrix ecology examines biodiversity in the context of ecologically distinct forest fragments embedded within a greater matrix of human-managed landscapes. Within an overarching landscape of fragments and matrices, biodiversity may be improved in different nested forms of biodiversity (e.g. in patches where agroforestry and/or crops associations are practiced, sites of eco- and agri-tourism projects, to mention a few human-managed systems). Matrices may vary greatly in “quality,” the quality level being defined as higher the more capable it is of supporting biodiversity and the movement of plants and animals between the fragments embedded within them. This movement allows for populations of these species to share their gene pools and to restore their numbers and presence on a landscape even in the face of localized extinctions and habitat loss (Vandermeer and Perfecto 2006, 2008). Low quality rural matrices, on the other hand, are often dominated by larger-scale plantations of monocultures or extensive pastures for cattle grazing, and thus constitute a homogeneous degradation or “sea” that inhibits interactions between species populations, potentially resulting in irreversible species loss (Bhagwat *et al* 2005).

I argue that the aforementioned small-scale conservation/rural development projects that I observed could have significant impacts on the matrix quality in my region of study. Through the examination of two organizations purportedly promoting matrix quality – Río Muchacho and Fundación Golondrinas – this dissertation elucidates strategies and approaches that may or may not be effective in the Ecuadorian Chocó.

## **Research Methods**

The fieldwork for this dissertation was carried out between September of 2010 and July of 2011. During this time, I visited numerous small-scale projects promoting

conservation and sustainable rural development, some started by locals and others by outsiders. Because the increased appearance of these projects is a nationwide phenomenon, my initial goal was to sample as many sites as possible in the three major geographical zones of continental Ecuador: the Pacific coast, Andean highlands, and the Amazon Basin (Oriente). I then narrowed my focus to the eco-region of the Chocó in northwestern Ecuador in order to minimize issues of replicability regarding effective conservation strategies for this specific part of the country. This was also to take into account the possibility of a Chocó wildlife corridor as proposed by the aforementioned international conservation NGO.

Two case studies (Río Muchacho and Fundación Golondrinas) emerged as the most suitable candidates for a comparative analysis regarding the different ways projects with similar stated objectives (related to conservation and development) go about attempting to achieve these objectives. They are also particularly well-suited for comparison given their long-standing presence in their respective areas relative to other small-scale projects of their type.

During visits to these sites, my goal was to provide a qualitative overview of each project's individual circumstances and those of the local inhabitants who were purportedly participating in them. This was accomplished through the use of semi-structured interviews with project leaders, workers, participants, and surrounding community members. In addition to this, I attended community meetings and workshops and engaged in continuous participant observation.

The qualitative analysis in this dissertation is complemented by a quantitative assessment of land cover changes over time using satellite imagery. Through remote



sensing, this study seeks to prove or disprove hypotheses made regarding changes in forest cover in the two sites over the last twelve years based on fieldwork observations.

## **Chapter Organization**

This dissertation consists of seven chapters. Discussion surrounding biodiversity conservation permeates the research. Even though conservation appears a fairly basic concept, it is crucial to understand all the underlying assumptions and implications that are carried along with this term. The first chapter provides an overview of the history, epistemologies, and debates that inform our current interpretations of nature and conservation. The discussion is chronological, with emphasis on key transitions in the international conservation discourse over the past 140 years. These begin with exclusionary approaches and wilderness preservation to biodiversity conservation and linked notions of sustainable development. Particular attention is then given to the related ideas of “sustainable use” and ecotourism, and how they fit into current conservation debates.

The second chapter shifts from theoretical discussions on biodiversity conservation to the specific region of study, the Ecuadorian Chocó. The chapter provides an overview of the particular biogeographical characteristics of the Chocó eco-region as a whole, with specific attention to the part of the Chocó located within Ecuador. Chapter Two then broadly delineates the unique history of the Ecuadorian Chocó and the various cultures (Afro-Ecuadorian, indigenous and *mestizo*) who have found their place within it.

Chapter Three analyzes some of the pressing threats to biodiversity conservation in the Ecuadorian Chocó as a whole. This represents an examination of factors that have been widely cited by conservation biologists, ecologists and other individuals and entities

concerned with the future of the Chocó eco-region in Ecuador. The most prominent factors profiled here are railroads and logging, land reform and changing patterns of land tenure, and the rapid expansion of African oil palm plantations.

Chapter Four shifts attention from the large-scale issues facing the Ecuadorian Chocó to contemporary phenomena that are occurring in critical localities of this region. This is accomplished by examining smaller and more localized efforts to improve the quality of the landscape matrix in specific regions within the Ecuadorian Chocó. This section introduces the two case studies upon which the subsequent analysis is constructed. The case studies of Río Muchacho and Fundación Golondrinas – both very prominent local projects – integrate biodiversity conservation with sustainable rural development by taking a different approach to these objectives than the aforementioned international conservation NGO.<sup>2</sup> Even though these sites do not fall precisely within the proposed wildlife corridor between Mache-Chindul and Cotacachi-Cayapas, they are a couple of the most well-known and established projects of this sort in the Ecuadorian Chocó, and as such are ideal counterparts for a qualitative study that examines their different strategies for accomplishing their goals, as well as the different relationships they have with members of surrounding local communities. This chapter concludes with hypotheses that may improve matrix quality and human livelihoods within these two projects.

The fifth chapter tests the hypotheses put forth in the previous section in a more quantitative fashion by means of remote sensing analysis. A time lapse series (from 2000 to 2012) of changes in land cover patterns of two sample sites within the case studies

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<sup>2</sup> Río Muchacho, as well as being the name of a specific project, also refers to its location. It is located in the Río Muchacho valley. The Muchacho (“Adolescent” or “Boy”) river was given its name on account of its unpredictability and impetuous (as well as frequently destructive) flooding during the rainy season.

helps to illustrate the differences in current outcomes between the two projects. Even though an extended study over several more years would be ideal to provide more conclusive evidence to prove or disprove the hypotheses made in the previous chapter, some preliminary assessments can be made.

Based on both qualitative and quantitative analyses made of the two case studies in Chapters Four and Five, Chapter Six brings forth some of the most critical factors that could potentially dictate the viability of projects regarding their strategies for biodiversity conservation and sustainable rural development. An overarching theme throughout the dissertation is the importance of community initiative and integration within projects like Río Muchacho and Fundación Golondrinas in the creation of matrices that better foster biodiversity. This could then be applied to projects such as the creation of a wildlife corridor between Mache-Chindul and Cotacachi-Cayapas in which human populations are also incorporated into the equation. However, local community integration/initiative may be driven and sustained by various circumstances. Even though it must remain clear that the topic at hand is highly complex and dependent on a multitude of structural, human and environmental factors, this chapter attempts to isolate two that are highly prominent: the issue of ecotourism as conservation strategy, and the important role of “social capital” (local organization) within the context of networks linking local peoples to globalized markets.

Over the last few decades, ecotourism has been viewed by most conservationists as the best way for local communities to derive profit from non-extractive resource use and foster biodiversity conservation (Campbell 2002; Brandon 1998). Río Muchacho, Fundación Golondrinas, and virtually every other conservation/sustainable development

project in rural Ecuador have adopted this view of ecotourism to one degree or another. It is for this reason that ecotourism and its potential for biodiversity conservation is examined at length throughout this dissertation. Nevertheless, the second factor of social capital – in the form of local organizations like farmer associations – and links to outside markets may prove to be one of the most viable (albeit relatively overlooked) contributors to sustainable resource management and matrix diversification. An additional element also worth mentioning is constituted by the specific spatial dynamics between the case study projects and their local community members, which is a dimension that could have its application within a variety of contexts.

Chapter Seven discusses the applications of the aforementioned findings in biodiversity conservation and sustainable rural development for the Ecuadorian Chocó region as a whole, as well as addressing possible directions for further study, including the potentially long-term impact of environmental education among schoolchildren and future applications of these micro-scale approaches to wider-ranging strategies for developing an ecological corridor between the two largest Chocó forest fragments in Ecuador, Mache- Chindul and Cotacachi-Cayapas. Local small-scale initiatives such as the Río Muchacho and Fundación Golondrinas projects can be found throughout the Ecuadorian Chocó and rural areas in general. Their potential for improving matrix quality between forest fragments is a topic, this dissertation concludes, that certainly deserves closer attention.

## CHAPTER I. HISTORY, EVOLUTION AND ENDURANCE OF WESTERN IDEAS OF CONSERVATION

I began fieldwork in 2010 in the Ecuadorian Chocó following specific guidelines and assumptions provided by a specific international conservation NGO. The manner in which human populations were overlooked in their efforts to establish a wildlife corridor between the two largest remaining Chocó forest fragments in Ecuador was perplexing. I found it particularly odd that several small-scale conservation/development/ecotourism projects along the landscape matrix between two ecological reserves were not considered as having a potentially significant role in improving biodiversity in this region, much less critical for promoting sustainable rural development.

These preliminary observations called for the need to address the underlying assumptions underpinning this conservation NGO's ideas of environment and conservation. Modern Western conservationist thinking prioritizes the notion of an "ideal" forest as one that represents a climax stage of vegetation – presumably untouched by humans (Fennell 1999:75, Jepson and Whittaker 2002:129). This follows what are now outdated ecological theories of forest succession. Moreover, given the predominance of island biogeography theory in traditional ecological thinking, not much attention has been given to the role of local peoples in *sustaining* ecosystems, as well as the importance of the matrix between the islands itself. As has been the case in other regions of study, matrices between forest fragments can at times contain more species richness than many ecologists would think (Perfecto *et al.* 2009:73).

I also began to wonder about the politics revolving around the establishment of an international conservation NGO in northwestern Ecuador. How does a foreign NGO's

knowledge of the environment and ecosystems in the Ecuadorian Chocó compare with that of the different ethnic and cultural communities who have inhabited this region for years, even centuries?

In any study regarding nature and conservation, such questions assume fundamental importance. The following discussion attempts to bring to light what Escobar calls a “coloniality of nature” (2008:120), in which the legacies of European colonialism shape the ways in which we currently view nature. This coloniality must be acknowledged in order to present a more holistic approach, one that acknowledges the Chocó’s complex cultural history of Amerindian and New World Africans’ landscape use. This is situated within significantly political topics of conservation as well as community-based “sustainable” development.

This chapter is divided into six sections: 1) Traditional conservation, 2) The growing emphasis on biodiversity conservation, 3) The introduction of sustainable development in conservation, 4) The endurance of traditional conservation, 5) Approaches to “sustainable” use, and 6) Ecotourism as conservation strategy.

The first section starts by examining the beginnings of Western environmentalism, and our very notions of what constitutes “nature” and “wilderness.” These were terms defined by the elite classes in the United States and Western Europe in the latter half of the nineteenth century, and did not take people into consideration as having any role to play in nature (Jepson and Whittaker 2002:129, Takacs 1996:42, Janzen and INBio 1992:34, Sloan 2002:295). This led to the creation of national parks, in which indigenous communities were expelled; humans could only be viewed as detrimental to nature under its Western definition (Western and Wright 1994:3; Harmon

1987:218). Despite changes over time in ideas revolving around conservation, the notion of areas set aside from human habitation via the establishment of ecological reserves is something that endures to this day (Jepson and Whittaker 2002:129; Campbell 2002:30; Wilshusen *et al.* 2002). However, there is evidence that this type of conservation can at times cause more harm than good (Guha 1989, Schwartzman *et al.* 2000, Nepstad *et al.* 2006).

From here, Section 1.2 of this chapter looks at the emergence of the idea of biodiversity in the Western conservation movement. This reflects the recent trend in “scientizing the concept of nature” (Takacs 1996:79-80), which places conservation biologists in a virtually exclusive and dominant position of power to determine biodiversity conservation priorities.

Section 1.3 examines a parallel – and gradual – shift towards a recognition (initially by mostly social scientists, but that began to be adopted in the conservation discourse by some conservation biologists) that human populations do not always play a negative in nature. It was from here that notions of “sustainable development” arose, in which involvement of local populations in the management of protected areas is seen as important for the success of conservation strategies (IUCN 1993, in Wells and White 1995:61).

Despite such developments, however, it is also possible to observe an obstinate endurance of the old traditional Western notions of nature and conservation described at the beginning of the chapter. Section 1.4 examines the manner in which this notion underlies much modern thinking in conservation, and is at the root of many current debates surrounding conservation and the part that local communities play within it.

Section 1.5 examines different approaches to sustainability that have been undertaken by the conservation movement. It addresses questions about what in fact constitutes “sustainable use” of natural resources. This serves to frame the emerging idea of co-management by local communities in conservation schemes, and initiate a discussion on the commonly-held notion of ecotourism as an ideal strategy that incorporates both biodiversity conservation and sustainable community development (at least in theory).

From here, and in light of the considerable increase in “ecotourism” ventures throughout rural Ecuador, Section 1.6 of this chapter continues on through the evolution of Western conservation by delving more deeply into the question of ecotourism – in its broadest sense – as a viable conservation and development strategy for regions of the South. It takes root in the previous notions of sustainable use and co-management, and is often touted as a panacea for biodiversity conservation, given that it is viewed as a way for local inhabitants to derive profit from nature in a non-destructive, non-extractive manner (Campbell 2002:30; Brandon 1998:394). The topic of ecotourism as conservation strategy is examined at length, particularly on account of its current popularity in rural Ecuador and much of the northwestern humid tropics.

## **1.1 Traditional Conservation**

### *The “wilderness” concept*

The Western approach to conservation has its historical roots in the early environmentalism in the West that led to the establishment of the world’s first national



parks.<sup>3</sup> It took form from the values of the elite in the United States and Western Europe at the end of the nineteenth century (Jepson and Whittaker 2002:129, Takacs 1996:42, Janzen and INBio 1992:34) and was deeply rooted in the moral responsibility and the emotional, intellectual, aesthetic and spiritual admiration its proponents held for nature's "untouched spaces" (Fennell 1999:75, Jepson and Whittaker 2002:129). As such, the concept was fundamentally based on the notion of wilderness. It emphasized the preservation of pristine nature for protection, recreation and scientific purposes (Fennell 1999:78). The 1964 U.S. Wilderness Act defined wilderness as "an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain" (Sloan 2002:295).

This notion of wilderness appealed to an urban population that sought to escape the modern industrialized cities for recreational purposes. Protected natural areas and national parks met this expectation of an urban class who sought the purity of spaces undisturbed by humans, as romanticized in Western folklore (Fennell 1999:75). Thus, the wilderness concept was intrinsically value-based (Mackey *et al.* 1998:2) and informed by an aesthetic appreciation of nature that was "constructive for the moral and cultural superiority of certain social classes" (Clark 1984, in Schmidt-Soltau 2004:4). The expulsion of Native American populations from places designated to be protected natural areas was key in creating the illusion that the wilderness contained within them was completely uninhabited by humans, and therefore "virgin" (Cronon 1996).

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<sup>3</sup> The first national park was Yellowstone National Park, established in the United States in 1872 (Harmon 2008).

### *The creation of national parks*

Since its conception in nineteenth century United States, the national park ideal has been the phenomenon of an affluent culture positioned to set aside large parcels of land for protection and recreation (Western and Wright 1994:3; Harmon 2008:219). In 1975, the International Union for Conservation of Nature and Natural Resources (IUCN) defined a national park as an area:

...where one or several ecosystems are not materially altered by human exploitation and occupation, where plant and animal species, geomorphological sites and habitats are of special scientific, educative and recreative interest or which contains a natural landscape of great beauty. (IUCN 1975)

The national park model of conservation, often referred to as the “Yellowstone model” (Stevens and de Lacy 1997:285), excluded habitation and resource extraction by humans, and transferred the area to government ownership (Western and Wright 1994:3; Harmon 1987:218). More specifically, it took land away from original indigenous inhabitants and subsequently called it “pristine.” In this way, the national park concept institutionalized the appropriation of natural areas based on the notion of wilderness preservation. This concept became well rooted within the North American and Western European context. It was subsequently introduced in the early twentieth century to countries in the South, where colonial (in the case of some African nations) and post-colonial governments sought to implement a blueprint of Western ideals and values held

by national and foreign elites and conservation biologists (Jepson and Whittaker 2002:129; Campbell 2000:174; Fennell 1999:78; Honey 1999:11; Pimbert and Pretty 1997:302; Cochrane 1993:318; Hough 1988:129; Harmon 2008:221). National parks and game reserves were established in African countries and India, and while they provided pleasure and entertainment to the national and international elite, the lives of local inhabitants were impacted in negative ways. The establishment of these set-asides resulted in the forced relocation of communities, and frequently in restrictions on resource access and use (Campbell 2002:37; Schmidt-Soltau 2004:4; Janzen and INBio 1992:31-2; Guha 1989:75).

The restrictions on the use of land-based resources that local inhabitants historically depended upon for their daily subsistence significantly affected their livelihoods and denied them basic human needs (Harmon 2008:218; Ghimire and Pimbert 1997; Stevens and de Lacy 1997; Brechin *et al.* 1991:13-4). For the sake of nature protection, access to resources such as firewood, medicinal plants, grazing land, and forest products was often prohibited without the provision of any proof that the resource use practices of local people were harmful in any way (West 1991:xvii; Harmon 2008:222). This type of conservation, which compromised local livelihood security consistently failed to garner support by local communities who questioned the legitimacy of land removal and the designation of set-asides for the pleasure of the elite (Brechin *et al.* 1991:17-8). Quite to the contrary; this approach generated lasting antipathy to conservation and lack of compliance with regulations that commonly ignored traditional land tenure and access rights. This ultimately would aggravate resource depletion, with

ensuing tensions and insecurity often leading to increased exploitation and resistance (Thompson 1999:188-9; Pimbert and Pretty 1997:298; Western and Wright 1994:4).

## **1.2 The Growing Emphasis on Biodiversity in Conservation**

Conservation efforts gained new momentum with the appearance of the biodiversity concept, which first emerged in the work of conservationist Raymond F. Dasmann in 1968. National parks became increasingly significant for reasons of species and habitat protection.<sup>4</sup> Inspired by notions of pristine nature and the “romance of diversity” (Flader 1974, in Takacs 1996:13), Western conservationists and wildlife biologists increasingly led the struggle for “saving the last great places” (TNC nd). At the beginning they were often headed by the promotion of particularly appealing and endangered megafauna (e.g. large felines, rhinos, elephants) and other rare species, but an advanced understanding of ecological interdependencies gradually gave way to a view of ecosystems as the storehouses of the diversity of life (Takacs 1996:21). This also entailed a shift in focus from animal species to habitats and vegetation.

“Biodiversity” became an increasingly prominent term in the 1980s. It has officially been defined by the Convention on Biological Diversity (CBD) as “the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (CBD 1992:3). At the same time this increasing recognition of biodiversity could be observed,

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<sup>4</sup> Throughout this paper, the term “national park” refers to the 1964 U.S. Wilderness Act definition of an area set aside for conservation that does not allow human occupation or resource extraction. “Protected areas,” on the other hand, refers to a broader definition that encompasses set-asides, but also ecological reserves, natural parks, and other designated areas considered important for their ecological (and sometimes cultural) value, and within which use and habitation by people may also be possible, though oftentimes limited.

the environmental sciences experienced a significant growth in national and international support, with conservation biology formalized as an academic discipline during the 1970s and 1980s (Whitten *et al.* 2001:1; Takacs 1996:35). Biologists, who considered themselves the scientific “representatives of the natural world” (Janzen 1986:306), became the most outspoken advocates of ecosystem and habitat protection around the globe. It was their mission to develop and promote the tools that would reverse the extinction of species and the degradation of ecosystems (Takacs 1996:35).

In recognition of this newly recognized global biodiversity crisis (Wilshusen *et al.* 2002:18; McNeely 1992:16), the international conservation community prioritizes Western scientific expertise and considers conservation biologists the trailblazers for directing and implementing conservation intervention at a global scale (Olson *et al.* 2002; Fennell 1999:92; Guha 1989:75; Janzen 1986). As one academic critic puts it, “by scientizing the concept of nature, biologists aim to convince you both that the biodiversity crisis is grave and that they have special expertise in understanding and addressing it” (Takacs 1996:79-80). The biodiversity crisis may indeed be grave, but conservation biologists are not the only scientists with expertise in addressing the issues at hand. Nonetheless, the voices and political power of conservation biologists are at the forefront of global biodiversity conservation efforts. It must also be noted that during this time, a considerable number of global biodiversity conservation organizations emerged, including the IUCN, World Wildlife Fund, Nature Conservancy, and many others.

In the diversity-rich tropical regions, where government spending on nature conservation is oftentimes inadequate, the provision of scientific, financial and managerial expertise through international environmental organizations is a fundamental

component of the globalization of environmental problems and the pursuit of global solutions (Wilshusen *et al.* 2002; Salih 2001). Within these efforts, national parks and other protected areas are powerful magnets for international conservation and development aid efforts and government programs (Stevens and de Lacy 1997:289; Boo 1990:8-9).<sup>5</sup> In order to deal with “the problems of a shrinking and environmentally threatened global commons” (Meyer 1997), the early involvement of effective conservation lobbies is “essential to ensure the security of protected areas” (Munasinghe and McNeely 1994:3). The existence of protected areas certainly continues to be considered a practical foundation for biodiversity conservation (Terborgh and van Schaik 2002; Wilshusen *et al.* 2002:22, Bruner *et al.* 2001; Redford *et al.* 1998; Sandlund *et al.* 1992:10).

Despite this aforementioned trend in conservationist discourse, and in consideration of recurrent resource-use conflicts, the broader international conservation community grew increasingly concerned that an exclusionary approach to the management of set-asides did not necessarily generate desired conservation outcomes, and that “simply fencing in all protected areas is an untenable strategy” (Inamdar *et al.* 1999). What followed (beginning in the late 1980s and early 1990s) were political and philosophical debates around the rights and needs of local resource users that furthered the discussion on the necessity to reconcile conservation objectives with needs of local populations (Brechin *et al.* 2002; van der Duim and Caalders 2002:745; Campbell 2000; Honey 1999:11; Ghimire and Pimbert 1997; Brechin *et al.* 1991:19; Hough 1988). Moreover, conservation NGOs found themselves under increasing pressure to justify

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<sup>5</sup> Please refer to the previous footnote regarding this paper’s definitions for the terms “national park” and “protected area.”

costly – in both the financial as well as the social sense of the word – exclusionary management and conservation regimes in protected areas around the world in the face of local, national and global development needs (Campbell 2000; Inamdar *et al.* 1999; Wells and White 1995:61). By the 1990s, concern with the economic, social and cultural rights of local communities was elevated in the international environmental and development agenda.

The integration of human and socio-economic development considerations within the conservation agenda was an important step in this historical progression. From here, the notion of conservation was expanded to fit within the context of “sustainable” development, whereby human populations would pursue activities aimed at alleviating poverty while at the same time finding ways to do so in a manner that was environmentally sustainable. Rooted more in the social sciences, rather than conservation biology, it begins to play a significant role in the way biodiversity conservation issues and their solutions are framed. Social and environmental achievements were not deemed mutually exclusive in this view on conservation. What follows is a more detailed discussion on the idea of sustainable development within the broader scope of conservation. This idea will then be further integrated within the discussion of the resilience of traditional conservation thinking in current times.

### **1.3 The Introduction of Sustainable Development in Conservation**

The paradigm of sustainable development arose in response to the debates surrounding the impact of traditional conservation regimes on local communities. It is a view that takes into consideration the pursuit of both social and environmental objectives (Westing 1996:218). Biodiversity is conceptualized to be a crucial component – “at the

core” – of sustainable development (Earthwatch Europe *et al.* 2002:3; see also van der Duim and Caalders 2002:745; Sandlund *et al.* 1992). Accordingly, international biodiversity conservation “entails a shift from a defensive posture – protecting nature from the impacts of development – to an offensive effort seeking to meet people’s needs from biological resources while ensuring the long-term sustainability of Earth’s biotic wealth” (Global Biodiversity Strategy, in Takacs 1996:45). This notion is also articulated in the core values of sustainable development, as “the essence of the concept is a fusion of the traditional concerns of environmentalism, such as conservation of natural resources and species, and of the international development agenda, namely poverty alleviation, among other stated goals” (Sunderlin 1995:481). National parks and other protected areas are a significant element in this agenda, and they are considered part of the development process (Bunting 2001:6; Munasinghe and McNeely 1994:2).

The Convention on Biological Diversity, one of the major outcomes of the 1992 UN Conference on Environment and Development (UNCED), expands traditional notions of conservation by emphasizing economic, social and cultural aspects of nature conservation along with the traditional emphasis on scientific, educational, ecological, recreational and aesthetic values (CBD 1992:1). Along with the conservation of biodiversity, the CBD outlines two fundamental objectives that take this new agenda into account. These are the sustainable use of natural resources and the equitable sharing of benefits (CBD 1992:2). Following this line of thought, the provision of economic incentives through alternative livelihood strategies is considered a crucial conservation and development strategy to generate compliance and local support, as well as to ensure the legitimacy of the conservation regime (Brechin *et al.* 2002; Campbell 2002, 2000;



Salm and Clark 2000; Borrini-Feyerabend 1999; Western and Wright 1994; McNeely 1992; Brechin *et al.* 1991). The early involvement of local populations in the planning and management of protected areas becomes an essential component of achieving these objectives, given that “it is becoming obvious that the key to protecting a cherished landscape lies within the communities that call it home” (IUCN 1993, in Wells and White 1995:61). Today, all major conservation organizations have adopted the notion of sustainable development in their agendas (Campbell 2000:167-8).

Nevertheless, in spite of their prominence in the current conservation debate, the international conservation community has not accepted approaches to sustainable use unanimously. As will be discussed further in following sections, the conception of sustainable use by conservationists can ultimately aim to exclude forms of resource use that are not in the interest of decision-makers. The discourse on the global biodiversity crisis and a deeply-rooted historical notion of local people as the main perpetrators of environmental damage become fundamental rationales in this process and contribute to the perpetuation of the traditional conservation approach. In truth, the romantic ideal of wilderness never really disappeared from the international conservation landscape. Quite to the contrary: it fundamentally informs the biodiversity discourse.

#### **1.4 The Endurance of Traditional Conservation**

##### *Biodiversity and the wilderness ideal*

The interpretation of biodiversity as an objective concept that is utilized to pursue a universally valid goal of conservation is problematic. A variety of economic, social, cultural and political interests and motivations inform manifestations of the biodiversity discourse within a nexus of unequal power relationships. While the biodiversity rhetoric

has replaced the previous conservation paradigms of nature and wilderness, it still embodies the emotional, aesthetic, ethical, and spiritual feelings about the natural world that are characteristic of traditional notions of conservation (Campbell 2000:171, Takacs 1996:41). Indeed, this outdated style of thinking in conservation is widespread among the conservation community (Stevens and de Lacy 1997:285), and is also associated with a set of values that are believed to be the aspiration of “civilized nations and societies” (Jepson and Whittaker 2002:129; see also Campbell 2002:30; Wilshusen *et al.* 2002). Within this framework, the term “biodiversity” becomes “a tool for zealous defense of a particular social construction of nature that recognizes, analyzes, and rues this furious destruction of life on Earth” (Takacs 1996:1-2). As a consequence, the desire for current habitat and ecosystem protection can be considered “a proxy for wilderness preservation, [which can] be smuggled in under the biodiversity concept” (Takacs 1996:43). As an ecological ideal, “wilderness” continues to be a powerful ideological force in global conservation efforts (McNeely *et al.* 1994, in Sloan 2002:295; see also Pimbert and Pretty 1997:300; Guha 1989).

Furthermore, current species extinction rates support the renewed emphasis on ecological imperatives and the necessity to further the “protection paradigm” in international biodiversity conservation (Wilshusen *et al.* 2002). Continuing extinctions of species caused by anthropogenic factors is currently a primary concern that has cast doubts on the effectiveness of recent conservation efforts (Terborgh and van Schaik 2002:3; Wilshusen *et al.* 2002:17-8). Many conservationists argue that the failure of biodiversity conservation is on account of the inefficiency of anthropocentric conservation approaches, as well as the problematic relationship between socio-economic

development and environmental conservation (Campbell 2000:177-8; Meadowcroft 2000:373; Brandon 1998; Redford *et al.* 1998; Westing 1996; Robinson 1993:22). Today, a great many conservationists find themselves engaged in a “race against time” (Terborgh and Schaik 2002:3), where the protection and preservation of ecosystems and natural areas becomes the imperative in current biodiversity conservation. This is succinctly phrased by Redford *et al.* (1998):

Parks were designed to preserve nature, not to “cure structural problems such as poverty, unequal land distribution and resource allocation, corruption, economic injustice, and market failure” (Brandon 1998, cited in Redford *et al.* 1998:457).

Following this, there has been a renewed emphasis on authoritarian management and enforcement regimes to “safeguard critically threatened habitats worldwide” (Wilshusen *et al.* 2002:17). The social goals promoted by the CBD become secondary to an ideal of nature that tends to conceptualize the presence of human residents within protected areas as “one of the most intractable problems faced by park managers” (Terborgh and Peres 2002:307). This trend is essentially informed by the notion of wilderness espoused by early conservation practice, and thus favors a concept of nature untouched by humans. In this manner, it further consolidates the dichotomy of human beings on one hand and nature on the other, a division that has historically influenced Western exclusionary notions of conservation and which is at the root of current resource use conflicts (Guha 1989).

To clarify, this study does not criticize the importance of the notion of biodiversity in conservation *per se*, but rather the approach taken by conservationists, biologists and the traditional conservation community in sustaining it. Building upon the previous arguments on discourses of what constitutes “nature,” it is possible to observe that conservationists frequently pay little to no attention to systems managed by humans, be they agro-ecosystems, forestry ecosystems or aquatic systems (Perfecto *et al.* 2009:79-80). In other words, many conservationists are focusing solely on forest fragments and not on the matrix, and the important role that the latter has in sustaining biodiversity. Consequently, in traditional approaches conservation has adopted a view in which biodiversity concerns are divorced from human activities, particularly agriculture, which is neither a practical nor realistic separation. Perfecto *et al.* (2009:79) point that this could have “devastating consequences” in biodiversity conservation, especially because at least half of the earth’s surface is composed of anthropogenic ecosystems. Ignoring their existence can do nothing but harm in the biodiversity discourse.

#### *The role of local communities*

Preservationists argue that humans and nature are incompatible in any lifestyle but the low-impact pre-modern one (Terborgh and Peres 2002:307; see also Schmidt-Soltau 2004:4). In accordance with this notion, presence and activities of human populations in and around protected areas are frequently condemned because of a perception that local inhabitants are the cause of biodiversity degradation. Furthering this argument, Terborgh and Peres (2002:307) assert that:

People of all stripes, whether indigenous or not, pose a grave threat to the biological integrity of any park when

they must derive their livelihoods from the park's natural resources.

This perception has been reconfirmed and consolidated by the deconstruction of the notion of the harmonious relation of rural and indigenous communities to nature and the prominence of traditional ecological knowledge (TEK) (Terborgh and Peres 2002; Agrawal and Gibson 1999:631; Pannell 1997), which has been influential in the popularity of people-centered and community-based approaches to conservation (Brosius *et al.* 1998; Stevens and de Lacy 1997:287; Western and Wright 1994). The notion of “local communities” as being among the primary perpetrators of environmental degradation has been a guiding principle in the history of nature conservation, and continues to be influential as a manifestation of the biodiversity discourse and current conservation efforts (Campbell 2002:30; Erb 2001:75; Kellert *et al.* 2000:706; Sundberg 1998; West 1991:xix; Hardin 1968).

Leach and Mearns (1996, in Campbell 2000:170) point out that conservation experts have a direct stake in sustaining the traditional conservation narrative and views about “the destructive role of local inhabitants” in order to maintain control over natural resources and to support continued intervention. The discourse on biodiversity is instrumental in increasing the say of conservationists in policy decisions, to generate resources for research, gain a key role in shaping the way nature is conceived “and, ultimately, stem the rampant destruction of the natural world” (Takacs 1996:2). Increasing population growth in the South, the penetration by market forces and subsequent pressure on natural resources, and the tangible evidence of local populations

in resource exploitation and violation of resource use restrictions is thought to require authoritarian and protectionist conservation regimes (Campbell 2002:30; Agrawal and Gibson 1999:631). Following these assumptions, the solution that emerges is the prohibition or restriction of resource extraction. The exclusion of human use through more and better enforcement subsequently leads to continued infringement of regulations and further criminalization of local communities as “poachers” and “encroachers” (Campbell 2002:30; see also Schmidt-Soltau 2004; Honey 1999:12; Escobar 1998). However, in many countries in the South, it is rarely local inhabitants who cause the greatest amount of damage, but corrupt government officials, foreign and local businessmen and investors, and large-scale commercial enterprises (Campbell 2002:38; World Bank 2001:ii; Thompson 1999:188; McNeely 1992:17).

Furthermore, the concept of “community” rarely receives the attention or level of analysis it needs in the context of resource use and management (Agrawal and Gibson 1999:630). Instead, conservation discourses promote a generalized image of communities as small spatial units with a homogeneous social structure and shared norms (Agrawal and Gibson 1999:630; see also Jakes and Anderson 2000; Brosius *et al.* 1998:165; McCay and Jentoft 1996:241-2; Hough 1988:131). This perception is without question an attractive concept for conservationists (Martin and Lemon 2001:590; Agrawal and Gibson 1999:630) because it permits a collective approach to the complex socio-political aspects of conservation practice and natural resource management (Pannell 1997). In spite of this, the multiple interests, motivations and objectives that exist within communities and between communities and other social actors, as well as the ensuing political nature of the development and conservation landscape, have been discussed

widely in the literature (Lane 2001:665; Mohan and Stokke 2000; Agrawal and Gibson 1999:633; Brosius *et al.* 1998; Thom and Washbrook 1997). Sundberg (1998) states that the problem is the detachment of aid and environmental organizations from existing power relationships by only “sharing” technical and scientific knowledge with “target” populations; in this manner the conservation narrative is effectively depoliticized.

Local resource users need to be distinguished based on the resource extraction that they in fact carry out. On the one hand, there is a fair argument for condemnation of resource use groups that are motivated by the demand of a market economy, and as a consequence place unrestrained pressure on natural resources for economic profit. Nevertheless, the ensuing conception of “local communities” as a whole as perpetrators of environmental damage and the condemnation of resource use *per se* also have an impact on those who cannot necessarily be held responsible for resource degradation. The condemnation of resource use and subsequent restrictions could instead be applied across the range of a “community,” or even encompass several communities that live within proximity of said resources:

In a perverse irony, the instrument of the forest peoples’ impoverishment, deforestation, is blamed on them! Their proximity to the forest makes them an easy target for blame, and their lack of political capital makes it difficult for them to refute this charge. (Dove 1993:21)

As a result, marginal resource users find it difficult to advance their needs when powerful stakeholders assume control of the management of natural resources – and directly or indirectly, the lives of the people dependent on those resources. The

essentialist notion that local inhabitants play an environmentally destructive role has historically been a fundamental principle in this process, justifying and legitimizing exclusionary approaches to biodiversity conservation and nature protection. Within this context, any extractive use of natural resources within protected areas will most likely be viewed as ecologically unsustainable, particularly when it collides with the aspirations of a conservation regime that is led by the belief that exclusion is necessary in the pursuit of ecological integrity.

This approach has increasingly come under fire, however, and the traditional conservation discourse has adapted to forms of resource management and approaches to sustainable use and benefit-sharing that, on the one hand, suffice in their rhetorical promises to sustainable development and poverty alleviation. However, on the other hand, they could potentially be another means of consolidating external control of natural resources and furthering the wilderness paradigm (Borchers 2004:20).

What follows is a discussion of the concept of sustainable use. Important in this is the notion of co-management, which has become a prominent approach to resource and environmental management. It builds on the constituency of resource users and other key stakeholders (such as the conservation community) in an effort to institutionalize sustainable use. A shared decision-making process and the self-determination of local people in their use of resources are key components of this concept. Nevertheless, local participation may in reality only be a token concession to principles of co-management. Experts and actors from the outside are those who continue to determine conservation objectives.



With local resource use limited on the grounds of ecological imperatives, ecotourism oftentimes becomes the most desirable option to sustainable use, and the conservation and development communities have eagerly adopted the concept. Ecotourism development eloquently demonstrates the nexus between environment and development. However, the role of local communities may only be secondary to more powerful stakes in the scramble for the natural resources of the South.

### **1.5 Approaches to “Sustainable” Use**

Sustainable use of natural resources and biodiversity has become a fundamental rationale in nature conservation. It is argued that biodiversity must be valuable if it is to be conserved, and that value is derived through utilization (Campbell 2002:30; Janzen and INBio 1992:27). The sustainable use of biodiversity can assume a number of forms, from traditional resource extraction to ecotourism. In the Convention on Biological Diversity, it has been defined as:

...the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations. (CBD 1992:4)

In addition, an important objective of sustainable use is to:

Protect and encourage customary use of biological resources in accordance with traditional cultural practices

that are compatible with conservation or sustainable use requirements. (CBD 1992:7)

Approaches to sustainable use that take into account economic, social and cultural needs of local inhabitants have best been conceptualized within the discourse addressing community-based conservation and co-management of resources, which has become increasingly prominent in the international conservation landscape over the past two decades or so (Borrini-Feyerabend 2000; Campbell 2000; Ghimire and Pimbert 1997; Pannell 1997; Western and Wright 1994; West and Brechin 1991). The idea of community-based conservation is based on the premise that locals have a greater interest in the sustainable use of resources than outside groups and institutions, and that a good part of resource management relies on traditional practices (Campbell 2002; Brosius *et al.* 1998; Stevens and de Lacy 1997:286).

#### *The idea of co-management*

The main concerns expressed in the CBD take form in the notion of co-management, which can be defined as:

...a pluralist approach to managing natural resources (NRs), incorporating a variety of partners in a variety of roles, generally to the end goals of environmental conservation, sustainable use of NRs and the equitable sharing of resource-related benefits and responsibilities. (Borrini-Feyerabend 2000:7)

Within a co-management regime, representatives of resource user groups, the scientific community, and government agencies share knowledge, power and responsibility. In this manner, it advocates decentralized and shared decision-making, active participation, and empowerment (Lane 2001:658). A partnership between the institution or group with jurisdiction over the protected area and other relevant interest groups (particularly local inhabitants and resource users) implies the identification and warranty of “their *respective functions, rights and responsibilities* with regard to the area” (Borrini-Feyerabend 1999:227, emphasis in the original; see also Kellert *et al.* 2000:706; Stevens and de Lacy 1997:276). Ingles *et al.* (1999:1) emphasize that:

The rationale for promoting collaborative management is based on the assumption that effective management is more likely when local resource users have shared or exclusive rights to make decisions and benefit from resource use. There is an increasing interest in strengthening or creating collaborative management systems as a strategy for promoting rural development and resource conservation through empowerment and partnerships.

The co-management approach is considered especially suitable when access to natural resources is essential for the security of local livelihoods and cultural survival (Borrini-Feyerabend 1999:227; Stevens 1997:276). It would appear to be an adequate response to natural resource conflicts, as it attempts to integrate conservation efforts with economic, social and cultural agendas by fostering democracy, equity and social justice

(Castro and Nielsen 2001:230; Borrini-Feyerabend 2000). Furthermore, the empowerment of local communities and resource users through shared responsibility and active involvement is likely to generate support and voluntary compliance with management objectives as well as incentives to self-enforcement (Lane 2001:665; Campbell 2000:170; Furze *et al.* 1996:x; Cochrane 1993:322; McNeely 1992:22; Sandlund *et al.* 1992:10).

As a consequence, the extent to which local resource users participate and share in decision-making becomes indicative of the potential for success of a co-management regime. Of course, there are considerable differences in the degree of participation, and this will determine the extent to which locals have a share of decision-making and power. According to Stevens and de Lacy (1997:272), the involvement of local communities in a co-management scheme can range from consultation to more active participation as co-managers or managers. However, consultation as the fullest extent of participation is unlikely to lead to a successful co-management scheme. Pimbert and Pretty (1997:309) assert that a consultative role does not concede any share in decision-making, since external actors define both problems and solutions. Instead, shared decision-making implies that a program is implemented through bottom-up planning, and co-managed by the implementing group and the beneficiaries (Ingles *et al.* 1999:6). At the top end of participation in a co-management scheme, the program is designed and owned by local people, perhaps with additional help of from outside facilitators (Ingles *et al.* 1999:6; see also Stevens and de Lacy 1997:276-7). This means that within a co-management scheme, local resource users should become central in determining conservation objectives, thus ensuring that their rights and needs are taken into account. With its emphasis on equity

and social justice, co-management is often proposed as the ideal solution to environmental problems and social injustice (Pannell 1997).

The notion of co-management, sustainable use and benefit sharing has indeed been adopted by many – if not most – national and international conservation and development agencies (Campbell 2002:30; 2000:167-8; Salm and Clark 2000:65; Kellert *et al.* 2000; Wells and White 1995:61). However, these notions continue to be informed by the “crisis” narrative that is a legacy of the traditional conservation discourse (Campbell 2002:29). Consequently, this comprehensive approach to biodiversity conservation and rural development also creates the aforementioned tensions between its ecological, economic and social objectives. This could ultimately compromise one goal for the sake of the other.

#### *Defining “sustainable use”*

A fundamental problem of current conservation efforts is the deliberate definition by conservationists of what maintains or generates the ecological integrity that is being pursued in biodiversity conservation. The concept of “ecological integrity” determines the type and extent of the exclusion of human activities, and how notions of sustainable use of local resource users will be manifested in a particular conservation context (Sloan 2002). Often, the definition of sustainable use remains steadfastly under the domain of the international scientific community and conservation biology (Janzen and INBio 1992:27; Sandlund *et al.* 1992:11; Hough 1988:133). This has a significant impact on the level of participation of resource users in determining conservation imperatives. Experts frequently assume that the objectives of conservationists are set, and that participation is only a means of getting locals on their side (Campbell 2000:177).

However, the idea of “sustainability” that informs conservation planning is arguably a vague concept (Phillis and Andriantiatsaholiniaina 2001; Pimbert and Pretty 1997:306). Its ambiguity allows for an interpretation according to the needs of the interpreter (Campbell 2000:179). In this way, the notion of sustainable use has become instrumental in consolidating traditional conservation ideals within the biodiversity discourse (Borchers 2004:25).

According to Campbell (2002, 2000), sustainable use can take consumptive and non-consumptive forms. Following this, resource extraction is consumptive “when the entire organism or any of its parts is deliberately killed or removed either as a goal in and of itself... or for a product” (Freese 1996, in Campbell 2002:30). However, Robinson (1993:24) argues that “any use of a species... is likely to encourage the overall loss of biodiversity.” He asserts that an approach to improving the quality of human life within the carrying capacity of supporting ecosystems is ultimately at the expense of the conservation of natural resources and biodiversity (Robinson 1993:22; see also Redford and Sanderson 2000; Redford and Richter 1999). As a result, consumptive resource use is not a popular option for many conservationists, who consider it their mission to reverse the extinction of species and the degradation of ecosystems.

As an alternative to consumptive forms of resource use, conservation institutions consider the development of ecotourism as the most sustainable approach to the utilization of biodiversity; it is seen a non-extractive activity, and as such constitutes a non-consumptive form of resource use (Campbell 2002:30; Brandon 1998:394). In recent years, ecotourism has become the top approach to sustainable use in protected and high biodiversity areas. It is conceived to contribute to conservation efforts through the

generation of revenue, and to rural development by providing benefits to and generating employment for rural communities. Nonetheless, this approach is problematic, and its economic, social and ecological feasibility is debatable. Furthermore, ecotourism in practice often fails to uphold its stated objectives and ideals. For the purposes of this study, a closer look must be taken to the concept of ecotourism, since it has become a popular strategy in development and conservation initiatives in the Ecuadorian Chocó, as well as most other regions in the South as a whole.

### *The ecotourism concept*

Along with the term “biodiversity,” ecotourism has become one of the most popular and influential slogans within conservation programs since the 1990s, “emerged like a phoenix from terms like *nature tourism* and *wildlife tourism* to become a universal conservation catchword, an exemplar of sustainable use” (Western 1992, in Honey 1999:21). At its creation as a term in 1987 by Ceballos-Lascurain (1987, in Boo 1990:xiv), ecotourism was defined as the experience of:

...traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas. (Ceballos-Lascurain 1987)

Even though it can be considered a subcategory of the broader nature tourism, ecotourism has been distinguished on several grounds. The concept gained popularity

based on the perception that it does not only rely on nature as a resource base, but that is ecologically sustainable and economically beneficial to conservation efforts (Burton 1997:756).

Ecotourism is thought to be the fastest-growing sector of the tourism industry (Erb 2001:75), and meets demand by marketing national parks and other protected areas as major destinations (Deng *et al.* 2002; Campbell 1999:534; Honey 1999:390; Scheyvens 1999:245; Boo 1990:2). Because government funding for these areas is often low (particularly in the South), the conservation community sees ecotourism as an ideal means of self-financing areas for conservation (Lindberg 2001; Spergel 2001; Walpole *et al.* 2001). Since conservationists tend to regard ecotourism as a non-extractive activity, they view it as the most sustainable and appropriate use of biodiversity and natural resources, as well as a way to make protected areas “pay for themselves” through user fees and concessions (Campbell 2002:41). Furthering this point, Dharmaratne *et al.* (2000:591) state that:

...self-financing will be crucial for conservation and preservation of the environment to be successful through the establishment of protected areas, [and] the growing interest in nature based on ecotourism in all parts of the world is a major, if not the only, means of self-financing protected areas.

Furthermore, the attention given to ecotourism is also rooted in the common view of it as a development tool that can generate economic benefits and create employment



opportunities for rural populations, which in turn promotes sustainable development (Newsome *et al.* 2002:19; van der Duim and Caalders 2002:744; Fennell 1999:10; Honey 1999:76; Ross and Wall 1999:124; Barkin 1996). By providing benefits and economic alternatives for rural communities, ecotourism is believed to increase awareness of the value of sustainable resource use and conservation, and is considered a valid response to resource use conflicts, particularly in protected areas (Brandon 1996).

Conventional forms of tourism rely significantly on imported goods and services, and most revenue does not accrue to tourist destination countries, but rather to origin countries where international tourism operators and service providers are located (Pleumarom 1994; Boo 1990:xiv-xv). Even though national economies in destination countries generally benefit from conventional tourism to some extent (Boo 1990:11), local economies – especially in the South – often fail to be on the receiving end of tourism spending (Wagner 1997; Brohman 1996; Gehrmann 1994). Ecotourism, on the other hand, is considered a means by which to establish stronger links with the local economy through employment generation, small enterprise development, and the reliance on locally produced goods and services, thereby contributing to an increase in standards of living (Barkin 1996). By building on the socio-cultural and human resource base of the local population for further development, an approach such as this one depends significantly on local involvement in design and implementation (van der Duim and Caalders 2002:757; Barkin 1996).

Following this notion, ecotourism development ideally relies on the involvement of a range of interest groups and the participation and empowerment of rural communities (Ross and Wall 1999:124; Scheyvens 1999:246). The transfer of control and

a sense of ownership conveyed to local communities are fundamental components of ecotourism development (Brandon 1996:29). Community involvement in planning, management and operation of ecotourism thus becomes an indicator of the extent to which communities benefit from ecotourism, not only economically, but also socially and politically as a means of empowerment (Scheyvens 1999). In this manner, the concept of ecotourism draws on the same participatory principles addressed previously within the context of co-management.

In order for tourism to be a viable strategy for sustainable development, Goodwin (1998:4) proposes that there is a good case for intervention to enable local communities and small-scale entrepreneurs to participate in the tourism industry. As a result, ecotourism has become a popular component of international conservation and development programs (Erb 2001:76; Honey 1999:76; Boo 1990). Aid agencies, environmental organizations, governments, and the tourism industry praise ecotourism as “a win-win proposition for Third World countries, conservation, and the travelling public” (Honey 1999:ix; see also Davenport *et al.* 2002:280). However, ecotourism may not be the panacea that conservation and development organizations often envision it to be.

#### *Ecotourism: a win-win?*

In theory as well as in practice, the distinction between the broad field of nature tourism and its subcategory of ecotourism is not always clearly defined, and there is certainly much room for overlap (Page and Dowling 2002:55; Burton 1997:757). Oftentimes, ecotourism and nature tourism are terms that are used interchangeably (Brandon 1996:ii; Boo 1990:2). Framed in this manner, ecotourism is merely a form of

conventional tourism that is nature-oriented, and it does not truly entail the social and development components discussed previously. Echoing old notions regarding the value of wilderness, the “civilized” people of today “seek refuge from the high-pressured pace of living and find the escape they need in the natural environment” (Burton 1997:756). The nature-based tourism industry and its subset ecotourism have been central in meeting this demand, as “capitalizing on the peaceful energy of nature’ is ‘very marketable’ to today’s overstressed workaholics” (Budowski 1992, in Honey 1999:53).

Furthermore, Boo (1990:xviii) points out that a “relatively pristine state” of nature is essential for the success of ecotourism. It is becoming increasingly common for affluent consumers to demand “remote”, “natural” and “exotic” tourist destinations (Scheyvens 1999:245), and often greatest value is given to the absence of human habitations as well as unique natural landscapes (Shafer and Benzaken 1998, in Sloan 2002:296). This idealization of “undisturbed” nature is a reference to early notions of nature tourism and recreation that were such a fundamental component of traditional nature conservation. As a consequence, areas dedicated to conservation commonly pay more attention to meeting the needs of tourists rather than those of local communities (Pleumarom 1994; Hough 1988:130). Such ideas of ecotourism are many times intrinsically informed by the notion of wilderness, and implicitly exclude or minimize local human activities and presence.

On account of its wide popularity, the term “ecotourism” is a more powerful label than others in the nature-based tourism industry (Filion *et al.* 1994:236). Based on its connotations as a form of tourism that benefits both conservation and development, the adoption of ecotourism as a marketing tool gives businesses an apparent green edge on

the competition (Newsome *et al.* 2002:15; Ross and Wall 1999:124; Scheyvens 1999:245).

However, ecotourism as it is practiced in many cases may contribute little to the well-being of local communities, and instead promote a form of conventional “green” tourism. Several case studies could serve to indicate that tourism development schemes that have adopted an “ecotourism” approach do not provide economic alternatives and benefits to host communities, nor do they increase participation and involvement of local people (Erb 2001; Walpole and Goodwin 2000; Campbell 1999; Honey 1999; Ross and Wall 1999; Bookbinder *et al.* 1998). As rural communities and local entrepreneurs often lack the skills and financial means to become increasingly involved in tourism, revenue continues to be generated outside the local economy by the state, the private sector, foreign investors, and the national (and local) elite (Campbell 2002:43; Walpole and Goodwin 2000; McCarthy 1999; Scheyvens 1999:248; Brandon 1996:29). Additionally, employment in this industry often relies on better-trained and educated outsiders (Hough 1988:130). As a result, low levels of economic benefit, ownership and participation continue to undermine the perceived potential of ecotourism as a tool for sustainable community development and local empowerment.

In addition to questions revolving around benefits to local inhabitants, the actual environmental impacts of ecotourism still remain subject to debate (van der Duim and Caalders 2002; Collins 1999). Despite the notion that ecotourism is a non-consumptive and non-extractive form of resource use and that it therefore has negligible environmental impacts, this is not necessarily the case. Negative impacts can be observed on species and ecosystems through pollution, as well as the disturbance and subsequent changing

patterns of wildlife behavior (Campbell 2002:41; Goodwin *et al.* 1997:38). In fact, viewing ecotourism as the ultimate conservation tool may, in many cases, be only wishful thinking.

Within the context of areas established for environmental protection and conservation, Hughes (2002:457) criticizes the “ambiguous character of science, which promises a regulatory regime for managing the environmental impact of tourism, but which cannot be delivered.” Moreover, there are no satisfactory indicators of carrying capacity or the ability of environments to sustain tourism (Butler 1993:39), and there is a persisting risk that once the carrying capacity has been reached, damage to the ecosystem may already be irreparable (Boo 1990:23). Despite these observations, the traditional conservation community has given surprisingly little attention to the potential ecological impacts of tourism, as opposed to their substantial discussions on the impacts of local resource users (see Terborgh *et al.* 2002; Brandon *et al.* 1998).

The feasibility of ecotourism as a conservation and development tool should be questioned, particularly on a case-by case basis. While ecotourism may generate revenue for the management of conservation areas through user fees and concessions (and in this way provide direct economic benefits for biodiversity conservation efforts), it may fail to address the socio-economic objectives it claims to pursue (or even exacerbate them). However, the ecotourism concept may prove to be a suitable marketing tool that simultaneously furthers conservation imperatives and ideals. At a time when biodiversity conservation is justified on the grounds of the sustainable use of natural resources, ecotourism is said to be the most sustainable use option. Moreover, the ambiguity of the concept, its roots in romantic ideals about “wilderness” – as well as its marketability –

make it a perfect tool for traditional conservation efforts particularly in protected areas, because it goes in accordance with both ecological and economic objectives of conservation and management of conservation areas.

The adoption of ecotourism as a sustainable use approach can be a means of securing political and economic control of a tourist destination area. Thus, it has the potential effect of legitimizing international conservation interventions, which may ultimately aim at controlling and restricting resource use practices and livelihoods of rural communities for the sake of nature and profit, and could consequently reflect “earlier eras of imperial domination” (Wilshusen *et al.* 2002:23; see also Campbell 2002; Erb 2001:74; Scheyvens 1999:248; Stevens and de Lacy 1997:289; Pleumarom 1994).

### **1.6 Ecotourism as Conservation Strategy**

As discussed previously, the conservation debate has undergone significant transformations over the past decades. Historically, the discourse is deeply embedded in preservationist ideals and the pursuit of pristine wilderness through the establishment of exclusionary protected areas. Over these past decades, a growing awareness of the recurring resource use conflicts and the acknowledgement of human rights and needs have initiated a process of change. The reformulation of nature conservation in the biodiversity discourse can be viewed as a response to this change. Indeed, biodiversity conservation – as the conservation and sustainable use of natural resources – has become a fundamental component of sustainable development. The participation of local resource users in the planning and management process is an essential principle in the discourse on meeting the needs of local communities, and it is best conceptualized in the idea of co-management.

Nevertheless, it can be argued that traditional nature conservation is merely being “re-packaged” in this process (Meadowcroft 2000:374). By promoting the conservation of biodiversity through sustainable use, the international conservation community joins in the discourse on sustainable development and, in so doing, legitimizes and consolidates its key role in biodiversity conservation:

Sustainable development is all about meeting the needs of present generations while safeguarding the ecosystems, species and genetic components that make up biodiversity, a crucial factor in meeting the needs of future generations.

(Earthwatch Europe *et al.* 2002:3)

This rationalization of biodiversity conservation is fundamental in perpetuating traditional conservation ideals. Moreover, by partaking in rural development efforts, this discourse has provided international conservation organizations with access to funding traditionally allocated for development (Campbell 2000:171; Pleumarom 1994). The perception of a global biodiversity crisis shapes current conservation efforts perceptions of sustainable resource use. This process is most evident in the discourse on the sustainable use of biodiversity through ecotourism. In an effort to attain an idealized level of ecological integrity, “consumptive” resource use practices by local populations are considered unsustainable. As a consequence, resource use on their part is restricted or prohibited, this process being supported by the notion of “local communities” as perpetrators of environmental degradation. Ecotourism, on the other hand, is thought to

offer the most sustainable use option, as it ideally contributes to conservation as well as community development.

Ecotourism as the proposed livelihood option does not, however, necessarily provide benefits and economic alternatives for rural communities. For a conservation movement that aims to establish areas for conservation, research and recreation, it is a politically and ethically suitable manifestation of sustainable use, and can therefore sometimes be a means of “getting off the hook” in the sustainable use discourse (Campbell 2000:179). Furthermore, the reality of ecotourism often reflects the notion that “old ways and power relationships die hard” (Honey 1999:85).

As a result, the sustainable use discourse through ecotourism has indeed contributed to institutionalizing traditional conservation values. With the management of protected areas around the world remaining under the domain of international conservation organizations, the ecological and economic aspects of biodiversity and sustainable use in these areas are in a symbiotic relationship. Conservation is justified through sustainable use as determined by conservationists, and this in turn legitimizes and finances conservation management (Campbell 2002:50). However, rural communities and local resource users whose livelihoods depend on the utilization of natural resources are often marginalized in this equation (Pleumarom 1994).

The fairly recent boom in ecotourism/conservation enterprises and other projects that adopt this now ubiquitous “green” language is by no means unique to Ecuador. Though many of these projects have adopted similar discourses and may appear to be alike at the surface, this is often not the case. What follows is a closer examination of two



of these projects, and how the manner in which they are managed can have significant implications for the people and ecosystems of the Ecuadorian Chocó.

## **CHAPTER II. THE ECUADORIAN CHOCÓ: BIOGEOGRAPHICAL AND CULTURAL HISTORY**

In Chapters Two and Three, I introduce the specific region of the Ecuadorian Chocó, analyzed from two different spatial scales. For one, at the macro-scale, one can observe a very biologically (and culturally) diverse eco-region that is undergoing rapid loss of its natural forests. When most conservationists consider the threats that the Ecuadorian Chocó is currently facing, its status as one of the major sites of biodiversity on the planet seems to be inevitably doomed.

On the other hand, if one takes a closer, more detailed look at smaller areas throughout the Ecuadorian Chocó, one may begin to notice that there are important processes taking place within the matrix of these fragmented landscapes. The Chocó forest fragments are mostly embedded in agricultural landscapes that – even though in some places are marked by expanses of African oil palm plantations – many times do include managed ecosystems. What caught my attention in particular was that, in addition to the traditional agricultural fields, what are also gaining prominence are small scale local conservation and eco-/agri-tourism projects. As mentioned in the previous chapter, there has certainly been a boom in these types of projects over the last decade or so. It seems quite plausible that projects of these types – though by no means are they all the same – could play a prominent role in creating higher quality matrices between Chocó forest fragments, and thus be (or become) significant in sustaining biodiversity in this Ecuadorian Chocó region as a whole. Even though I visited several different projects during my fieldwork, I chose two case studies that worked relatively well as counterparts:

Río Muchacho and Fundación Golondrinas. Both have been in place for about 20 years, are well-known, and have similar stated objectives.

This chapter is divided into two sections: 1) The Chocó biogeographic region, and 2) Distinct cultural histories of the Chocó. Before entering a detailed discussion of the dissertation's case studies, Section 2.1 of this chapter offers a broad description on the Chocó biogeographic region as a whole. It then narrows this description more specifically to the environmental context of the part of the Chocó that is found within Ecuador. Once the environmental aspect of this region has been addressed, Section 2.2 shifts to an examination of the history of the diverse cultures that can be found in the Ecuadorian Chocó today.

## **2.1 The Chocó Biogeographic Region**

Spanning 100,000 km<sup>2</sup> along the coastline from Panama to northern Ecuador, the humid forests of the Chocó Biogeographical Region are characterized by high biodiversity and endemism, as well as relatively rapid habitat loss, particularly since the second half of the twentieth century (Dodson and Gentry 1991, Dinerstein *et al.* 1995). On account of its sustained deforestation rate and the significant number of species extinctions that are expected as a result if unabated, the Chocó was declared a global priority “biodiversity hotspot” in 2000 (Myers *et al.*).<sup>6</sup> Despite fairly recent controversies regarding the role of biodiversity hotspots in conservation and subsequent revisions of

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<sup>6</sup> This eco-region falls within what is now referred to as the larger Tumbes-Chocó-Magdalena hotspot, recently adjusted to incorporate an extension of 274,597 km<sup>2</sup> reaching from eastern Panama to northwestern Peru (Conservation International 2007). This area incorporates the moist forests in the north that reach as far south as mid-northern Ecuador, and the drier tropical forests from mid-southern Ecuador to northwestern Peru. In this dissertation, the term “Chocó,” unaccompanied by other indicators, refers specifically to the tropical and subtropical moist broadleaf forest eco-region comprising the northern section of this biodiversity hotspot.

indicators for species richness, levels of threat, and endemism, the Chocó remains a region of utmost concern and priority for conservation biologists (Orme *et al.* 2005).

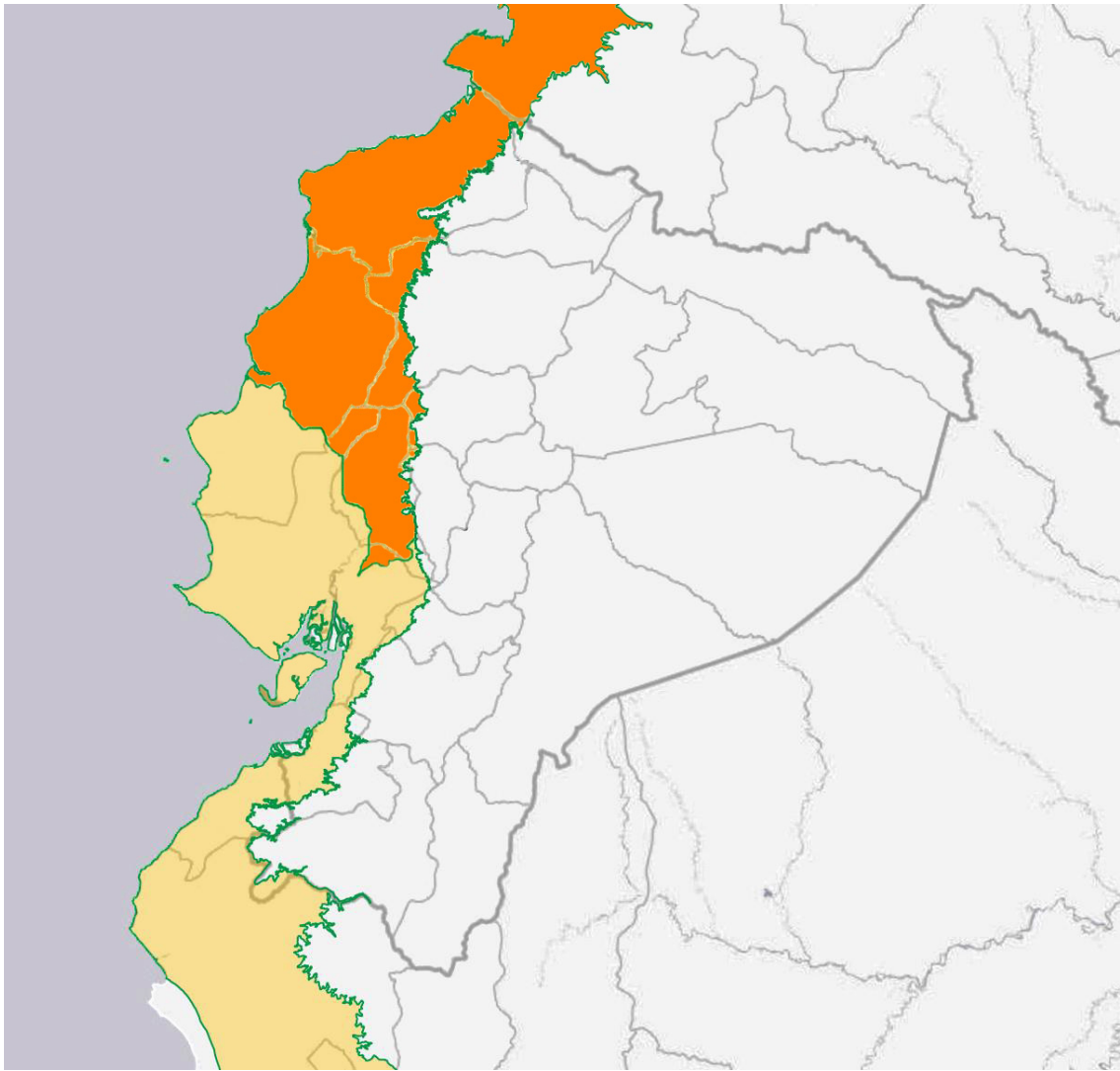


**Figure 2.1** Tumbes-Chocó-Magdalena biodiversity hotspot. The specific Chocó broadleaf forests that this dissertation focuses on reach from the northernmost point in Panama down to central Ecuador (within the red). Source: Center for Applied Biodiversity Science at Conservation International 2005.

### *The Ecuadorian Chocó*

In Ecuador, the Chocó reaches into the northwestern province of Esmeraldas, as well as parts the provinces of Carchi, Imbabura, Pichincha, and Manabí (Figure 2.2). This region is distinguished by extremely wet broadleaf forests that receive an average of eight meters of rainfall annually, and by a diversity of as many as 300 distinct tree species per

hectare.<sup>7</sup> On account of the abundance of precipitation, species that are typically found in the montane cloud forests of the Andes have been able to extend their range towards the coastal zone. Throughout the Chocó, endemism is also quite high on account of extensive speciation among various groups of plants, most notably epiphytes, thus hinting at the likely existence of plant refugia during Pleistocene glaciations (Conservation International 2007).



**Figure 2.2** The Ecuadorian Chocó. The Chocó moist broadleaf forests are represented by the darker shaded areas. Lighter shaded areas represent the broader Tumbes-Chocó-Magdalena biodiversity hotspot.

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<sup>7</sup> The southern section of the Ecuadorian Chocó consists partly of a transitional vegetation environment that is also adapted to more variable climate and (occasionally) drier conditions compared to the forests to the north.

## 2.2 Distinct Cultural Histories of the Chocó

The cultural history of the Chocó is as rich as its biodiversity. Prior to European arrival to the Americas, what is now considered the province of Esmeraldas, located in the northwestern corner of Ecuador, was inhabited by various different indigenous ethnic groups: Yumbos, Malabas, Cayapas, Niguas, Tsáchilas and Campaces. By the time of European arrival, these groups had adopted diverse levels of social and political organization. For example, the Cayapas had a complex sociopolitical structure, comprised of a principal chief, or *cacique*, who ruled from the political center of Singobucho, and who counted on various secondary caciques in charge of supervising and managing production carried out by dispersed family groups (Palop Martínez 1987:231). The Niguas also ruled through a similar system of chieftaincies, or *cacicazgos* (Rueda Novoa 2010:37).

Interaction between these different ethnic groups appears to have been fraught with tensions and rivalries. To illustrate, there is record of battles in 1548 between Niguas and Yumbos in what has been referred to as the War of Cansacoto (Archivo General de Indias 1598). Access to food products and resources appears to have been an important factor in these interethnic tensions. Several of these groups' food economies were based on spatial mobility (they were only partially sedentary regarding agricultural production), and this led to territorial encroachment between them. The Yumbos, for example, did not follow settlement patterns that extended from a centralized political nucleus. Rather, they followed seasonal migration cycles to remote farmlands, in which they would cultivate and harvest crops for trade and sale in Quito (Maldonado 1744).<sup>8</sup> Spanish chronicler

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<sup>8</sup> Some of the most important crops traded by the Yumbos were coca, maize, yuca (manioc), sweet potato, coconut, cotton, avocado, chili, pineapple, guava, heart of palm, and several medicinal plants.

Miguel Cabello Balboa stated that indigenous populations in this region were composed of “various different peoples and nations with different ceremonies, languages, manners and customs regarding food and drink, and battling with their neighbors occupies much of their time” (Cabello Balboa c. 1579)

To add to this ethnic complexity, in 1553 a Spanish slave ship on its way to Callao from Panama ran aground along the treacherous northern coast of what would eventually come to be known as the republic of Ecuador. Africans mostly from the Guinea Coast destined for slave labor – seventeen men and six women – succeeded in escaping the shipwreck and found refuge in the dense mangroves and tropical forests of the area. These newcomers, led by Antón “el Hechicero” (“the Sorcerer”) first arrived in a region that straddled the territories of both Niguas and Campaces. With great strategic skill – at times with ruthless violence, and at times with remarkable diplomacy – Antón and his followers came to gain political control over a great number of chieftaincies in this region within an astonishingly short period of time. Occupation and control of Nigua territory was virtually immediate, and the African newcomers joined the Niguas in battles against the Campaces.<sup>9</sup> In a letter to the king of Spain, *oidor* Juan del Barrio y Sepúlveda wrote the following from a colonial perspective:

These blacks of Esmeraldas are very knowledgeable and astute; they understand Spanish, though they speak the language clumsily. They have been great warriors against Indians of other infidel provinces, [Indians] fear them

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<sup>9</sup> Battling against the Campaces led to the death of six West African men. Niguas saw this as an opportunity to free themselves from African subjugation, but failed in this endeavor. Furthermore, Illescas punished the Niguas cruelly, and succeeded in planting terror throughout the whole region. This proved to be a very successful strategy in the newcomers’ expansion and conquest of indigenous groups, as word of Antón’s tyranny spread rapidly (Queija and Stella 2000).

because they have killed many, and those [Indians] who they take captive serve under their dominion as slaves. They are terrible, cruel and determined when administering punishment. Spaniards have never been able to subjugate them. [1600]

Among those West African newcomers who came along with Antón was also the young Alonso Illescas, who by 1555 had assumed political leadership after Antón's death. As a child, Illescas had been taken from Cape Verde and raised as a slave in Seville. In Spain, he learned to speak Spanish and cultivated a deep understanding of Spanish religion and law. He also became skillful at acting, singing, playing the vihuela (instrument similar to a lute), and sword fighting (Barrio y Sepúlveda 1600). Having a deep understanding of both Spanish and West African cultures – as well as having experienced warfare against different indigenous groups under the leadership of Antón – made Illescas the most eligible successor of Antón as leader among natives and Afro-descendants.

Alonso Illescas was quick to learn the language of the Niguas, one of the largest coastal groups, and he greatly encouraged the establishment of kinship ties through intermarriage between indigenous leaders and Africans. Illescas himself married the daughter of the Niguas' principal cacique. Successive generations followed this same practice. As stated by the captain Ruiz Díaz de Fuenmayor, "...the black man Alonso Illescas has lived among Indians for over twenty years. He now has a great number of children and grandchildren that could populate an entire town. He is very well respected,



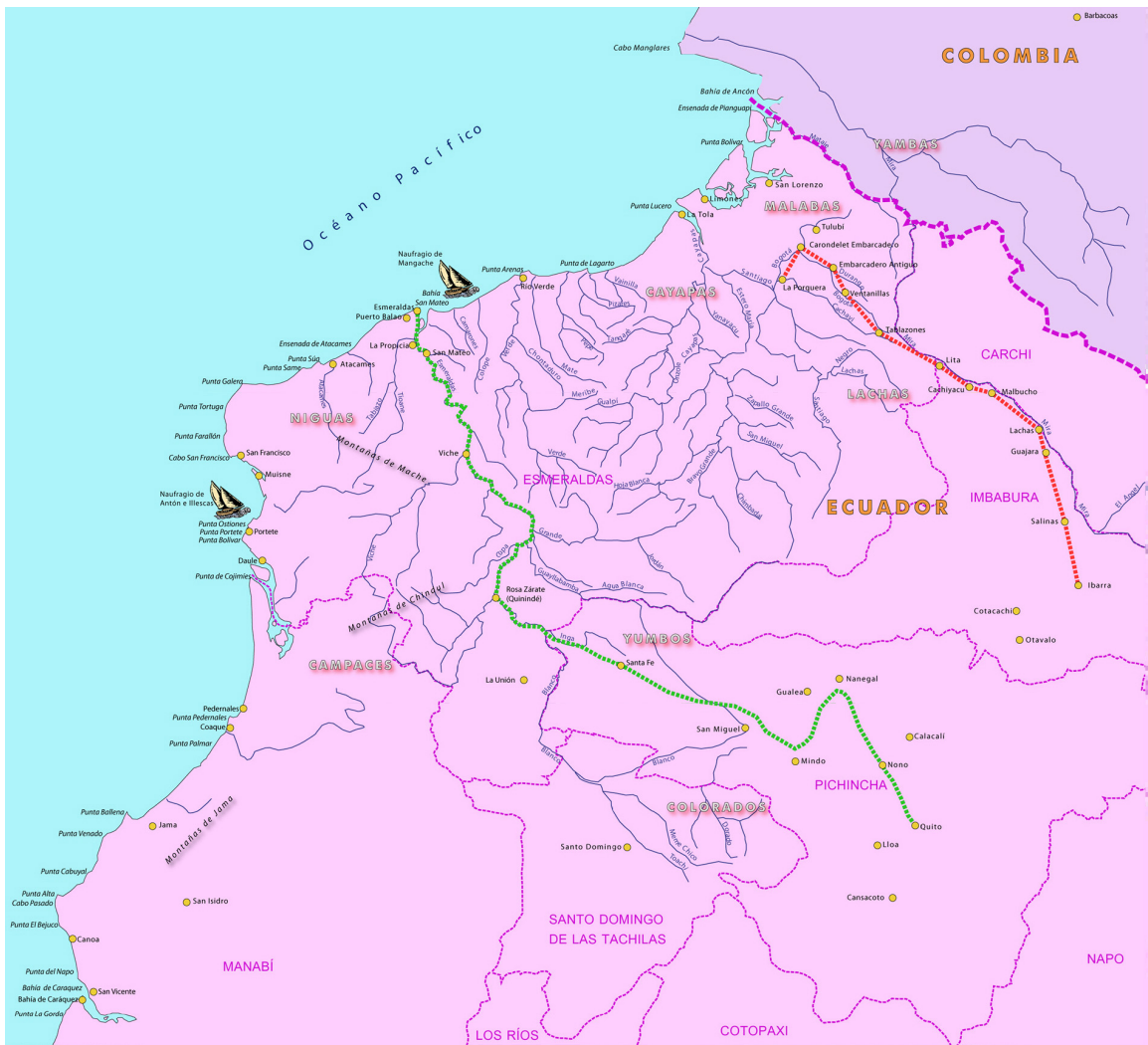
because he is related with all the caciques in the province” (Fuenmayor c. 1570, in Jiménez de la Espada 1965:91).

Sometime around 1545, another slave ship from Nicaragua had also wrecked along the treacherous coasts of Esmeraldas (Figure 2.3). A group of maroons, led by Andrés Mangache, seized control of indigenous chieftaincies (in a manner similar to Antón’s). In this fashion, Mangache and his sons, Francisco Arobe and Juan Mangache, became caciques in the region around the bay of San Mateo. By 1600, Francisco Arobe had two sons, Pedro and Domingo, and they had control over the southernmost territories of the Cayapas (Figure 2.4). This placed them in direct competition with the Illescas clan. Initial conflict between the Illescas and Mangache-Arobe eventually led to peacemaking via intermarriage: Juan Mangache married one of Illescas’s daughters. These clans clearly defined their territories, the Illescas controlling Cabo Pasado to the south, and the Mangache-Arobe controlling the bay of San Mateo to the north (Rueda Novoa 2010).



**Figure 2.4** *Mulatos de Esmeraldas*, by painter Adrián Sánchez Galque, 1599. The three men depicted in this portrait are Don Francisco de Arobe and presumably his two sons.

Shipwrecks were not entirely uncommon along the coasts of Esmeraldas, and additional wrecks led to a greater influx of newcomers of West African descent to these maroon settlements, or *palenques*. This, however, was a relatively small number of newcomers compared to those Afro-descendants who arrived to Esmeraldas escaping slavery from the southwest of what is now Colombia throughout the eighteenth and nineteenth centuries (Rueda Novoa 2010:43).



**Figure 2.3** Sites of the two 16th-century slave shipwrecks. To the south, by Punta Portete, was the first marooned ship that brought Antón and Illescas to Esmeraldas. The site to the north, by Bahía San Mateo, corresponds to the arrival site of Andrés Mangache. This map includes the predominant ethnic chiefdoms at the time. Source: [www.pueblosoriginarios.com/sur/andina/zambo](http://www.pueblosoriginarios.com/sur/andina/zambo)

Even though over the years Spaniards attempted several incursions into territories under dominion of maroons, the almost impenetrable mangrove and broadleaf forests of this part of the continent – along with some intelligent political maneuvering – made Iberian control over this indigenous-maroon area virtually impossible. Control by inhabitants of West African descent over what would eventually be described as the northwestern Ecuadorian Chocó region continued throughout the remainder of the colonial period and well into the 19th-century republican era.

It was only relatively recently – in 1957 – that a railroad linked Quito to San Lorenzo, one of the main townships in what is now the northwestern Ecuadorian province of Esmeraldas. The construction of this railroad unleashed a chain of physical, cultural, and socioeconomic transformations that have continued to take place to this date.

The northwestern Ecuadorian Chocó, therefore, has a long history of settlement by people of indigenous and West African descent. The northeastern Chocó, mainly encompassing the valleys of the Chota and Mira rivers, is also predominantly Afro-Ecuadorian. However, the history of the peoples in this region is quite different. Most Afro-Ecuadorians here are descended from slaves brought into these valleys during the 17th century by the Jesuit and Mercedarian religious orders to work on sugar cane plantations. Jesuit missionaries took over these valleys in 1659, and began establishing sugar cane plantations using indigenous labor. Disease soon decimated the native population, which was replaced by African slave labor. Afro-Ecuadorians continue to compose the majority of the population in the Chota valley, and their cultural traits differ somewhat from Afro-Ecuadorians in Esmeraldas. Today, some Afro-Ecuadorian agriculturalists in more isolated areas of Chota may speak Quichua in addition to

Spanish. However, this does not mean that there was no interaction between inhabitants of the Esmeraldas region and those from Chota. During the colonial and early republican periods, escaped maroons from this region would find a safe haven in the long established and independent kingdoms of African heritage in the province of Esmeraldas. A steady influx of other people of African descent, especially escaped slaves from other regions, contributed significantly to the increase of Afro-Ecuadorian inhabitants in Esmeraldas.

The communities I worked with in this northern region of the Chocó were predominantly Afro-Ecuadorian, both from the northwestern and northeastern Chocó. However, those involved in the Fundación Golondrinas project – to be addressed in greater detail in the Chapter Four’s case studies section – were mostly descended from the Chota valley regions even though this project was located in the north-central Ecuadorian Chocó. In addition to Afro-Ecuadorians, some of the community members were Awá, and others were mestizos, though the latter originated mostly from other parts of the country, particularly the province of Manabí (directly to the south of Esmeraldas).

Moving south within the Ecuadorian Chocó into the northern region of Manabí, the cultural landscape is also quite distinct. During late pre-Columbian and very early colonial times, this region was ruled over by the kingdom of the Caras, which encompassed a number of smaller chieftaincies, including the Cancebies, Apechiniques, Machalillas, Xipixapas, Jarahuas, Pichuncis, Picozaes, Pichotas, and Japotoes. These were relatively small satellite populations (compared to those of the larger Inca Empire) whose livelihoods were based on fishing and trading. The transitional vegetation environment of the southern Ecuadorian Chocó is drier than the tropical forests to the

north, and therefore not quite as impenetrable as those areas occupied by the kingdoms ruled by Illescas and his descendants.

After European arrival, it was not long before Spanish colonists occupied the region.<sup>10</sup> It provided a suitable environment for large-scale production of cotton and tobacco, as well as cattle ranching. Subsequently, as with most regions in the Americas, the impact of disease and forced labor exacted its toll on the indigenous population, and the original number of inhabitants in this region were reduced considerably. Generations of *mestizaje* between natives, Afro-descendants and Europeans have resulted in a largely mestizo population in northern Manabí, which is referred to specifically as *montubio*. This term entails a very specific connotation in terms of lifestyle; *montubio* culture is characterized by ranching and agriculture (most prominently, cacao, tobacco, bananas, and other tropical fruits), *montubios* being the Ecuadorian definition of cowboys. As with their neighboring Afro-Ecuadorian counterparts in the northern Ecuadorian Chocó, *montubios* are a greatly marginalized fraction of the country's population. On account of the booming population in the province of Manabí (it is the third most populated province in Ecuador) and excessive impoverishment particularly in its rural areas, *Manabitas* form the largest proportion of internal migrants within the country. In my experience traveling through all regions of Ecuador, the great majority of inhabitants of non-local origin have been *montubio* farmers from Manabí. This has even been the case in some of the most remote regions in the Ecuadorian Amazon.<sup>11</sup> For my research in Río Muchacho (to be

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<sup>10</sup> Portoviejo, the capital of Manabí, is one of the oldest colonial cities of Ecuador, founded by captain Francisco Pachecho (under the command of Francisco Pizarro and Diego de Almagro) in 1535.

<sup>11</sup> Internal migration of *Manabitas* has reached such an extent that it appears to be causing civil strife in other parts of the country, especially within the neighboring province of Esmeraldas. In ancestral Afro-Ecuadorian communities like Yalaré, for example, many local inhabitants are claiming that newcomers

addressed in the Chapter Four), I worked primarily with *montubios* from this part of the southern Ecuadorian Chocó.

The complex cultural history can now be situated within the significant large-scale threats to biodiversity that the Ecuadorian Chocó is currently facing.

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from Manabí, trying to colonize the area, are resorting to violence in order to displace them (Toro, in *El Universo*, 2006).

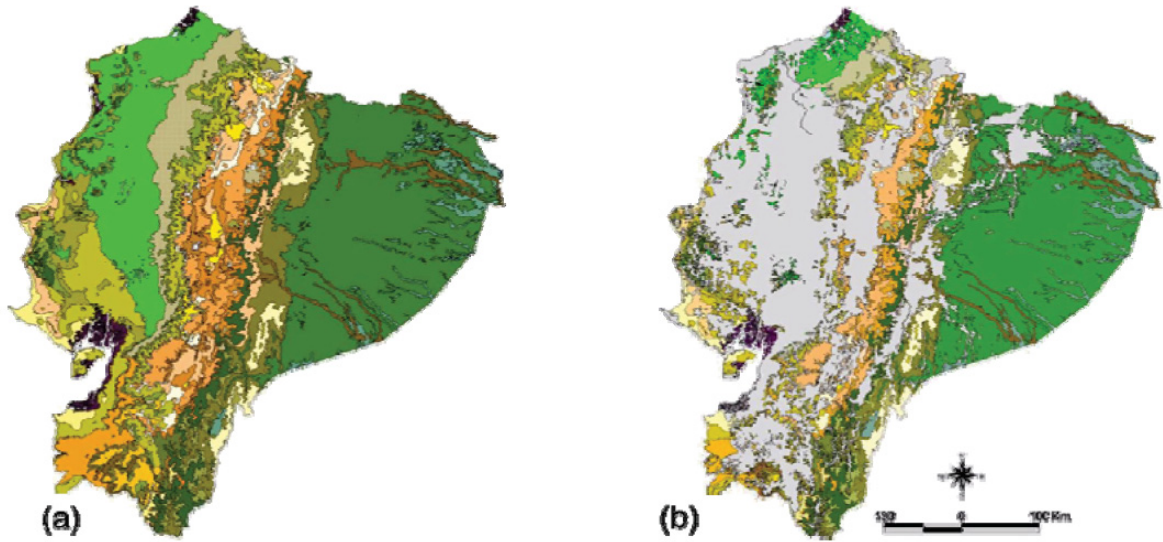
### CHAPTER III. BIODIVERSITY CRISIS IN THE ECUADORIAN CHOCÓ: CONTEXT AND CAUSES

This chapter identifies the most significant threats to biodiversity conservation that the Ecuadorian Chocó confronts today, at the macro-scale. It examines these threats (as well as their histories), and classifies them into three broad categories, described in the corresponding three sections: 1) Railroads and logging, 2) Land reform and changing patterns of land tenure, and 3) The impact of African oil palm cultivation. The general assessment of the biodiversity crisis in the Ecuadorian Chocó described in this chapter will serve as backdrop and contrast for Chapter Four, which shifts the dissertation's attention to the small-scale picture, represented by the Río Muchacho and Fundación Golondrinas project case studies.

Deforestation pressures within the broader Chocó eco-region are far from uniform. So far, the status of its forests in Panama and Colombia remains fairly stable.<sup>12</sup> In Ecuador, however, the picture appears somewhat grimmer. Since the second half of the twentieth century, different government policies, development activities, and changes in patterns of land tenure have worked in conjunction to produce severe deforestation. Since this time, the Ecuadorian Chocó has been reduced to less than 4% of its original forest cover (Sierra 1999) (Figure 3.1).

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<sup>12</sup> So far, some factors that have inadvertently led to conservation of the Chocó in Panama and Colombia have been difficulty of access through the Darién and, ironically, political unrest in Colombia. Nevertheless, the proposed extension of the Pan-American highway south through the Darién and into Colombia, as well as mining concessions and other large-scale development projects loom as future threats to this section of the Chocó.



**Figure 3.1** Classification of vegetation cover in Ecuador. Images show (a) original vegetation cover and (b) vegetation cover in 1999, with grey areas representing deforestation. Bright green corresponds to Chocó forests. Source: Sierra 1999.

Today, the forests officially recognized as representative of the Chocó eco-region remain largely contained within three ecological reserves: Mache-Chindul, Cotachi-Cayapas, and Cayapas-Mataje (Figure 1.1).

An important catalyst of the social, political and environmental transformation of the Ecuadorian Chocó was the rapidly growing logging industry in the region that railroads facilitated (Whitten 1974). This has been further complemented by past government-sponsored colonization and land reform initiatives, and large-scale commodity agriculture – most prominently, that of African oil palm – as well as the expansion of pasturelands (Sierra 1999).

### **3.1 Railroads and Logging**

Before the 1960s, there appears to have been very little deforestation in northwestern Ecuador. However, the introduction of a national railroad system in 1957



(Whitten 1965:1) led to a rate of urbanization and development that increased especially rapidly in the 1980s (Sierra 1999). The construction of additional surface roads that in subsequent decades connected the province of Esmeraldas to the highlands and other coastal provinces to the south greatly exacerbated this transformation. Timber extraction was the leading factor in this conversion.

The development of industrial logging in Ecuador has been shaped by broad economic trends that are by no means unique to this country. Until the late 1960s, the Ecuadorian timber sector was relatively marginal, with a wood market specialized in precious and semi-precious hardwood for furniture, sawn wood for construction, and also firewood and charcoal particularly for Andean urban areas. Wood was extracted mainly from private lands and public forests located in the immediate vicinity of towns and cities. During this time, logging in the Ecuadorian Chocó was restricted to the banks of some of the main rivers and natural harbors, where loggers almost exclusively extracted hardwood species such as guayacán (*Minquartia guianensis* or *Tabebuia guayacán*) and chanul (*Humiriastrum procerum*). Even though Esmeraldas is now the main timber-producing province in Ecuador, industrial logging did not find its place there before the 1970s, when large veneer and plywood-producing firms were first established (Salazar-Canelos *et al.* 1998).

The rise of industrial logging coincided with the agrarian reform, addressed in more detail in the next section. As new laws were enacted to outlaw absentee ownership and expropriate idle arable land for redistribution to colonist farmers, logging companies began losing their rights to forest concessions to colonists willing to undertake small-scale farming and ranching. As a consequence, logging companies opportunistically

resorted to follow colonists, as they took possession of public lands along new roads. The forests of the Chocó – newly opened to colonists – were rapidly hacked down by newcomers' urge to convert forest to farmland as well as loggers' continuous search for the cheapest roundwood, both activities being greatly encouraged by the government's land reform policies and incentives (Sierra 2001).

Even though the colonization frontier eventually stabilized, the domestic wood market continued to expand. Logging companies ventured ever deeply into state-owned forests, where they reached indigenous and Afro-Ecuadorian communities living traditionally along waterways. This led to a new deforestation dynamic in the late 1970s in which the logging companies supplied these communities with chainsaws and other goods, and encouraged the local inhabitants to log liberally. Thus, industrial logging was able to take place in some of the most remote areas of northwestern Ecuador, and an entire road system was eventually built by private companies, who also financed the maintenance of state-built roads (Sierra 2001). To fully comprehend the nature of rapid and widespread land conversion in the Ecuadorian Chocó, a closer look at land reform policies enacted during this time is in order.

### **3.2 Land Reform and Changing Patterns of Land Tenure**

Land tenure in Ecuador has followed a complex storyline since the time of Spanish colonization, intertwined with political and social change, as well as natural resource development. Shifting and contradictory land tenure and resource access rules complicate the story further.

Modern land tenure patterns in Ecuador developed from Spanish colonial land systems. Spanish colonists encountered large native populations in the highland regions

and established the *encomienda* system, whereby the Crown granted individual colonists rights to land and to the labor of the indigenous families who lived there. This system gradually produced haciendas worked by an indentured labor force composed of *huasipungueros*. These *huasipungueros* worked without salary in return for the farming rights to small plots, or *minifundios*, on the haciendas. In many cases, the system was abused by colonists, with *huasipungueros* being bought or sold along with the hacienda. Large-scale agriculture developed later in the 16th and 17th centuries along coastal Ecuador, where farming for export used sharecroppers or paid labor to harvest crops. The monetary labor system that developed in coastal regions began to compete with the feudal system of the highlands for cheap labor.

Pressure to reform the feudal hacienda agricultural practices came from abroad, from humanitarian and liberal elements within the country, as well as from large landowners in coastal areas, who needed a cheap and mobile labor force. A land reform law finally enacted in 1964 – the Land Reform, Idle Lands, and Settlement Act – outlawed the *huasipungo* system and also set up the Instituto Ecuatoriano de Reforma Agraria y Colonización (IERAC) to administer the law and to expropriate idle arable land for redistribution to farmers. The new policies outlawed absentee ownership and limited the size of holdings to 800 hectares of arable land in the highlands, 2,500 hectares of arable land in the coast, and 1,000 hectares of pastureland in either region. The law also set the minimum amount of land to be granted in the redistribution at 4.8 hectares. Revisions of the law in the early 1970s required that all land with absentee landlords be sold to the tenants and that squatters be permitted to acquire title to land they had worked for three years.

In addition to the aforementioned clauses, formal property law as executed by the IERAC required that those settling in tree-covered hinterlands clear their respective parcels in order to acquire official property rights. This tenurial regime induced a cycle of excessive land clearing and inadequate soil conservation in the vicinity of agricultural frontiers (Southgate 1990). Furthermore, bureaucratically-induced tenure insecurity contributed to deforestation. Like other land reform agencies established during the era of the US-sponsored Alliance for Progress, IERAC required a long time, often years, to adjudicate claims for formal property rights.<sup>13</sup> Delays were explained in part by administrative constraints; IERAC's record-keeping system was cumbersome and the agency did not acquire its first computer until the late 1980s (Sierra 1991). To make the deforestation problem worse, the complexity of formal property law lengthened the adjudication process; IERAC was obliged to execute 10 separate administrative procedures during the course of settling a tenure claim (Seligson 1984).

In the face of tenure insecurity, which was especially severe for those who lacked the funds or influence needed to “move the system along,” agricultural colonists tended to safeguard land claims by continuously using their parcels for crop or livestock production (Rudel 1983). Indigenous groups responded in similar fashion to these institutional incentives. MacDonald (1981:356) provides the example of the indigenous community of Pasu Urcu, in the Ecuadorian Oriente. In the 1970s, the inhabitants of Pasu Urcu abandoned their traditional periodic fallowing scheme after IERAC agents informed

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<sup>13</sup> The Alliance for Progress (Alianza para el Progreso) was initiated by John F. Kennedy in 1961. Its aim was to establish economic cooperation between the United States and Latin America. One of the proposed means for achieving this was the promotion of more equitable income distribution and land reform. In adherence with its stipulations for economic and developmental assistance, the Ecuadorian government created the IERAC in 1964. Through this, it attempted to address the problems of land tenure by breaking up haciendas, prohibiting debt peonage, among other things.

them that fallow lands could be claimed by agricultural colonists who were 50 kilometers away at the time. Thus, for colonists as well as indigenous communities, continuous agricultural production became a way to assert and to protect property rights.

The land reform laws changed in 1994, when rural lands in Ecuador came under the jurisdiction of two government agencies: the Ministerio de Agricultura, Ganadería, Acuacultura y Pesca (MAGAP) and the Ministerio del Ambiente (MAE). Lands administered by the MAGAP were previously under jurisdiction of the Instituto Nacional de Desarrollo Agrario (INDA) from 1994 to 2010 and, before that, under the IERAC, from 1973 to 1994. When the MAE was created in 1996, all lands within the forest patrimony and protected forests, which had previously been administered by the Instituto Ecuatoriano Forestal y de Áreas Naturales (INEFAN), were handed over to this department.

Recent Ecuadorian government policies have attempted to reverse deforestation in rural areas by participating in incentive programs associated with carbon sequestration schemes and payment for ecosystem services. The current national development plan enacted in 2009 (Plan Nacional para el Buen Vivir) has the specific goal to reduce deforestation rates by 30% by 2013. In 2008, the MAE-administered SocioBosque program was launched on a nationwide, its two stated goals being to conserve 36,000 km<sup>2</sup> of forest and other native ecosystems, and safeguard livelihoods and increase income for between 0.5 and 1.5 million people.<sup>14</sup> The total operating budget for the first two years was \$8.5 million USD, with 70% being directed to payments, and 15% to monitoring costs (de Koning *et al.* 2011).

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<sup>14</sup> SocioBosque is a national program that has been built from experiences gained through the conservation incentives project with the Gran Reserva Chachi, from 2005 to 2008.

The incentive agreements are voluntary and consist of cash payments for each hectare of forest (or other native ecosystem) enrolled in the program. Incentive agreements can be made with individuals or with those holding communal title to the land, including indigenous groups and local community cooperatives. The incentive payments are scaled according to the number of hectares enrolled in each agreement: starting with \$30/hectare/year for the first fifty hectares, scaling down to \$20/hectare/year for the second fifty hectares, \$10/ha/yr for hectares 100 to 500, and so on (de Koning *et al.* 2011). To be eligible to become a beneficiary of SocioBosque, an individual or community must have clear and uncontested title to the land. Each individual or community submits an investment plan for how the income will be used by the household or group, and the duration of each agreement is twenty years.

In spite of these current policies looking to encourage forest conservation, approximately 27% of lands administered by the MAGAP (formerly INDA) and 10% of MAE lands (in forest patrimony or protected forests) have yet to be titled, covering an overall area of almost 81,000 km<sup>2</sup> (FAO 2000). Even though the majority of these lands are located in areas that are extremely remote and experience a relatively low threat of deforestation, the process and cost of acquiring a title can be prohibitive to landholders. Furthermore, even lands with title suffer tenure insecurity on account of conflicting or contested claims to the land. These conflict areas, though technically titled, could represent an increased threat to forests because occupants are driven to convert the land in order to establish their claim. It has been estimated that almost 30% of Ecuador's land area suffers from this situation of titles land under conflict (Morales *et al.* 2010:94).

Furthermore, although land reform laws promoting deforestation and unsustainable use changed in 1994, many settlers continue to associate forest clearing with improved security. During my conversations with inhabitants throughout the Ecuadorian Chocó, a great number of those interviewed were unaware that agrarian reform policies from the early 1970s were no longer in place. The legacy of the IERAC and INDA is still strong among those in the Ecuadorian hinterlands, and a greater dissemination of new land policies would be in place to slow down deforestation rates in certain areas.

In addition, based on interviews with inhabitants in different provinces of the Ecuadorian Chocó, it is quite evident that lacking formal titles to land is a relatively common occurrence in rural Ecuador. Even if a rural landholder were aware of new governmental conservation incentive programs like SocioBosque (only a small fraction of rural populations currently has knowledge of these new programs), he or she would be required to provide proof of land ownership, which is already a difficult task. On account of these different land tenure factors, significant deforestation is continuing to take place in the Ecuadorian Chocó.

### **3.3 The Impact of African Oil Palm Cultivation**

In addition to the aforementioned processes of logging, development, and agrarian reform, the expansion of African oil palm plantations has become a factor of increasing significance in the transformation of the Ecuadorian Chocó.

Beginning in the 1990s, there has been an unprecedented increase in the agricultural production of African oil palm (*Elaeis guineensis*) in Esmeraldas. Even though small plantations of oil palm were introduced in Ecuador as early as 1953, its

production did not increase significantly until these last two decades.<sup>15</sup> During the first half of the nineties, oil palm production supplied the raw material for approximately 152,473 tons of oil per year for the elaboration of edible fats and soaps (Núñez 1998:15), and has increased since, transforming Ecuador into the second largest palm oil producer in Latin America after Colombia.

In 2002, president Gustavo Noboa issued a decree designating 50,000 hectares in the canton of San Lorenzo (along the northern coast of the province of Esmeraldas) to the production of African palm. Of this area, 5,000 hectares are considered Forestry Heritage of the Ecuadorian State, over 5,000 hectares are Afro-Ecuadorian ancestral lands, and over 1,000 hectares are Awá indigenous lands. It should be noted that the Ecuadorian Constitution has declared these community lands indivisible and nontransferable. As pointed out by Minda Batallas (2002:68), the underlying aim of this decree is to legitimize the systematic expropriation of ancestral and forestry heritage lands, which is currently being carried out by the African palm industry in northern Esmeraldas. The palm growers have usurped land from the original inhabitants through illegal purchases and forced displacement of the latter, and continue to do so. Interestingly, some of Gustavo Noboa's family members are large-scale palm-growers (Minda Batallas 2002:53).

In order to understand the extent of what is implied by African palm production, it is helpful to understand its specific impact on the environment and human communities of the region. African palm plantations have become the major cause of deforestation in recent years, surpassing the impacts caused by subsistence agriculture, timber extraction

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<sup>15</sup> Unlike other regions in Latin America where there has been a significant and sustained presence of inhabitants of African descent (e.g. Brazil), so far there is no evidence that would indicate earlier oil palm cultivation and use among Afro-Ecuadorian settlements.



and cattle ranching. In order to establish palm plantations, it is necessary to clear-cut an area and level the topsoil. This in itself has quite detrimental impacts on any ecosystems previously present in the area to be cultivated, but oil palm plantations have also caused major disruptions and conflicts among subsistence communities in the region. This has been largely on account of land purchases among Afro-Ecuadorian and indigenous communities, as well as individual landowners (Minda Batallas 2002:40).

It is not uncommon for communities (usually mestizo farmers) that have sold their land to encroach upon other neighboring communities, thus causing rifts and conflicts concerning land ownership. Many times, palm growers purchase ancestral common lands, which, as stated before, cannot be sold according to the Ecuadorian Constitution. This leads to questions of who benefits from the sale of lands and how these sales are legitimized by government authorities. In the area of San Lorenzo in Esmeraldas, oil palm companies have established themselves in State Forest Heritage lands, where, in theory, they are not allowed to carry out any activity other than sustainable exploitation of natural resources. In addition, these firms have apparently bought land in the buffer zone and inside the Cayapas-Mataje Mangrove Ecological Reserve, which, again, is technically prohibited by law (Minda Batallas 2002:23).

None of these companies have permits to clear forest. However, they cut timber and non-timber species alike to make way for African palm plantations, in the face of forest authorities. In addition, these firms operate without environmental management plans, violating the collective rights of local communities acknowledged in the Constitution of Ecuador and in Convention 169 of the International Labor Organization (of which Ecuador is a signatory), which include the right of these communities to be

consulted when activities are being planned that could affect them. One strategy used by palm growers is to attempt to gain the favor of local inhabitants by offering them infrastructural projects such as roads, schools, or electric lighting. Perhaps unsurprisingly, these promises are seldom fulfilled.

In general, the social impacts implied in the previously mentioned processes include displacement of indigenous, Afro-Ecuadorian, and small mestizo farmers. This displacement can be the cause of various issues, such as the conflicts that arise when one community attempts to settle the land already occupied by another, the disruption of social structures and traditions of indigenous and Afro-Ecuadorian peoples, the decreasing availability of materials for building houses, canoes, and other utensils due to excessive logging, as well as the disappearance of subsistence agriculture, hunting, and traditional medicine – which can eventually lead to the undernourishment of local communities, an increased dependence on the market economy, new technology and global market demands, leading to indebtedness among rural inhabitants, agrochemical contamination among workers of palm plantations and neighboring communities, and liver and skin diseases associated with this type of contamination (Minda Batallas 2002:43). All these factors can be added to the already obvious environmental impacts of African palm production to create a truly stark broad picture of what the landscape of the Ecuadorian Chocó could become in the near future at the current rate of agricultural expansion.

#### **CHAPTER IV. FOREST FRAGMENTS AND SMALL- SCALE CONSERVATION IN THE ECUADORIAN CHOCÓ: CASE STUDIES**

This chapter shifts the broader discussion of the Ecuadorian Chocó in the previous chapter to a more nuanced analysis of events occurring within its landscape matrix. A closer, more local, inspection of the fragmented landscape that constitutes most of the Ecuadorian section of the Chocó reveals that there are several processes taking place that could have significant impacts on the quality of the matrix between forest fragments. One of these has been the fairly recent boom in local community development projects that often incorporate eco- and agri-tourism, as well as community outreach. What follows is a discussion of two case studies that exemplify the types of projects taking place and the different ways in which they are managed.

The chapter is broadly divided into three sections: 1) Research approach, 2) Methodology, and 3) Case studies. The first two sections outline the approach and methods used in the qualitative analysis for this dissertation. Section 4.3 then examines the two case studies – Río Muchacho and Fundación Golondrinas – in significant detail. It does so by subdividing each case study according to different qualitative aspects: environmental education, tourism, the project in question's relationship with local communities and, in the case of Fundación Golondrinas, farmer associations. Based on these fieldwork observations, Section 4.3 then assesses the spatial differences in outreach dynamics between the two case studies, as well as their potential for success regarding their stated conservation objectives.

#### **4.1 Research Approach**

An important component in the methodology for this dissertation is the use of case studies. Given the abundance of conservation/sustainable development/community outreach projects in Ecuador, I had the opportunity to visit a diversity of sites not only in the Chocó, but in several different parts of the country. It was my goal to sample as many different projects and their participating communities as I possibly could in the three main geographical zones of continental Ecuador: Coast, Andes, and Oriente (Amazon Basin). The immediate objective was to provide a suitable qualitative overview of the projects' individual circumstances and those of the local inhabitants who were purportedly participating in them. From this, I expected to glean some perspective on how certain dynamics and activities were more successful than others, the ultimate goal being that of developing effective strategies for both biodiversity conservation and sustainable rural development that could be implemented elsewhere in the Ecuadorian Chocó in an effort to diversify and improve the quality of the matrix between forest fragments.

The boom in small-scale rural development/conservation/ecotourism projects is widespread and fairly recent, starting at the very end of the 1980s and beginnings of the 1990s. In order to undertake a more meaningful analysis of the impact of these projects on matrix quality, I clearly had to rely on the projects that had been in existence for the longest period of time. Two projects stood out as optimal candidates for contrasting case studies. They had both been in existence since the early 1990s (approximately 20 years), and their stated visions (as well as their purported strategies for achieving them) were very similar, at least on paper. Land tenure patterns in the surrounding regions were

almost identical: both projects worked with communities in which families owned relatively well-delineated parcels of land, ranging on average from one to ten hectares.<sup>16</sup> This is in itself of importance, given that the aforementioned pattern is the predominant form of land tenure among rural inhabitants throughout Ecuador, excluding indigenous and other forms of communal land ownership, as well as modern forms of large landholdings or latifundismo practiced by large agribusiness and some ranchers. It was also useful that both projects were located in different parts of the Ecuadorian Chocó; this made for a nice fit within the preliminary wildlife corridor project envisioned by the conservation NGO that had requested my help at the beginning of my fieldwork season. In the future, I aim to extend this study approach into a wider analysis that also includes projects established more recently.

Today is a period of rapid changes in the agricultural landscape of Ecuador, and progress made (or not made) by these projects must be followed closely for what could potentially be a significant study of their impact on the macro-scale. The two case studies of Río Muchacho and Fundación Golondrinas can help in determining what works and what does not work in the expansion of a matrix of quality that can promote biodiversity in Ecuador, while at the same time recognizing that local inhabitants can achieve food sovereignty as well as derive subsistence and profit within these quality matrices without being perceived as a threat by some of the more traditional conservationists.

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<sup>16</sup> Indigenous communal lands such as those owned by the Awá to the north of Fundación Golondrinas were deliberately excluded from this study on account of the significant difference in the way these local populations manage their resources.

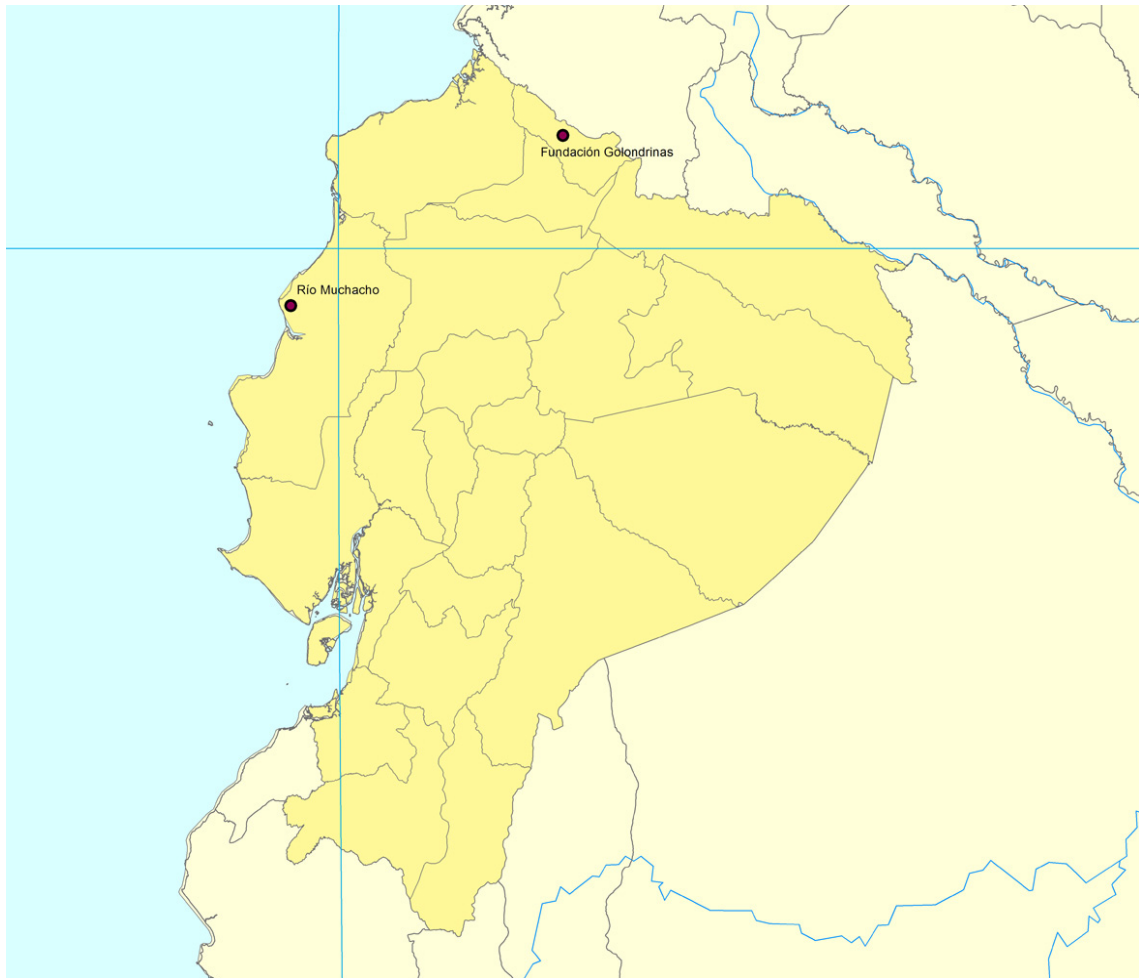
## 4.2 Methodology

This case study part of this dissertation draws upon two primary methodological components, one qualitative and the other quantitative. During my visits to the research sites, I relied greatly on semi-structured and interactive interviews with project leaders, workers, participants, and surrounding community members. It was equally important to attend as many community meetings and workshops as I could, as well as to engage in continuous participant observation. Being able to assess people's sense of integration and identification within these projects was quite a subjective endeavor. The ability to grasp a "feel" for what the average local thought of a project became easier with time up to a certain point; however, the more involved I became, newer layers of complexity became apparent in any given dynamic between a local or group of locals and the project and its managers. Despite these subjectivities, some factors that served as clear indicators were the extent to which local inhabitants continued activities promoted by the projects on their own, as well as the length of time a local resident would want to continue participating in community workshops and meetings. In addition to these factors, and perhaps most importantly, was the level of community *initiative* in these projects' programs. Did community members reach out to the project and propose or design their own courses of action? To what extent were locals at the helm of project initiatives?

My qualitative study was essential in framing a subsequent analysis of actual forest and vegetation cover among the communities involved – or purportedly involved – in these projects. Based on my impressions, I was able to formulate hypotheses regarding what the matrix quality would be among these projects and adjacent communities. I then sought to prove or disprove my hypotheses with a land cover analysis through time using

satellite imagery. This quantitative component will be analyzed in further detail in the next chapter.

### 4.3 Case Studies



**Figure 4.1** Sites of the two case studies: Fundación Golondrinas and Río Muchacho.

Río Muchacho



**Figure 4.2** Entrance to the Río Muchacho project.

As stated on its own website, the Río Muchacho project proposes “new ideas and initiatives for the improvement of the local people and environment” (their website can be viewed at <http://www.riomuchacho.com/>). This project is located near the Pacific coast, to the north of the province of Manabí (Figure 4.1). It is located in an interesting transition zone between the southern Chocó forest and northernmost portions of the tropical dry forest zones that continue to the south into Perú. Because its landscape is positioned in a transitional zone, vegetation here possesses traits corresponding to both Chocó and tropical dry forest ecosystems, and endemism and diversity of animal and plant species is high. However, this is a region that has undergone some of the most rapid deforestation this last century, particularly on account of the expansion of cattle ranching



and monoculture plantations such as maize, passion fruit and, to an increasing degree, African oil palm. The project's stated objectives are to promote conservation, sustainable agriculture by the 91 families living in the neighboring communities, community outreach, and environmental education.

Darío Proaño, one of the founders of Río Muchacho, describes the beginning of this project as something that happened relatively spontaneously. He is an Ecuadorian of French and Catalan descent who grew up in Quito, and is married to Nicola Mears, a New Zealander. Together in 1989 they purchased around three hectares of land in coastal Manabí (in a valley by the Río Muchacho river), seeking to establish an organic farm for their personal use. It was a small-scale, private project. At the beginning, Proaño and Mears lived in a tree house, and only had a small plant nursery and a vegetable garden. Proaño describes the surrounding area as having been so degraded by pasturelands and large-scale monoculture (particularly maize) that it was almost completely deforested. Once they became established on their farm, they began to understand the particular climate and ecosystem of the area they were living in, and also what types of agriculture were possible. They were surprised to find that they could grow a greater variety of crops than they had first expected, given the particularities of this transitional zone. During some times of the year, they could cultivate crops more suited to drier, cooler climates, and at other times, crops that were adapted to greater moisture and higher temperatures.

Once Proaño and Mears thought they understood certain ways to restore the degraded landscape, including what kind of agriculture was possible and appropriate for their particular geographical location, they felt it was their duty to disseminate this information to other local agriculturalists in the area. In Proaño's own words, they

“thought they understood it all... an agricultural model that was non-polluting, for subsistence and not monetary gain...” (from personal interview with Proaño, 8/31/10)

Convinced that they had come up with a solution to the land degradation that they witnessed in their surroundings, they enthusiastically sought to “educate” the locals. Perhaps unsurprisingly, their enthusiasm was met with suspicion and hostility by the others, who were likely local *Manabitas* who had been residing in this area for much longer than the couple of newcomers.

This failure to connect with the other local agriculturalists led to Proaño’s and Mears’s eventual frustration. As a consequence, Proaño decided that the problem was the “culture and agricultural systems” that had been adopted by local inhabitants in this region. Caught in a vicious cycle of producing high-yielding agricultural cash crops, most people had forgotten traditional agricultural practices, thus producing an “abyss” in what were once traditional knowledge systems for sustainable agricultural production (from personal interview with Proaño, 8/31/10).

### *Environmental education*

In the face of difficulties in communication with local inhabitants of the Río Muchacho valley, Proaño decided that in order to change this predominant pattern of production, he had to change local people’s “culture” (from personal interview with Proaño, 8/31/10). To accomplish this transformation, he and Nicola began to plan an elementary school for the children in the community that would incorporate an environmental curriculum that was better suited to their own reality. Through environmental education, the project founders’ aimed to reach to the parents indirectly through their children. For example, one of their first projects with the children was

teaching them how to use apiculture to improve pollination in their passion fruit fields. Three or four families became interested in adopting these techniques on their own farms, but soon discovered that in order to keep their bee colonies viable, they had to stop spraying their crops with synthetic pesticides. Nevertheless, this has been a slow and arduous process, and currently an average of only one or two families per community are practicing organic passion fruit production with crop associations.



**Figure 4.3** Students of the Escuela Ambiental Río Muchacho during a visit to the project's farm.

Following the current school curriculum, children in their last year must establish their own sustainable and organic gardens/orchards within their parents' passion fruit fields. These gardens must follow certain guidelines taught at the school and contain 20 different leguminous, fruit-bearing, root, climbing, shrub and other plant and tree crops, growing in associations. In addition, they must be grown without the aid of artificial fertilizers and pesticides. The aim of this endeavor is to create a virtually self-sustaining, integrated agricultural system. In theory, this would seem like a potentially successful way to encourage crop diversification among local dwellers and, if maintained, increase the quality of the matrix that they occupy. However, school attendance is very low. Particularly after ages 7 or 8, children seem to drop out, either to help parents at the farm or to move to another school located in the medium-sized town of San Vicente, about 15 miles away to the south. Very few children remain until the seventh grade, which is when they are required to begin their crop association project. During the time that I was visiting this project, only three children were required to undertake this task. Moreover, when I visited these children and their families, I soon realized they were not involved in their projects at all. Volunteers visiting Río Muchacho were assigned to help these children establish their crop associations, but in practice there was a palpable disconnect between what was expected of them and what was in fact taking place. Most of the volunteers are foreigners who do not speak Spanish, and therefore cannot communicate with the children or their families. What also became apparent was the tense dynamic between foreign volunteers and locals. Some local families (understandably) did not seem particularly amenable to the idea of a young, usually English-speaking outsider in his or her early twenties coming to their farms and dictating how to change their agricultural

practices. It was really no great surprise when I discovered that none of the crop association projects were being carried out, and that the volunteers eventually gave up their mentorship positions that year.

### *Tourism*



**Figure 4.4** Foreign tourists and volunteers posing with Proaño and Mears (first and second from right).

In the early nineties, Proaño and Mears also started a tour agency, Guacamayo Tours, located in Bahía de Caráquez, which at approximately 20 miles away is the closest city to Río Muchacho. This is now one of the most popular tour agencies in this part of the country. Most of their revenue is derived from ecotourism to their own project, but they also offer guided tours to other coastal attractions, such as Isla Corazón, around Isla de la Plata for whale watching, birding sites, the Panama Hat Trail, and even offer

Spanish courses in different locations. Río Muchacho itself enjoys a positive reputation in foreign travel guides, and is able to attract a great number of tourists and volunteers year-round. The tourists who represent the greatest profit are those who visit the project to take 1- to 3-day tours, and pay over \$160 per person per visit. Also important are those who come to take a month-long permaculture course that is offered by the project three times a year. When I visited, the cost of this program was around \$1,200 per person for a month. These courses are popular and usually exceed their stated capacity of 20 persons per session. Despite this, the bulk of the visitors to the project are the volunteers, who come in at any given time and are present year-round. Volunteers pay approximately \$365 a month for accommodations and meals. About ten percent of the net profits from volunteers purportedly go back to funding the school (from personal interview with Proaño, 8/31/10).

#### *Relationship with local communities*

My study not only focuses on the site of the Río Muchacho project itself, which occupies what are now about 11 hectares of land, but also the surrounding communities that inhabit this river valley. They are comprised of a total of 91 *montubio* families and cover an area of over 100 square miles. Most of these families own at least a one-hectare parcel of land, on which they grow cash crops such as passion fruit and maize, or use for pasture to feed livestock. Some of these families are located at great distances from the project and its school; when school is in session most children use mules and horses to transport themselves to class. In one of the statements on their website, the vision of the project (in addition to forest conservation and regeneration) includes promoting “the sustainable prosperity of the communities in the region of influence of Río Muchacho

valley, benefiting and involving local communities” (see website at <http://www.riomuchacho.com/>). The Escuela Ambiental, as already mentioned, has been the project’s most prominent way to attempt to accomplish this.

The project at one time or another has also offered workshops for adults from the valley communities, ranging from ways to diversify agricultural production with crop associations and lengthening fallow periods, to ways in which organic waste can be transformed into compost for soil enrichment. During my stay, an evening workshop was offered to the parents of the schoolchildren, in which a documentary was projected from a laptop computer. It examined the case of a group of farmers in Honduras who began using nitrogen-fixing leguminous crops in between periods of maize cultivation, thus decreasing the depletion of nitrogen in the soils. In addition to this, it was also an opportunity to address matters related to the school and its students. An issue of concern was the lack of student involvement in the end of year sustainable agriculture project. It was brought to everyone’s attention that mostly volunteers were doing the project work, rather than the children.

However, parents of these children were mostly absent from the meeting. Total attendance was around five men and seven women. Again, this was a very illustrative instance of the dynamics taking place between the project managers and locals. Community members were required to travel to the project center (in this case the school), and during this time, the few people who managed to make the trek there sat quietly while Proaño gave them instructions and a lecture. By the time the meeting concluded, most attendants had already left – it was dusk and making it back home over several kilometers in the dark is not an easy or desirable endeavor (there is no electricity

in the surrounding areas – the project uses generators in the evening to power a few essential appliances). What I found of particular interest is that the “community outreach” performed by Río Muchacho is very much centered around the location of the project; in other words, community members of surrounding areas were expected to travel to the specific project site for any form of project assistance, be it environmental education, workshops, or other meetings.

From what I managed to observe, the only real and consistent community participation in the Río Muchacho project was that which was carried out by the few locals hired to work on the project’s farm. In terms of local people directly employed by Río Muchacho, I was surprised to discover that there were never over eight people working there at any given time.<sup>17</sup> This could be seen as problematic, given that the project also claims to help local people through employment. Furthermore, based on one-on-one interviews with the local employees, it became clear that working on the project was not very profitable vis-à-vis work performed in nearby cash crop plantations or livestock ranches. The farm workers employed by Río Muchacho were paid less than \$250 per month, which falls below the mandated minimum wage in Ecuador. When asked why they remained at Río Muchacho, answers were consistently the same: the pay was not good, but the work was easier (from personal interviews conducted between 9/1/10 and 11/15/10). However, these conversations took place at a moment of crucial transformations within the dynamic between the project and its employees. Shortly after their first interviews, at least three disgruntled employees decided to stop working for the Río Muchacho farm. There appeared to be augmented tension between these workers and

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<sup>17</sup> Out of those eight people, two or three were not even local to the area; they were from Bahía de Caráquez, and would travel 20 miles back to their homes every weekend.



Proaño. According to workers' accounts, Proaño was increasingly adopting a more businesslike – or “cold” – attitude towards the employees.

This can be illustrated in the case of one of the workers, Alfredo.<sup>18</sup> Alfredo and his family lived at quite a distance from the project farm. After taking his child to school, Alfredo would drive his motorcycle to the project, and usually arrive to work between 6:10 and 6:15 in the morning. Even though workers were expected to arrive to work at six o'clock, Alfredo stated that it was virtually impossible for him to arrive at that time. He explained that he had a newborn baby to help tend to, and then drive himself and his child about six kilometers to school before making his way to work. This all took a significant amount of time. Proaño had previously shown leniency regarding his arrival time (Alfredo had been working at the project farm for approximately two years); however, during this time he informed Alfredo that he would deduct seven dollars from his salary for every fifteen minutes that he arrived late to work. This was highly upsetting to Alfredo, who consequently decided to quit his job (from personal interview conducted on 11/30/10).

Around this same time, other workers were becoming disillusioned with their jobs in the Río Muchacho project. They had previously expressed that working on the farm was rarely burdensome and even fun, especially because they enjoyed the opportunity to speak and socialize with foreign tourists and volunteers, and in some instances even learn some English. The workers greatly valued the social component of their jobs, and to a certain degree this compensated for their relatively low wages (in addition to the ease of work). Nevertheless, during the time that increasing tensions between the project managers and employees could be observed, Proaño announced that it was no longer

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<sup>18</sup> Workers' names have been changed in order to protect their confidentiality.

permitted for the farm workers to socialize with foreign tourists or volunteers (from personal interviews conducted between 11/15/10 and 11/30/10). I found this peculiar, given that Río Muchacho attracts some tourists by advertising stays with local families and the option of participating in activities such as local fiestas. Furthermore, on its webpage, the project asserts that “there is always a colorful blend of locals, tourists, students and volunteers all sharing their experiences, skills and abilities...” (<http://www.riomuchacho.com/>).

The overall strain in the relationship between Río Muchacho founders and the farm workers led to a palpable disenchantment – and detachment – of locals previously involved in the project. As a result of this (and perhaps other factors that I was not made aware of) three local workers resigned from their positions during my stay at this location.<sup>19</sup>

In terms of other local residents not directly employed by the farm, my impression is that there was even greater detachment from the project than that exhibited by its salaried workers. I visited various households located in the valley with which the Río Muchacho project is said to cooperate. For the most part, if households did not have children attending the *escuela ambiental*, they were not completely aware of – and by no means participated in – the project’s initiatives. However, with few exceptions, most households knew Proaño, and even engaged in business negotiations with him. For example, most had at one time or another paid the Río Muchacho project to allow their sows to mate with the project’s immense and elderly boar, Isidro. The project also owns several sows that at any given moment will be nursing at least two or three farrows. The

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<sup>19</sup> I have been informed by other visitors to the Río Muchacho project that more workers have since abandoned the project but have not been able to corroborate this information.

piglets are sold to local residents and even buyers who come from greater distances. The project also owns a great number of chickens that are, as with the piglets, sold to locals.

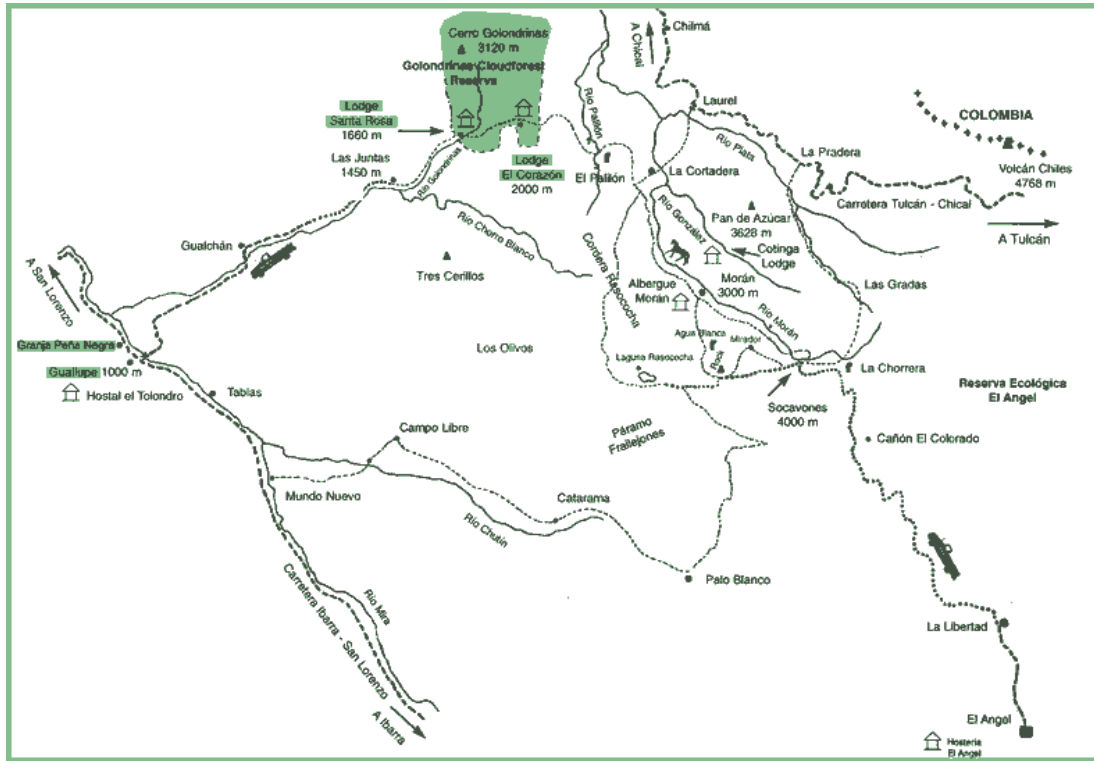
Despite this relationship with Río Muchacho, when asked about their impressions of the project, the majority of households identified it almost exclusively as a tourist attraction, and associated it mainly with the continuous presence of foreigners. Those who associated the project with sustainable agriculture and conservation were mainly younger adults who at one time or another were students at the *escuela ambiental*. Out of the young adults interviewed, only two asserted that they practiced more sustainable agriculture, as taught by the project's school (from personal interviews conducted between 9/1/10 and 11/15/10).

#### *Fundación Golondrinas*

Even though Río Muchacho and Fundación Golondrinas are both considered to be located within the Chocó Biogeographical Region, their physical environments are quite different. Whereas the Río Muchacho project falls within a Chocó-Tumbes transitional zone – and consequently sometimes exhibits some characteristics of tropical dry forests – Fundación Golondrinas mostly works in an area that is more “traditionally” characteristic of Chocó rainforests, even though its easternmost portions do reach very high elevations in the western cordillera of the Andes (Figure 4.5).

For the most part, this project and many of the predominantly Afro-Ecuadorian communities it works with are located in the lower Mira river basin. This is a relatively lower mountainous area with very steep slopes, thus making land surfaces exceedingly susceptible to erosion. This is exacerbated by the heavy precipitation that can occur throughout much of the year, as well as certain agricultural practices. Some more isolated

communities within the basin region are located at higher elevations, between 1,400 and 1,660 meters above sea level, and fall within the cloud forests of the western Andean foothills.



**Figure 4.5** Map showing some of the communities participating in Fundación Golondrinas projects. Source: Fundación Golondrinas website (<http://fgolondrinas.org/>).

According to its (somewhat outdated) website, Fundación Golondrinas aims to conserve its surrounding forests and their endangered ecosystems, all the while “improving the quality of life for the people in the region” (their website can be viewed at <http://www.fgolondrinas.org/>). The primary strategies in accomplishing these goals are, broadly speaking, the creation of farmer *cooperativas* for the sustainable production of the principal cash crops, coffee and cacao, environmental education, and community workshops addressing the use of more sustainable agricultural techniques. The

Golondrinas project, however, has undergone much growth and transformation since it was first conceived.

The founder of the Golondrinas project is María Eliza Manteca. She is a native of the Mira valley region, and was raised near the location of her current foundation headquarters, in the small town of Guallupe. This is a rural area inhabited mostly by black campesinos, and during her childhood the remoteness of this location resulted in limited education opportunities for local farmers' children. At the age of fourteen, Manteca traveled to Quito to find a job and complete her high school education by taking night courses. After a few years of continuing her studies and obtaining a nursing degree, Manteca returned with the intention of beginning a project that would benefit the people of her community, as well as the surrounding environment. However, she soon realized that there was not much she could accomplish without some kind of financial capital to aid in the establishment of an officially recognized foundation. As a result of this and with the help of some friends, in 1989 she decided to start operating a small backpackers' hostel in Quito. Within the first year, the earnings from this hostel were used to establish her foundation in Guallupe. The hostel grew in size and popularity, with positive reviews in popular travel guides and forums. Manteca began offering guided tours and treks through neighboring cloudforests to interested tourists. The bulk of the profits went into purchasing land in the Chocó and establishing projects such as model farms (*granjas demostrativas*) that served to illustrate sustainable agricultural practices to locals and any others who could be interested in the concept. She officially began her joint conservation/rural development project in 1993.

### *Environmental education*

In addition to establishing model farms and training farmers in agroforestry techniques and permaculture, Manteca embarked upon an ambitious environmental education project for schools in the Mira valley region. Even though in one of her first interviews, Manteca was adamant that changing people's "culture" was not a viable strategy for conservation (from personal interview conducted on 12/10/10) – which contrasted with Proaño's view that "culture" was the main culprit for detrimental agricultural practices – both her project and that of Proaño arrived at similar conclusions regarding environmental education, especially for schoolchildren.<sup>20</sup> They both came to view it as a fundamental step in securing long-term agricultural practices within their local communities. Despite this, their approaches within the strategy of environmental education differ considerably.

Throughout the years, the Golondrinas project has consistently organized projects and programs with schoolchildren, as well as adults, on a variety of topics. These topics have included practical ways in which perceived organic waste can be recycled and reused using compost piles, explaining the importance of specific natural resources, protecting watersheds, among other things. Even though trips for children and adults to the *granjas demostrativas* are also organized whenever possible, Manteca carries out most of these activities by visiting every school in the region. She accomplishes most of this on her own, but will make use of the occasional volunteer for this as well. During my stay at the project, I accompanied Manteca to six different schools in neighboring

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<sup>20</sup> These comments on "culture" made by both Manteca and Proaño were offered during their interviews without any sort of baiting on my part. Quite to the contrary, I was surprised that they each made such dissimilar (opposite, in fact) observations of their respective communities' cultures at the beginning of their very first interviews, and considered it a coincidence with potentially important implications.

communities within the course of a week. She used these visits to distribute large tubs of molasses and sacks of manure – raw materials for elaborating compost tea – in preparation for a future workshop for adults on how to improve their soil fertility.<sup>21</sup> In addition to the molasses and manure, Manteca also distributed several rolls of wire mesh to help in the establishment of school gardens, which is an ongoing project for the schoolchildren. She made her visits while classes were in session, and spoke to every classroom of students about the upcoming contest between all the schools in the lower region, in which the best garden and those students involved in its maintenance would be rewarded. She then checked on the gardens and gave students suggestions on how to improve their crop production. At the end of each visit, she offered various fruit tree seedling to students who were interested in planting their own gardens at home. These were children who wanted to participate in an ancillary contest between individual home gardens. I was surprised to see that most students who had access to some land for their personal use seemed quite enthusiastic about the prospect of having their own seedlings, to the extent that there were not enough plants for every student who signed up for one (those who could not receive a seedling at that moment added their names to a waiting list). Manteca kept a record of all students who were given a seedling for future monitoring of their individual progress.

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<sup>21</sup> Given the general absence of infrastructure for public meeting areas in most of rural Ecuador, classrooms are the most common location for community meetings and workshops.



**Figure 4.6** Children in Guallupe signing up with Manteca (at center) to receive fruit tree seedlings for their home gardens.

Manteca and her Golondrinas project are currently promoting environmental education among nine elementary schools and four high schools in the lower Mira basin. These account for all elementary schools, even those located in more isolated areas, as well the majority of secondary schools in the region (from personal interview with Manteca, 1/24/11).<sup>22</sup>

I interviewed several households with children who had established their own gardens. In every household I visited, the children's families were involved in the maintenance and production of these gardens almost to the same extent that the children were. Overall, they expressed interest in being able to have access to seeds and seedlings from the foundation and improving the quality of food that their families consumed (from

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<sup>22</sup> In addition to these schools, Manteca also works with two universities to promote internships and fieldwork in collaboration with Fundación Golondrinas.



personal interviews conducted between 1/25/11 and 2/5/11). This is an important component in the Golondrinas project's education goals: the promotion of food sovereignty and better nutrition among inhabitants of the Mira valley. During her popular visits to schools, Manteca emphasizes the importance of having control over what community members produce and eat in addition to the environmental benefits of sustainable agriculture. She strives to make it a community objective; when she visited one school garden that had numerous vegetables that were ready for picking, she planned a school community lunch for the following week in which the children would make a salad with their garden ingredients, and eat it with their parents and teachers. With projects such as these, Manteca hopes to show that anyone can produce their own healthy food, instead of producing crops unsustainably for the benefit of others (from personal interview with Manteca, 1/24/11).

### *Farmer associations*

In addition to environmental education, another primary goal of Fundación Golondrinas is the establishment of farmer cooperatives for the sustainable production of cash crops, particularly coffee and cacao. Even though this is a relatively recent endeavor compared to its environmental education program, the creation of agricultural associations has assumed a vital role in the Golondrinas project's strategy for long term sustainability and rural community development.

In this sense, Manteca has served as a coordinator at two important levels. Her first role as coordinator is between her Asociación de Cafeteros Bosque Golondrinas (ACBG), composed of approximately 80 farmers from several different communities in the lower Mira region, and the Ecuadorian government's SECAP (Servicio Ecuatoriano

de Capacitación Profesional) program.<sup>23</sup> SECAP is a public institution that provides training and workshops in numerous fields for Ecuadorians seeking to increase their professional knowledge and abilities in order to expand their labor opportunities.<sup>24</sup> Through communication with SECAP, Manteca has been able to make use of their resources and professionals to train local farmers in a variety of agricultural strategies for coffee and cacao production. These strategies include technical knowledge on how to manage soils to improve their crops, using a variety of fruit trees to grow – following certain agroforestry standards – in association with coffee and cacao for the benefit of the environment and diversification of personal household consumption, the use of composting for sustainable fertilization, the elaboration of natural pesticides, and training in management for small businesses.

Manteca's second role as coordinator entails the establishment of direct market relationships between the ACBG and equitable/sustainable wholesale buyers. At present, more has been done to secure coffee buyers; the related cacao project remains at an earlier stage of development. Some farmers who had already been producing significant amounts of shade coffee berries were working at times with the Galletti group, an Ecuadorian intermediary that sells sustainable coffee mostly to international buyers. However, many of the farmers complained that the price that Galletti pays for their beans is insignificant and does not provide a significant means of sustenance (from personal interviews conducted on 6/28/11). Several farmers expressed eagerness to be able to

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<sup>23</sup> Roughly translated to Ecuadorian Service for Professional Training, which is an autonomous division of the Department of Labor Relations of the Ecuadorian government.

<sup>24</sup> Since 2007, government investment in SECAP programs has increased considerably. Since the beginning of President Rafael Correa's tenure, SECAP spending has amounted to approximately 21.7 million US dollars. This contrasts with the previous government's SECAP spending, which amounted to 5.5 million US dollars between 2003 and 2006 (SECAP 2012).

establish more direct contact with buyers – and therefore receiving fairer prices for their product – rather than relying on intermediaries in the market chain. Manteca asserts that she has been able to provide potential international buyers for their coffee, though no specific names were given.



**Figure 4.7** SECAP technician (second from left) instructing ACBG farmers on practical coffee bean fermentation techniques.

In the case of sustainable/equitable cacao production, the Golondrinas project has established a relationship with a national buyer, Yachana Gourmet, though market arrangements had not been finalized at the time of my study. This buyer would potentially pay over three times the going rate for non-organic, fermented cacao beans from small-scale producers.

In terms of establishing sustainable and profitable systems of agroforestry in the lower Mira valley, coffee and cacao certainly appear to be the most appropriate crops for the endeavor. Given that both crops can be organically- and shade-grown with no significant reductions in harvest volumes – and parallel increases in market value – they have tremendous potential for low impact agroforestry applications, and consequently could foster long-term maintenance of quality matrices within their managed ecosystems.

During my study, I visited farmers in the communities of Espejo, Río Verde, and Chinambí. At the time of my visit to these communities in June of 2011, there were 14 members of the association in Espejo (this number had recently increased from 5 members), 19 members in Río Verde, and 10 members in Chinambí. Of those interviewed, most had positive expectations regarding their crops. They see their changes in crop associations as a way of improving their farms, not necessarily changing them completely. In the words of one of the farmers, don Juan, he is looking for something to live off of throughout the whole year with a crop that produces long term benefits, not just crops that provide something “*sólo para las gallinas,*” or only for the chickens (from personal interview conducted on 6/28/11). Many of these farmers formerly engaged in monocropping of sugar cane, maize, bananas or plantains, with minimal profits. As members of the ACBG, they have diversified their agricultural production considerably. After engaging in coffee cultivation with *Coffea arabica* of the *caturra* variety, one of the most important crops used in their agricultural associations has become the guaba (*Inga edulis*) tree. This is a native tree that is fast growing and tolerant of acid soils. It improves soil fertility through nitrogen fixation, provides relatively dense foliage to shade coffee and cacao crops, as well as firewood and charcoal and a fruit with sweet pulp suitable for

human consumption (guaba is referred to as “ice-cream-bean” in English). It is a tree of great utility as green manure with its high biomass production, and also helps control weeds and erosion in agroforestry systems. Other common fruit trees used in these agroforestry associations are the native guayaba (*Psidium guajava*, known as guava in English), papaya, a variety of citrus trees, and also plantains and bananas, mostly for household consumption. These are planted in addition to a number of native trees and shrubs that have been left in many cases to provide additional shade for the crops.

The communities participating in the ACBG share long histories of isolation and impoverishment. Many of the participating farmers have never found themselves in a position where they could afford synthetic fertilizers or even pesticides. Swidden farming had been the most common form of agricultural management. The Golondrinas project, in coordination with SECAP technicians, offered composting workshops to those farmers interested in increasing soil fertility in a sustainable manner. Farmers like don Juan have implemented these techniques, and assert that the quality of their crops has increased significantly since fertilizing with their compost (from personal interview conducted on 6/28/11).



**Figure 4.8** ACBG farmer’s compost pile in the community of Espejo

The establishment of a local seed bank is also of considerable significance among ACBG farmers. Out of the ten ACBG farmers in the area of Chinambí, only two were able to cultivate their coffee seedlings successfully during their first year of participation in the project. The eight remaining farmers with failed crops were able to resort to members in the community of Espejo who were producing quality coffee cherries for replacement seeds, rather than buying these from Colombian farmers at a considerably higher cost (which would include travel across the border in order to carry out the transaction). Overall, ACBG farmers viewed this as a significant advantage (from personal interviews conducted between 6/28/11 and 7/2/11).

### *Tourism*

Even though the Golondrinas project website offers guided tours through the nearby cloud forests and seeks to attract volunteers to help with its environmental education and agricultural programs, Manteca lacks skills in computer technology to maintain an updated website and answer e-mails. This is aggravated by the general absence of Internet services in this rural location.<sup>25</sup> Formerly, most visitors (tourists and volunteers) would coordinate trips to this region through Manteca's hostel in Quito. However, Manteca closed down the hostel a few years ago, despite its popularity, in order to be able to focus on her work in and around Guallupe. Since the hostel's closure, the number of visitors to her project, along with the income that they represent – has dwindled considerably, to the point where they have become at present a negligible component of the project. In 2010, Manteca did not receive more than seven visitors;

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<sup>25</sup> A government program recently inaugurated an Infocentro – or Internet center with computers – in Guallupe as part of a larger campaign to give rural localities Internet access. Frequent black outs affect the extent to which locals can use these computers; nevertheless, progress is being made in this area.

roughly half of them were foreign tourists and volunteers, and the other half were biology graduate students conducting fieldwork in the vicinity.

### *Relationship with local communities*

Fundación Golondrinas does not offer much in terms of salaried employment for the inhabitants of surrounding localities. Manteca shoulders most of the environmental education and coordination work herself, and uses the occasional volunteer for supplemental temporary aid in this regard. Despite this, it appears that the majority of inhabitants in the various communities along the lower Mira valley view the foundation as a community project, rather than a private enterprise (from personal interviews conducted between 1/25/11 and 7/2/11). Most locals are well aware of Fundación Golondrinas and the types of projects it is undertaking, and there is an overall perceived community benefit from Manteca's work. This is especially palpable among those who have been able to attend SECAP workshops and courses coordinated by Manteca, as is the case with ACBG members. In addition to the environmental education and farmer associations for the sustainable and equitable production of coffee and cacao, the Golondrinas project maintains long standing involvement in other community projects. These projects include the Afro-Ecuadorian women's artisan group "Raíces Negras" in neighboring San Juan de Lachas, and a workshop in Guallupe in which an instructor (again, in coordination with SECAP) teaches local women different types of craftwork. The work of these women is then sold communally in nearby artisan markets.

Manteca is a well-known public figure in the region, and was recently elected *teniente política*, political head of her parish of La Carolina, which is composed of twelve different communities in the region. Perhaps most important is the fact that there is

continuous input from community members regarding Fundación Golondrinas' projects. During my stay in Guallupe, I witnessed several visits from members of surrounding communities, during which they had conversations with Manteca regarding their individual or group proposals for Golondrinas-sponsored programs. These visits became even more frequent, not surprisingly, once Manteca had been elected *teniente política*. Many of these requests were for additional training workshops in cooperation with the government's SECAP program. Some individuals wanted to start small agri-tourism enterprises, and viewed Manteca and her organization as a model to follow and also as a potential collaborator. Others had requests concerning their community school programs. Overall, there appeared to be continuous communication between the Golondrinas project and its surrounding communities, and there was mutual collaboration between both.

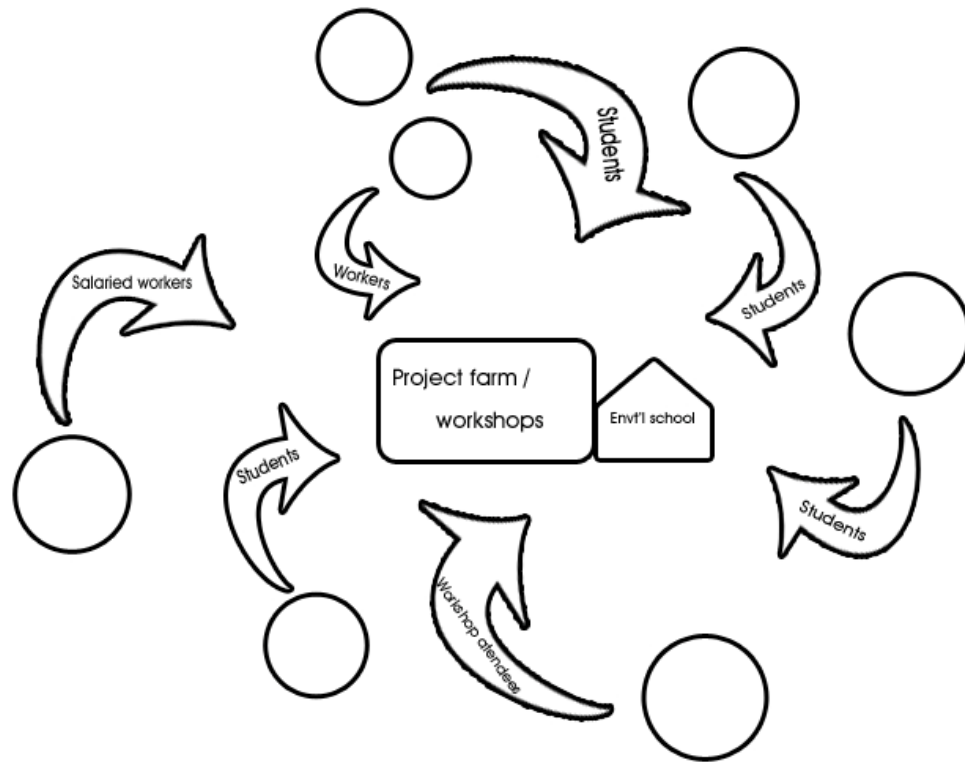
#### *Spatial differences in outreach dynamics*

Río Muchacho and Fundación Golondrinas appear, at least at the surface, to be quite similar projects in terms of strategies for addressing conservation and sustainable community development. Both emphasize the importance of environmental education as an essential component in a long term approach to sustainable resource use, as well as the utility of workshops for training adults in composting, waste management, watershed protection, among other topics in sustainability, conservation and development. They both also make use of model farms that demonstrate organic and/or permacultural techniques. Furthermore, and arguably most importantly, both projects make claims regarding the benefit they provide to local inhabitants in their respective regions. I argue that this is of utmost importance because, as mentioned previously, locals' perceptions of their role and integration within projects of these types are key to their success or failure.



After a more detailed discussion in the previous section regarding the manner in which these individual projects are undertaking implementation of their strategies, their differences become more apparent. What stand out in particular are the differences in the flow of information between project and local communities, as well as the way in which outreach is offered by the project to locals, be it in the form of environmental education, agricultural workshops, or any other kind of community assistance.

In the case of the Río Muchacho project, the flow of information and resources between project center and surrounding communities is fairly static. Most activities are concentrated around the project farm and environmental school themselves. Moreover, the services provided by the Río Muchacho project are not typically by community initiative; they are planned and organized by the project, and are accessible only if locals make the effort to approach the project or its school. As described previously, locals visit the project most regularly to attend its school, or to work as the few salaried employees at its farm. In terms of financial benefit, most profit derived by the project's activities – primarily tourism – remains concentrated around the project and its related enterprises; virtually none of it extends to surrounding communities, despite assertions on Río Muchacho's website that much is done to improve livelihoods of local inhabitants. Figure 4.9 below illustrates the basic dynamics of outreach between the Río Muchacho project and its surrounding communities.

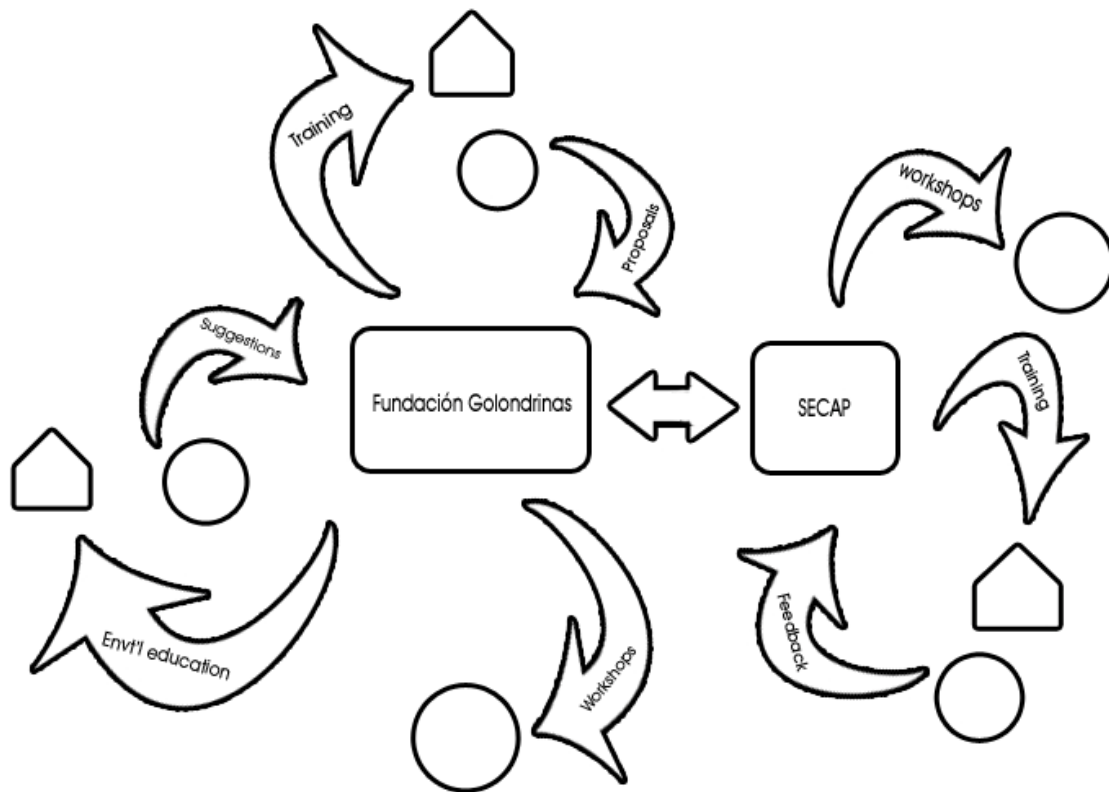


**Figure 4.9** Outreach dynamics between Río Muchacho and local community members. The project, school, and all related activities are static. Locals – in the form of students, a few salaried workers, and workshop attendees – access these services and activities by approaching the project.

In contrast to what has been observed in Río Muchacho, Fundación Golondrinas maintains what could be considered a more complex dynamic in outreach activities and services between its project and local communities. Unlike Río Muchacho, the Golondrinas project does not have its own school geared towards its environmental sustainability agenda, nor does it hire locals as salaried workers. I argue that this is not necessarily a drawback in outreach strategy. Quite to the contrary, there seems to be a more intensive effort to extend outreach and services to all local communities within the lower Mira region as a result. Environmental education and technical workshops are

offered at various schools and meeting places of different communities, thus making these services more accessible to the inhabitants of any specific locality. Furthermore, these project activities are not viewed as isolated or separate from the communities – either in a figurative or literal sense – because they have been integrated within regular daily school or community meeting routines. This is particularly important for those inhabitants who live in some of the remotest areas of the region.

As stated before, most locals appear to view the Golondrinas project as a *community* project, and not something that has been established by outsiders. It certainly helps that Manteca, its founder, is a woman originally from one of the participating Mira valley communities, and is a very well-known public – and now political – figure in this region. It is also important to note that most, if not all, the programs and services provided by the Golondrinas project are by community initiative. In the same way that there is an outward flow of information and resources from the project (and also from its important association with SECAP) to local communities, there is also a flow of information, feedback and project proposals from local communities to the Golondrinas project. Even though profits made by this project are virtually non-existent, much has been done in terms of coordination with outside – mainly governmental – resources, like SECAP, to increase the viability of financial activities of the inhabitants of its surrounding communities, particularly those that can be carried out in a sustainable manner. Figure 4.10 summarizes these basic dynamics between Fundación Golondrinas and its local inhabitants.



**Figure 4.10** Outreach dynamics between Fundación Golondrinas and local community members. This, compared to the figure for Río Muchacho, shows a more intensive effort to extend education, services and activities to various communities and schools throughout the lower Mira region. Furthermore, the flow of information and feedback is not unidirectional; there is a constant back-and-forth between the project and community members. Also worth noting is the role of the SECAP in providing additional training and workshops, thus helping to establish a more organized local network of services, information, and feedback.

Success?

The case studies presented in this dissertation illustrate but two approaches by which local conservation/community outreach projects attempt to fulfill their purported goals. These goals, broadly defined, include forest restoration, biodiversity conservation (or restoration), and the improvement of local communities' standards of living.

One of the fundamental assumptions in this study is that local communities must play a central role in any conservation and biodiversity conservation project. As stated before, it is necessary for resource users to be involved in the decision-making process concerning the management of the environments they rely on and form an integral part of. This often implies a program implemented through bottom-up planning, designed and owned by local people, with possible aid from outside facilitators (Ingles *et al.* 1999:6). This assumption is certainly nothing new, and has been adopted in one way or another by most conservation/development organizations, both at the national as well as the international levels. However, this has been paired with a “biodiversity in crisis” discourse that creates tensions between the ecological, economic and social objectives of projects promoting both biodiversity conservation and rural development. As a result, and despite some conservation/development organizations’ stated assumptions regarding the role of local communities, the idea of “sustainable” use often ultimately excludes forms of resource use that are not deemed “suitable” for conservation (from a more traditional point of view).

This leads to discussion of another fundamental assumption in this dissertation, which reflects the view of Perfecto *et al.* (2009:73) that agricultural systems managed by humans can play a significant role in sustaining biodiversity. In the history of (Western) conservation, little attention has been given to agricultural and forestry systems managed by humans as potential sites for increased species richness. This is even the case among conservation/development organizations that extol the importance of local community management of ecosystems. However, the reality of the matter is that anthropogenic ecosystems dominate most landscapes worldwide, and ignoring the role that local

communities play in sustaining quality matrices within mosaics of managed systems and forest fragments could be quite detrimental to the conservation of biodiversity in the long run (Perfecto *et al.* 2009:35).

Both case studies addressed in this chapter appear to recognize – at least in theory – the important role that their respective local communities play in sustaining biodiversity in their regions. Moreover, in their attempt to diversify agricultural production and encourage more agroforestry practices, both projects also seem to recognize that human ecosystem management is crucial in improving matrix quality, and are thus critical for maintaining and promoting biodiversity.

Despite the similar stated intentions between the Río Muchacho and Golondrinas projects, this chapter aims to discern if one case study's outreach strategy is more successful than the other's, and as a consequence, if one region exhibits increased forest coverage, particularly over the last ten years or so, after two decades of implementation. Based on my interviews with local inhabitants in several communities surrounding both of these projects, as well as the observed levels of actual community involvement, initiative and sense of integration within them, my hypotheses were fairly straightforward: the Río Muchacho project lacks true and complete community involvement, and will therefore exhibit increasing deforestation and land cover degradation over its region of influence within the last ten years or so. The Golondrinas project, on the other hand, will exhibit less deforestation among the regions inhabited by its communities over a similar period of time, because locals themselves lead this project's initiatives and feel they are deriving some kind of benefit from them. This is

especially significant with regard to initiatives revolving around more sustainable agroforestry practices.

In Chapter Five, I seek to prove or disprove these hypotheses by using the more quantitative approach of satellite imagery analysis.

## **CHAPTER V. REMOTE SENSING ANALYSIS**

The aim of this chapter is to substantiate my qualitative analysis in a more concrete and quantifiable manner through the examination of remote sensing data. What follows constitutes a basic and suitable introduction to this type of study; however, it could be complemented in the future through analyses using imagery from other satellites as well as very thorough and consistent on-the-ground fieldwork throughout this region of study over several more years. This chapter is divided into four sections: 1) Focus of study, 2) Challenges, 3) Methodology, and 4) Results.

### **5.1 Focus of study**

The specific focus of the remote sensing study is to develop a general notion regarding the temporal variation in land cover trends in areas under influence of both Río Muchacho and Fundación Golondrinas projects. The analysis made use of all of NASA's available Terra Moderate-Resolution Imaging Spectroradiometer (MODIS) Vegetation Indices Product (MOD13Q1), 16-day composite data with 250-m resolution, from March 2000 to May 2012. It provides a visual representation of changes in vegetation/land use cover in areas around both case studies over the last twelve years, and compares these sites side by side.

### **5.2 Challenges**

During the initial stages of the remote sensing analysis, it was my intention to use imagery from Landsat 5 TM and Landsat 7 ETM+ satellites. These satellites provide unprocessed multi-spectral photographs with very high resolution (30 meters). This would have allowed me to view nuanced patterns and changes in land cover beginning



even before the establishment of the Río Muchacho and Fundación Golondrinas projects, from 1984 until the present.

However, my two study sites are distinguished by being consistently obscured throughout the year by dense cloud cover. Due to the great seasonal variations (rainy versus dry seasons) within these sites, it was also of critical importance to find cloud-free images from different years, but corresponding to the same seasons for each site. This proved impossible to accomplish. On account of these difficulties, I opted for the MODIS imagery, which will be described in more detail below.

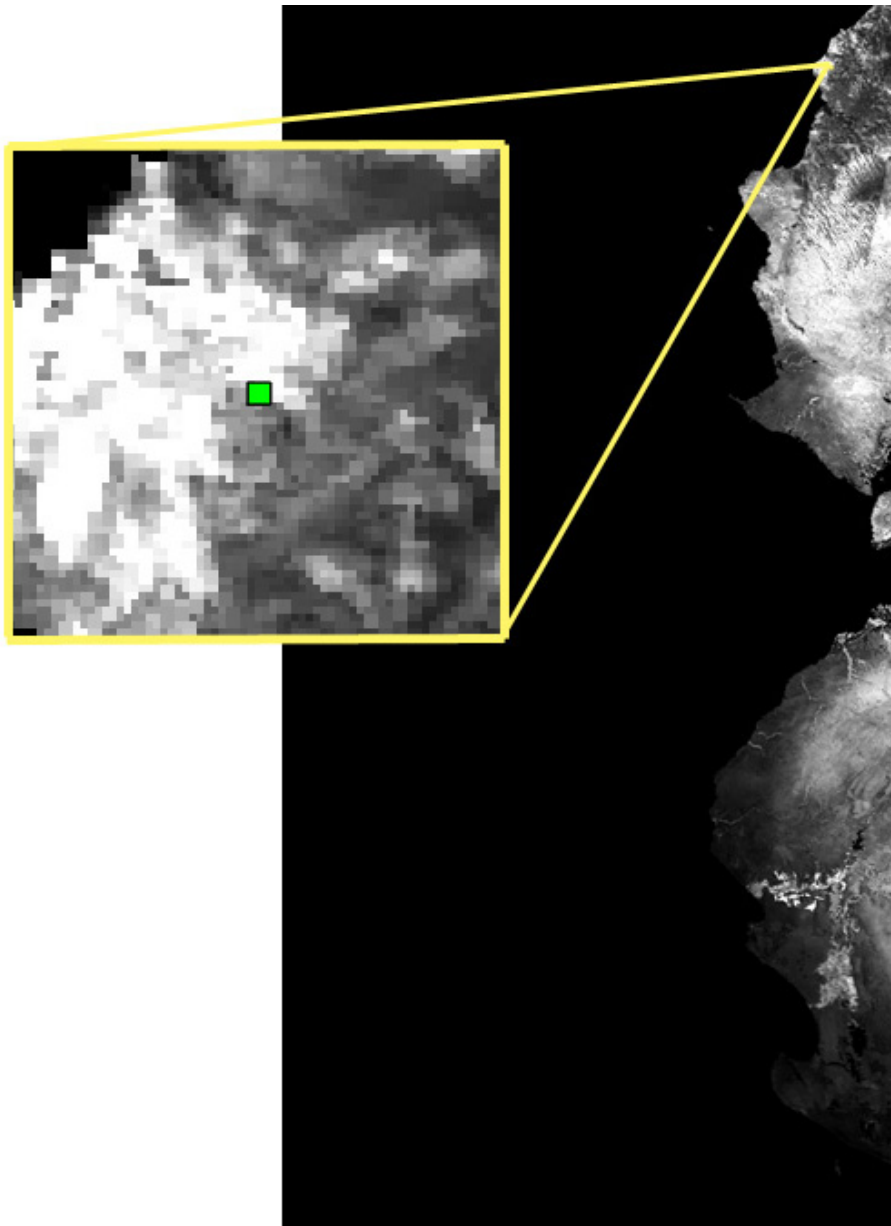
### **5.3 Methodology**

In order to conduct this analysis, two specific regions of interest (ROIs) within the case study sites were selected. Given the moderate resolution of the MODIS imagery (250 meters), I opted for relatively small samples: the Río Muchacho sample covers a surface area of 0.48 square kilometers (9 pixels), and the Fundación Golondrinas sample covers 0.64 square kilometers (12 pixels). ROIs for both study sites were selected on the basis of their location relative to local communities who purportedly take an active role in the projects' programs. The exact locations of these sample sites are centered on the following coordinates: 0°23'7.50"S, 80°23'14.05"W for Río Muchacho, and 0°49'7.50"N, 78°9'21.23"W for Fundación Golondrinas (Figures 5.1 and 5.2).

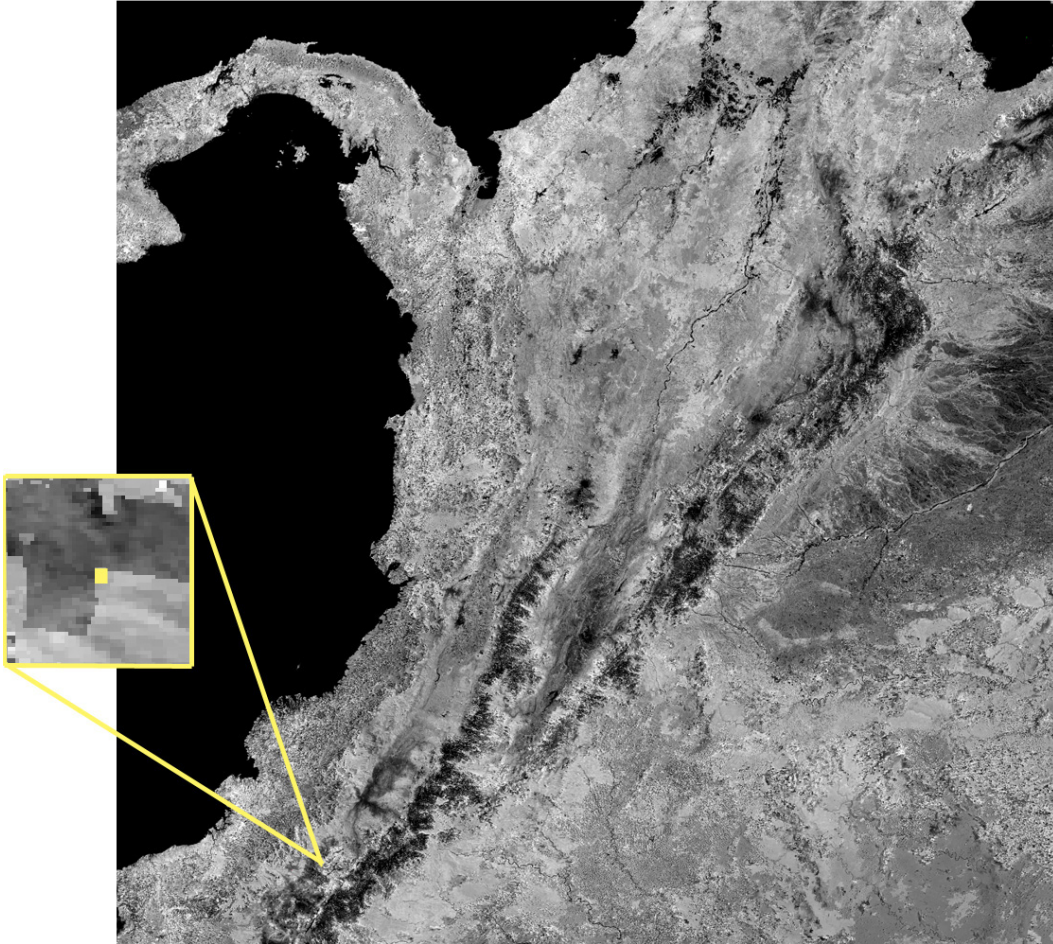
The specific MODIS product used for this study was MOD13Q1, which shows vegetation indices every 16 days at 250-meter spatial resolution. The MOD13Q1 data were obtained through the online Data Pool at the NASA Land Processes Distributed Active Archive Center (LP DAAC), USGS/Earth Resources Observation and Science (EROS) Center, Sioux Falls, South Dakota ([https://lpdaac.usgs.gov/get\\_data](https://lpdaac.usgs.gov/get_data)).

The data provided a Normalized Vegetation Index (NDVI) and an Enhanced Vegetation Index (EVI). Both NDVI and EVI are dimensionless indices that represent the amount of green photosynthesizing vegetation in a way that corrects for most atmospheric effects. For this particular study, I chose to use MOD13Q1 EVI over the NDVI data. Even though the latter is used more traditionally in time series applications, the EVI data minimize canopy background variations, biomass saturation, and maintain sensitivity over dense vegetation conditions. Furthermore, the EVI was developed more recently to allow for heavily vegetated areas to be distinguished, whereas the NDVI tends to saturate at high levels of vegetation, rendering it impossible to differentiate between high and very high levels of vegetation. Given that EVI does not saturate at very high vegetation levels, and assuming that my samples would at times contain very high green photosynthetic levels, EVI was clearly the better option.

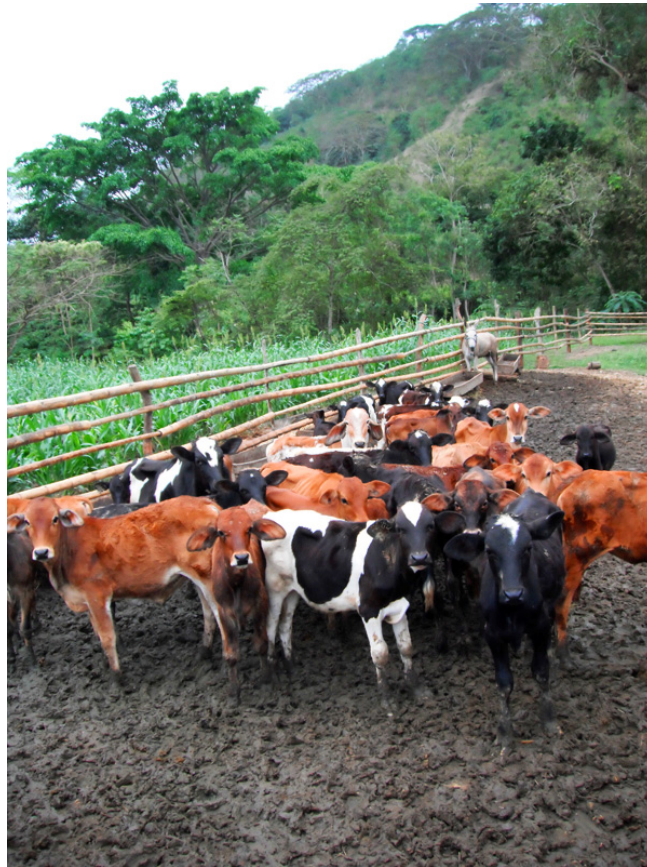
For each of the sample sites described above, I collected all available MOD13Q1 EVI data; that is, all images collected every 16 days for the span of 12 years. For each site, I determined the average EVI for the 9 or 12 pixels contained within the respective ROIs.



**Figure 5.1** Image corresponding to the MOD13Q1 tile containing the Río Muchacho site. It is composed of 9 pixels (0.48 square kilometers), and can be viewed more closely in the zoom insert.



**Figure 5.2** Image corresponding to the MOD13Q1 tile containing the Fundación Golondrinas site. It is composed of 12 pixels (0.64 square kilometers), and can viewed more closely in the zoom insert.



**Figure 5.3** At top, panoramic view of area adjacent to Río Muchacho (photo credit: Florence Audette). At bottom, livestock grazing as common land use among communities in the area (photo credit: Luke Philbert).



**Figure 5.4** At top, view of bridge over the Mira River connecting the Golondrinas communities of Espejo and Chinambí. At bottom, subsistence agriculture as common land use among communities in the vicinity.

## 5.4 Results

Figure 5.5 represents the fluctuations in vegetation cover for both Río Muchacho and Fundación Golondrinas sample sites. What is immediately evident is the extremely high range of seasonal variability, particularly for the Río Muchacho site. This should be attributed at least in part to the fact that this region is considered a transitional zone between Chocó moist broadleaf forests and tropical dry forests, and therefore dry seasons in or around the Río Muchacho project can be fairly drier than in other parts of Ecuador (roughly between the months of May and October).

However, the seasonal fluctuations and greenness lows for Río Muchacho do seem to have increased over time. This can only be corroborated with a study encompassing a broader scope of time, and could be a topic for further investigation. Another aspect worth mentioning is the abrupt increase in EVI during the beginning of the rainy season for Río Muchacho. In the span of 16 days, an almost 300% increase in EVI can be observed in some instances. On account of the overall absence of deciduous trees in this region, it is my assumption that this dramatic change in EVI represents the quick growth of pastures in some areas for livestock grazing. This assumption could be further supported by direct observations on the ground. One thing that is certain is that there has been reduced greenness within the Río Muchacho site in the last few years. This is suggested by the smaller spikes and lower numbers in EVI in recent times.

It is interesting to note that there seems to be an inverse EVI relationship between both sites. This is somewhat perplexing, given that both Río Muchacho and Fundación Golondrinas have rainy seasons corresponding to the months between December and May. However, Fundación Golondrinas may have sporadic rainfall throughout the year,

even during its “dry” season, whereas this is very uncommon for the region encompassing Río Muchacho.

Contrary to what is observed for the Río Muchacho sample site, there seems to be decreasing seasonal variability of EVI over time for the Fundación Golondrinas site. Again, this is only a conjecture; a study encompassing several more years would be necessary to prove that this trend is in fact taking place.

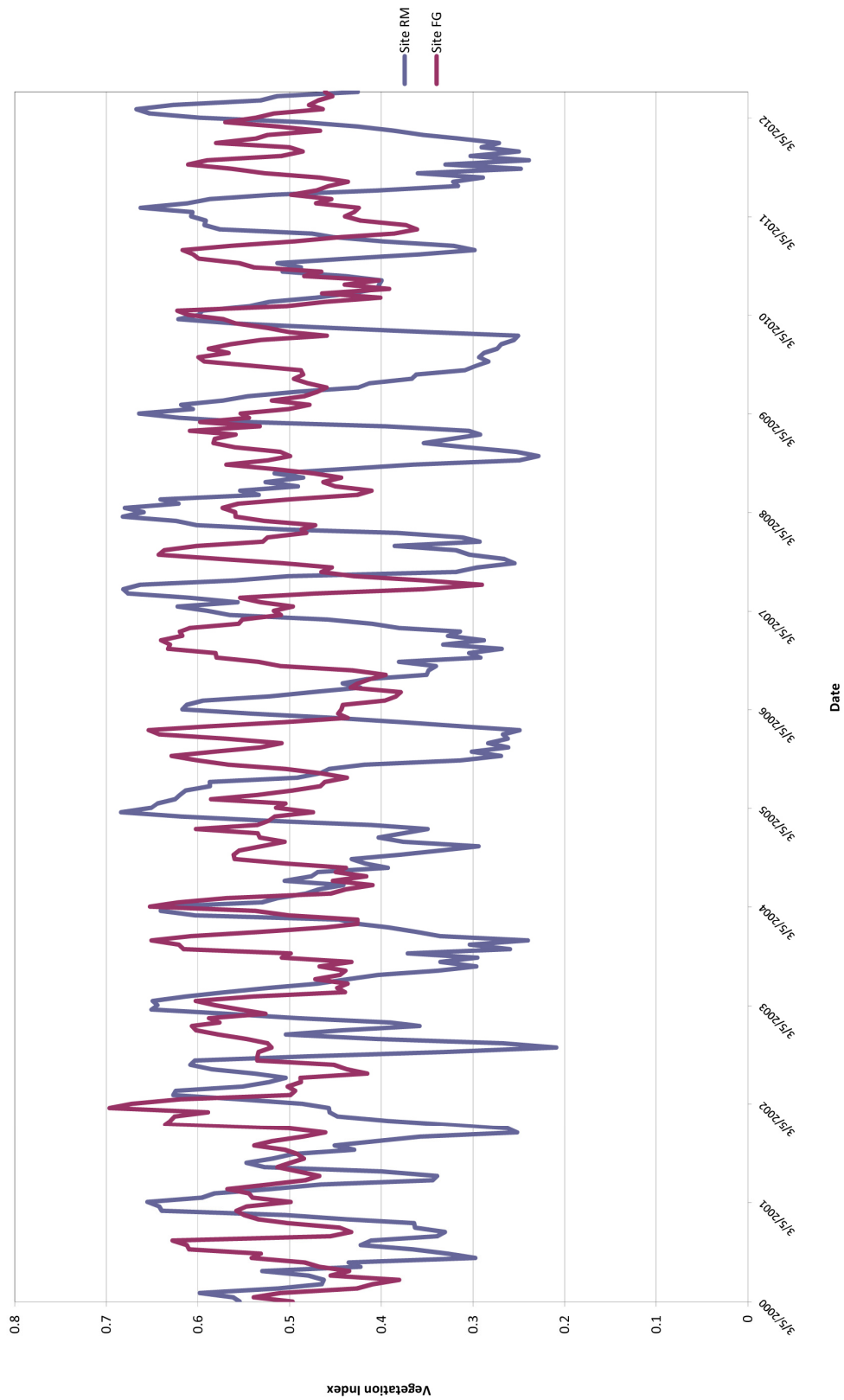
Tentative deductions derived from this analysis would be that little or no forest regeneration can be observed for the Río Muchacho site. If anything, dramatic and abrupt variations in EVI in extremely short periods of time seem to indicate the expansion of pasturelands in the sample ROI. Forest regeneration for the Fundación Golondrinas site is not clear; however, there does not seem to be increased deforestation in this sample site within the last several years.

Chapter Six builds upon the qualitative analysis described in Chapter Four and this chapter’s remote sensing analysis. The objective is two-fold: 1) to determine the efficacy of specific strategies undertaken by the case studies; and 2) to discuss factors of significance for organizations interested in forest corridor concepts for biodiversity conservation and sustainable rural development in the Ecuadorian Chocó.

Study site	Latitude	Longitude	mean EVI	mean SD
Río Muchacho	0°23'7.50"S	80°23'14.05"W	0.445247	0.070655
Fundación Golondrinas	0°49'7.50"N	78°9'21.23"W	0.512717	0.06563

**Table 5.1** Mean EVI (Enhanced Vegetation Index) and SD (standard deviation) for the two sites over the last 12 years.





**Figure 5.5** Changes in vegetation indices over time for both Río Muchacho (blue) and Fundación Golondrinas (red) sample sites. Time series was smoothed with moving window size of 3.

## **CHAPTER VI. IMPORTANT FACTORS FOR CONSIDERATION IN STRATEGIES FOR BIODIVERSITY CONSERVATION AND SUSTAINABLE DEVELOPMENT IN THE ECUADORIAN CHOCÓ**

One of the main objectives of this study is to determine what types of small-scale approaches and strategies work to achieve long term conservation and sustainable community development in the Ecuadorian Chocó. This chapter examines two important factors that come into play in discussions surrounding the viability of projects like Río Muchacho and Fundación Golondrinas, particularly in assessing the success of their strategies for biodiversity conservation and rural development. It is divided into four sections: 1) Ecotourism as conservation panacea for the Ecuadorian Chocó, 2) The role of globalization and social capital, 3) The importance of underlying outreach dynamics, and 4) Final considerations.

Sections 6.1 and 6.2 address the two prominent factors in discussions surrounding conservation strategies in the region, namely, ecotourism and local organization (“social capital”) within the context of networks linking to globalized markets. In addition to these elements, Section 6.3 addresses the related dimension of specific spatial dynamics between local community members and projects, which is also considered as a contributor to the overall efficacy of the aforementioned factors. Section 6.4 summarizes these factors and proposes priorities for effective conservation strategies in the Ecuadorian Chocó.

Even though numerous structural, human and environmental circumstances create a highly complex picture that ultimately guides the outcome of these particular projects, the present chapter constitutes an exercise in isolating what would appear to be two of the most prominent strategies adopted by one or both of the case studies, and which would, at

least in theory, have the most far-reaching impact on local development and conservation. Though at one level this could be viewed as a somewhat limited analysis on account of an “artificial” isolation of factors, the sole purpose of this section is to tease out selectively and dissect those of particular importance in somewhat of a more systematic fashion.

### **6.1 Ecotourism as Conservation Panacea for the Ecuadorian Chocó?**

All projects I visited during my fieldwork incorporated ecotourism – or at least the idea of ecotourism – to some degree or another within their strategies. Starting in the 1990s, there has been what would seem to be an exponential increase in the number of ecotourism projects not only in Ecuador, but throughout much of the Global South and particularly in areas of high biodiversity. Using the case studies represented by Río Muchacho and Fundación Golondrinas, this section analyzes whether ecotourism alone is a potentially viable strategy for conservation and sustainable development in this region.

Chapter One of this dissertation addressed the general issues surrounding ecotourism. Ecotourism can be considered an aspect of the broader notion of “sustainable” resource use for the preservation of biodiversity, and could in many instances fall under the previously discussed idea of co-management, which advocates participation and decision-making that is decentralized and shared between local inhabitants and other relevant interest groups. Most importantly, ecotourism has been touted as one of the most effective ways for local communities to profit from their environment and the biodiversity contained within it in a non-extractive, sustainable way, thus simultaneously promoting both environmental conservation and community development.

The relatively recent appearance of agri-tourism as conservation and development strategy in rural Ecuador is a phenomenon that begins to play into notions of biodiversity conservation as well as the idea that human-managed ecosystems are of significance in environmental conservation for creating matrices that can effectively sustain biodiversity. An offshoot of ecotourism, agri-tourism is gaining popularity throughout the world (not only in the global South), perhaps at least in part as a consequence of the growing interest in organic food and the Slow Food movement.<sup>26</sup> A great number of projects in Ecuador – including both Río Muchacho and Fundación Golondrinas – have incorporated agri-tourism in addition to ecotourism in their approach to sustainable community development and environmental conservation.

#### *Agri- and eco-tourism in Río Muchacho*

For Proaño and Mears of the Río Muchacho project, tourism constitutes their most important activity in terms of revenue. Guacamayo Tours, their agency located in the city of Bahía de Caráquez, is certainly the best-known tour operator in coastal Ecuador, and received its official ecotourism certification from the Ecuadorian Ecotourism Association and the Ministry of Tourism. As described in Chapter Four, Guacamayo Tours offers ecotourism packages that include trips and guided tours to islands off the coast of Bahía de Caráquez, whale and bird watching sites. The agency also offers various agri-tourism activities revolving around their Río Muchacho location, which seem to be the most profitable of any of their tour packages.

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<sup>26</sup> The Slow Food movement began in Italy in 1986 to counter the increased domination of fast-food chains and industrialized agriculture promoted within increasingly globalized and capitalistic food systems.

Agri-tourism promoted by Río Muchacho can take one of various forms. One of their most popular is the use of volunteers to work on their organic farm. The Río Muchacho project is one of the most publicized and visited agri-tourism sites of the country, and at any given time can house between five and twenty (and sometimes more) volunteers. These volunteers are, with little exception, foreigners – most of them visiting from various countries of Europe, North America, New Zealand, Australia and Japan. Volunteers pay \$365 for four weeks at the farm (including meals and housing), and during this time perform duties such as planting and harvesting crops, construction of farm infrastructure, feeding farm animals, teaching at the project’s environmental school, and mentoring fifth graders in the creation of their permaculture designs at home (see Chapter Four for more details). The greatest percentage of tourists visits the Río Muchacho project as volunteers.

Agri-tourism in Río Muchacho can also take form as shorter – and costlier – trips to visit the project site and its organic farm, as well as to participate in community activities. These tours last between one and three days, during which time visitors stay and observe work done at the farm, but do not perform any farm work themselves (unless they choose so). They are also taken on horseback by guides (the local men who are employed by the project) to other areas where they can take mud baths, swim in the river, and visit some remote household to gain some insight into more “traditional” ways of living in the region. A person taking this type of tour typically pays around \$165 for this package, and is the most profitable kind of visitor for the Río Muchacho project (taking into account the time and resources invested by the project). Many of these visitors also take Spanish lessons at the farm, and this significantly increases the cost of the tour.

Fewer visitors opt for this kind of itinerary. Even though their numbers vary considerably depending on the season, tourists who enroll in these shorter and more tailored trips average about four or five a week.

A third form of agri-tourism practiced at the Río Muchacho project consists of month-long intensive courses in permaculture and organic farming. These courses are offered three times a year, and are very popular with foreign tourists. Enrollment in these courses consistently exceeds their capacity of 20 students per class. The cost per person may vary slightly, but averages about \$1,200 for four weeks of instruction per student (including meals and housing). During this time, visitors learn specific agricultural practices, such as how to elaborate organic fertilizers, crop associations and rotations, worm farming, seed saving, principles of permaculture, apiculture, composting, among other things.

Ecotourism – particularly through its subcategory of agri-tourism – is the most important source of revenue for the Río Muchacho project.<sup>27</sup> A relatively conservative estimate of its gross income derived from ecotourism averages about \$117,000 for a typical year. This is a considerable amount when compared to other ecotourism projects in Ecuador, and especially in the region of the Chocó.

Given its remarkable success as an ecotourism enterprise, Río Muchacho could potentially serve as an ideal model of ecotourism as strategy for conservation and sustainable community development. However, based on the remote sensing analysis described in the previous chapter, there is little that would seem to indicate that there has

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<sup>27</sup> Other (less significant) sources of revenue for Río Muchacho include the sale of poultry and piglets to locals, using their prized boar for breeding with local farmers' sows, selling craftwork and stationery produced by their small recycled-paper company, EcoPapel, in Bahía de Caráquez, and tuition paid to them by locals whose children attend the project's environmental school.

been forest conservation or regrowth in the areas under the influence and incorporated by the project in the last decade. Rather, in recent years there have been more prolonged periods of exceptionally low forest biomass, which could be an indicator of overall biodiversity loss in the region. Using remote sensing of the Río Muchacho site alone as indicator, it would appear that the expansion of ecotourism in the Ecuadorian Chocó has had no significant positive – and in some instances, has maybe even had negative – effects on forest and biodiversity conservation.

In terms of community development, and based on the ideas espoused by advocates of ecotourism (Campbell 2002; Brandon 1998), the success of tourism by the Río Muchacho project would also theoretically imply that locals' quality of living should have improved since its establishment. This of course has to do more with the level of community integration and initiative within these projects than ecotourism itself. Despite assertions made by those running Río Muchacho that sustainable development is one of the fundamental objectives of the project, this does not appear to be the case. The point is substantiated by the qualitative analysis based on interviews with locals and observations made by the author and described in greater detail in Chapter Four. This also explains the apparent decline in seasonal forest cover over the years in this region: the communities it is purportedly reaching out to and who are benefitting from Río Muchacho's development program apparently are not following through with the project's objectives. It goes to reason that if the communities in question were taking initiative in – and felt that they were an integral part of – the project's endeavors, a different outcome in terms of forest cover would be observed.

*Agri- and eco-tourism in Fundación Golondrinas*

Ecotourism has always been an important component, at least in theory, of the Fundación Golondrinas project. María Eliza Manteca, founder of Fundación Golondrinas, first developed the project's ecotourism program in 1993. This was an attempt to sustain her project financially and to generate some alternative income for local communities, while at the same time promoting conservation of the region's cloud forests and watersheds.

Manteca established an official travel agency, Permacultura Cia. Ltda., in 1998. This agency arranged ecotourism packages to a variety of destinations, including the Amazon basin, Andes, and the Galápagos. However, most important were the trek and excursion packages to the Chocó itself, within the project's own Cerro Golondrinas cloud forest. Manteca herself would lead these tours, and any revenue made from tourism activities went to support the project's environmental education and conservation programs.

Originally, the Fundación Golondrinas tour agency was headquartered in La Casa de Eliza, the project's hostel in Quito. Considerably popular with tourists, the hostel's revenues were for the most part channeled directly into funding project activities. The added benefit of the hostel's location in Quito was that visitors wishing to explore other areas of Ecuador could be directed to the more remote site of Guallupe through Fundación Golondrinas' agency. This was also the case for project volunteers. During the time that La Casa de Eliza was operational, until 2007, Fundación Golondrinas received a somewhat steady influx of visitors. Though not quite matching the numbers of Río Muchacho, the Golondrinas project would house an average of eight visitors per month



(though specific numbers would vary depending on the season). Most of these visitors were volunteers for the project, performing tasks such as working with the schoolchildren of the various participating communities in environmental education, hosting community workshops, working on the project's model farms, helping build infrastructure for communities or the project, among other things. Volunteers typically worked with the project for a month, and paid approximately \$280 per month (including meals and housing), though costs per day would decrease with lengthier visits.

When Manteca closed down the hostel and its associated tour agency in 2007 to concentrate more fully on her work in Guallupe, the number of tourists and volunteers to Fundación Golondrinas plummeted. This, as described in Chapter Four, was compounded by Manteca's general lack of ability to maintain an online presence for her project. Also, her new political position as *teniente política* in the parish of La Carolina since 2010 has shifted her focus even more. In the last five years, the average number of visitors has dwindled to about seven per year (based on personal observations made in 2011). It is now rare for visitors to remain over two weeks. It could be estimated that total revenues from ecotourism to Fundación Golondrinas currently do not exceed \$1,000 per year.

Despite the current inability of Fundación Golondrinas to attract a significant number of tourists, Manteca has expressed a desire to be able to do so again in the near future. She recognizes that ecotourism potentially represents the most lucrative source of revenue for a project like hers. However, she has come to view ecotourism as simply that: revenue. It is a means to pay for infrastructure, school materials, community workshops, and other costs incurred by the project in order to meet its conservation and development objectives. There has been a shift in the way that Manteca views ecotourism in relation to

conservation. Within the context of her own project, Fundación Golondrinas, she no longer considers it an important source of alternative income for the local inhabitants in the region, nor the most direct way to achieve forest and biodiversity conservation (from personal interview with Manteca, 1/24/11). The two most important activities of the project are now environmental education and the establishment of farmer cooperatives for the sustainable production of coffee and cacao.

Based on the observations gleaned through the remote sensing analysis of this region described in the previous chapter, the dramatic decline in ecotourism by Fundación Golondrinas has not had a discernible impact on forest cover over the years. When comparing this site with Río Muchacho, it in fact becomes apparent that there are less dramatic seasonal differences in the areas under influence of Fundación Golondrinas. In other words, from a conservation standpoint, it would appear that biodiversity has been better protected in the Fundación Golondrinas project than in Río Muchacho. The differences, however, are not yet significant enough to derive a reliable conclusion regarding the exact difference in percentage of forest surface area lost to deforestation in the last years. Despite this, it is clear that ecotourism has not had much of an effect, in one way or another, on forest cover in these two regions.

### *Copycat projects*

Without doubt, using the concept of ecotourism alone as strategy for sustainable development and biodiversity conservation is not enough. As argued throughout this dissertation, it is of utmost importance that persons from local communities first take the initiative and regard themselves as integral parts of these schemes for there to be success in sustainable development and conservation via ecotourism.

That said, an interesting phenomenon involving imitation of what are perceived to be “successful” agri- and eco-tourism enterprises could potentially lead to interesting results in the future. During my visits to several other conservation projects throughout Ecuador I observed a distinct proliferation of ecotourism project “clusters” on an even smaller scale than sites like Río Muchacho or Fundación Golondrinas. Most of these micro-projects were initiated by individuals looking to participate in a perceived growing economy based on eco- and agri-tourism. They were often established by locals (but in some cases also by outsiders) in close proximity to larger, more established and well-known projects such as my two case studies. This would be presumably to attract the same tourists looking to visit places like Río Muchacho or Fundación Golondrinas.

Some of these micro-projects are more informal than others, but they are all characterized by their small scale, not exceeding an area of ten hectares, but for the most part averaging a couple of hectares per project. There was also a fairly wide range in the way those involved approached their project: some individuals who already had farms would paint signs at the entrance of their plots, designating them as “*fincas agroturísticas*.” They would diversify their already existing crops, and improve landscaping on their farms to make them more aesthetically pleasing to visitors (especially foreigners).

Other individuals have initiated their projects with the very deliberate purpose of creating sites dedicated specifically to eco- and agri-tourism. There are a few locals in areas adjacent to Fundación Golondrinas who have done this by taking advantage of new government programs offering low-interest loans and small grants (commonly averaging 1,000 USD) to Ecuadorian nationals who wish to invest in projects throughout the

country. These programs are mostly the result of the implementation of the Plan Nacional Para el Buen Vivir, managed by SENPLADES (Secretaría Nacional de Planificación y Desarrollo). I visited a couple of sites that were both located at less than a mile from Fundación Golondrinas. One was a project dedicated to sustainable production of farmed fish in artificial ponds (mostly tilapia and a couple of local species), and the other was a *finca agroecológica* (“El Paraíso”) that hoped to attract foreign volunteers much in the same way that Fundación Golondrinas had done.<sup>28</sup> The latter project was particularly interesting. It was owned by a farmer who had been granted some government funds and a loan to buy a single hectare of land by the Mira River. With the encouragement of Manteca, he designed a highly biodiverse and productive agricultural ecosystem on this relatively small parcel of land, and was in the process of building some cabins for potential tourists and volunteers. At the time of my visit, this project had just been launched, and until then no tourists had visited the site (it was also in a remote location and had not yet made its presence known to the public at large).



**Figure 6.1** Sign and map for Finca Agroturística El Paraíso, subsidized by SENPLADES

<sup>28</sup> Finca Agroturística El Paraíso also has a pond for the sustainable production of tilapia and recreational fishing.



**Figure 6.2** A view of the agricultural ecosystem managed by Finca Agroturística El Paraíso. High levels of crop associations: interspersed among native (and already existing) trees, it is possible to discern crops like coffee, plantains, papaya, and guava.

This is the result of a quite recent incentive policy for investment within the country, and it will be interesting to observe if small enterprises such as these become even more common. It should be noted that the projects I observed and visited were very much encouraged by the larger case study projects, and there was no sense of perceived competition among them. This was especially the case with microprojects near Fundación Golondrinas; Manteca assumed a very active role in encouraging locals to take advantage of the new investment incentives offered by the Ecuadorian government, and would even visit these projects to offer her expertise and advice on how to manage them better. This is of special importance now because of her prominent political role among these communities as well, and she is in an even more prominent position to encourage these types of small projects among community members.



**Figure 6.3** Manteca paying a visit to the owner of Finca Agroturística El Paraíso and his project.

The proliferation/clustering of these smaller “copycat” projects catering to agri-tourism could potentially have an impact on long-term biodiversity conservation and community development. Even though these effects have yet to be observed and quantified, the projects in question could serve to illustrate another less direct way in which the concept or idea of ecotourism (or more specifically in this case, agri-tourism) could be an asset to conservation and sustainable rural development. Projects such as these are leading local inhabitants to engage in more sustainable land/resource use and in the creation of clusters of biodiversity-promoting agroforestry, rather than resorting to cattle ranching, oil palm cultivation, or other more detrimental agricultural practices.

It must be pointed out, however, that these microprojects are all being started by *community initiative*, which – as has been argued throughout this dissertation – is one of the most important driving forces behind a successful scheme of both biodiversity conservation and sustainable development.

## **6.2 The Role of Globalization and Social Capital**

As stated previously, community initiative is of fundamental importance in the implementation of strategies for biodiversity conservation and sustainable rural development, and can take place as a result of a variety of factors. In order for the momentum to participate in sustainability projects to occur, incentives must exist for those who choose to do so. Stated broadly, individuals will generally seek to participate in a type of activity or endeavor that – in addition to many things – conveys the potential of providing them with some kind of sustained benefit or profit. For example, as in the case of the smaller “copycat” projects described in the section above, longer-established model projects such as Río Muchacho and Fundación Golondrinas are encouraging local

populations to engage in more sustainable land uses via the creation of *fincas agroturísticas*. The possibility of attracting funding from government agencies like SENPLADES as well as revenue from future tourists and volunteers are some of the most important driving forces behind this upsurge in agri-tourism ventures.

In addition to eco- and agri-tourism as possible sources of profit for inhabitants of the Ecuadorian Chocó, the potential for involvement in global markets for the sustainable and free-trade production of crops like coffee and cacao has become a source of significant community initiative, specifically within the Fundación Golondrinas project. In Bebbington's study on "islands of sustainability" in the Ecuadorian and Bolivian Andes, the author emphasizes that in order for there to be sustainable intensification of rural land use promoting improved livelihoods for Andean communities as well as a decrease in environmental degradation, it is useful to promote the manufacture of high-value products for middle class and elite markets, as well as the establishment of local organizations and networks ("social capital") linking to non-local institutions (Bebbington 1997). The efforts undertaken by Fundación Golondrinas in recent years to create the ACBG (as described in Chapter Four) and to establish direct market relationships between the farmers cooperative and outside buyers echo recommendations by Bebbington.

#### *Local organization and networks*

In her local role as founder and coordinator of the coffee growers association (ACBG), Manteca's duties have been two-fold. First, she has worked to organize local, unified networks of farmers who inhabit several different communities in the lower Mira region. Through participation in the ACBG, individual farmers have been able to



strengthen their presence and ability to access and negotiate with outside buyers of coffee and cacao and institutions that could have a significant impact on their agricultural intensification. Second, also in her capacity of coordinator, Manteca has established an important working relationship between ACBG farmers and the Ecuadorian government's SECAP program. Through resources provided by the SECAP in the form of professional training, the ACBG has been able to improve agricultural technologies that enhance local production of coffee in a manner that is sustainable and conducive to an increase in biodiversity through the creation of a better quality matrix via agroforestry.

### *International linkages*

The second dimension of this work by Manteca and Fundación Golondrinas has been to secure networks with outside institutions and buyers of sustainable and fair trade coffee and cacao. As presented in Bebbington's study, observed "islands of sustainability" in both Ecuador and Bolivia have invariably relied on high-income and relatively niche markets (1997). Though coffee and cacao are highly volatile commodities in the world market, growing demand of equitable and "green" versions of these crops have the potential of providing lucrative enterprise possibilities for organized farmer groups like the ACBG, particularly if they have direct links to the buyers without relying in market chain intermediaries.

The aforementioned elements of local "social capital" – namely, organizations and networks – serve the crucial function of helping local farmers "renegotiate relationships with the market, state and other civil society actors" (Bebbington 1997). From my observations, this increasingly seems to be the case in the farming communities participating within the Fundación Golondrinas project and its affiliated ACBG.

Furthermore, in localities such as Espejo, Río Verde and Chinambí, the farming families participating in this project have clearly begun to diversify their farms and overall agricultural production, following agroforestry models proposed by Manteca and SECAP technicians. There has been a shift from widespread swidden agriculture in these areas to more sustainable and organic designs of recycling and composting organic waste, which according to farmers has considerably improved soil fertility (from personal interviews conducted between 6/28/11 and 7/2/11). The establishment of local seed banks within the network of ACBG farmers has also improved their access to replacement seeds in a significant manner.

Again, based on the remote sensing analysis discussed in the previous chapter, it would appear that strengthening local organizations and networks – social capital – and direct links to outside entities could potentially have a positive effect on matrix diversity in the region. It is important to note that deforestation rates along the lower Mira valley and adjacent areas were among the highest in Ecuador, particularly over ten years ago. Forests in the region had been reduced to less than 10% of their original cover by 1999 (Sierra 1999). However, seasonal differences in forest cover between 2000 and 2012 in the areas working with Fundación Golondrinas are less dramatic than those corresponding to the Río Muchacho project, which might hint at a greater success relative to biodiversity conservation by the former in the long run. Only a longer-term study of these two projects will ultimately offer the possibility of determining their concrete impact on forest cover.

In spite of this, based my fieldwork, it appears quite likely that there will be an expansion of forest cover in the future under the influence of the Fundación Golondrinas

project. By 2011, at least 80 farmer families in various different localities along the lower Mira region were actively participating in agroforestry schemes as a result of their membership with the ACBG. Furthermore, it was clear that this agroforestry movement by members was a relatively recent phenomenon; an increasing number of farmers were demonstrating interest in the project, and the possibility of being able to achieve some kind of material benefit through more sustainable agricultural practices was the most observable incentive for this interest.

If the ACBG's links to outside markets prove to be enduring and replicable, a reasonable expectation would be that a greater development of "islands of sustainability" would be observed in this region in the future. This could potentially lead to the creation of a matrix of a quality that would guarantee a significant increase in biodiversity between larger Chocó forest fragments, while at the same time providing local farmers with a more sustained source of income.

In contrast to the strengthening of social capital and direct market links brought forth by Manteca and Fundación Golondrinas, the Río Muchacho project has not participated in community efforts of this nature. Other than the projects presumably undertaken by students in their last year of school, there has been little effort or incentive for farmers in surrounding communities to participate in agroforestry or even crop diversification. This makes it more difficult to envision increased biodiversity conservation in lands that are not under direct ownership by Proaño and Mears from Río Muchacho.

### **6.3 The Importance of Underlying Outreach Dynamics**

There are significant discrepancies between the spatial approaches in the community outreach activities undertaken by these two case studies. Even though the broader notions of social capital, interconnectedness with outside markets and ecotourism have been examined as having potentially critical roles to play in biodiversity conservation and rural development in the Ecuadorian Chocó, I would argue that specific local approaches add an important dimension to these factors.

Figures 4.9 and 4.10 represent the flow of information and resources between local community members and the case study projects. In the case of the Río Muchacho project, it remains quite static, whereas there is a significantly more complex spatial dynamic in this flow of resources, information and feedback within the Fundación Golondrinas project (explained in greater detail in Chapter Four). Even though both projects undertake work in environmental education, establishing model farms and providing workshops on composting, waste management, and watershed protection (among other things), their approach to this work and the related dynamic with local community members differ significantly. One of the most dramatic – and important – differences between Río Muchacho and Fundación Golondrinas is the physical location in which these outreach efforts take place. In Río Muchacho, most if not all of the activities are concentrated around the project itself. In contrast, Fundación Golondrinas takes a more active role in extending outreach and services to all the communities within the lower Mira region (which is no small feat).

A second (related) difference of significance between the two case studies is the pattern of information circulation and feedback between community members and

projects. In Río Muchacho, the source of project initiatives and flow of information is unidirectional (from project to local inhabitants), whereas in Fundación Golondrinas this dynamic is more complex, with mutual feedback between community members and project. It is particularly important to emphasize that most programs and services provided by the Golondrinas project are initiated by local members of the surrounding communities. Much in the same manner that there is a flow of information and resources from the Golondrinas project to locals, there is also a flow of information, feedback and project proposals from locals to the project. This pattern of mutual feedback and initiative development is absent between the Río Muchacho project and its surrounding local communities.

#### **6.4 Final Considerations**

Based on the above discussion, this study proposes that ecotourism *per se* – and its subcategory of agri-tourism – though generally desirable for its potential to provide substantial revenue to projects like Río Muchacho and Fundación Golondrinas, cannot be considered in and of itself as the most effective approach for jointly achieving biodiversity conservation and sustainable rural development in the Ecuadorian Chocó, despite what has been written (Campbell 2002; Brandon 1998). Nonetheless, the ecotourism aspect of well-established case studies such as the ones examined in the dissertation could conceivably have some indirect impacts on diversifying matrices through the implementation of agroforestry schemes in smaller “copy-cat” enterprises (specifically, *fincas agroturísticas*) adjacent to the original projects.

As reiterated throughout this study, the most critical factor in determining a project’s success relative to its purported goals of biodiversity conservation and

sustainable rural development is the sense of community involvement, initiative, integration and empowerment within the project. Related to this concept is the notion of being able to profit from sustainable activities such as agroforestry (and even ecotourism). Members of local communities need to derive sustained benefit/profit from such activities, and in this sense the strengthening of social capital, local organization and reliable networks linking to global markets is perhaps the most important factor to consider. Ecotourism can be seen as a secondary aspect that may or may not fall under this broader category. As long as the practicality of following biodiversity conservation schemes can be discerned by local community members, their initiative and integration within these projects can be guaranteed.

A related consideration is the added spatial dimension of outreach activities between project and local community members. This, in conjunction with the flow and distribution patterns of information, resources and feedback between these two parties, are elements with significant impact on the efficacy of the work undertaken by the projects. The subject is, however, complex, and this chapter represents the beginning of an attempt to investigate strategies for both biodiversity conservation and sustainable intensification of rural land use in the Ecuadorian Chocó.

## CHAPTER VII. CONCLUSION

This dissertation has identified some of the processes with ostensibly the most potential for effecting enhanced biodiversity conservation and sustainable rural development in the Ecuadorian Chocó. These have been examined at local scales, which could conceivably have positive impacts throughout the region as a whole. Of critical importance is the need to engage the epistemological frameworks underlying historical and current discourses surrounding conservation and development.

Despite current trends in conservation efforts to incorporate agroforestry and human-managed systems for the promotion of biodiversity, an internalized traditional Western conservation notion remains in which there is a strong bias towards what are sometimes referred to as “pristine” forests. There are still many who view primary forests as seemingly untouched and “natural” and as having more intrinsic value than anthropogenic forests and ecosystems, even though the latter play an increasingly important role in sustaining biodiversity.

The present study attempts to make an epistemological departure from this enduring bias in traditional Western ideas of conservation by finding theoretical underpinnings in matrix ecology, as exemplified in work by Vandemeer and Perfecto (1997, 2001). It has done so by taking a look at conservation and community development efforts that are already taking place at the micro-scale in the Ecuadorian Chocó, examining factors that appear to work – as well as others that do not – and their potential for promoting a higher quality matrix (and therefore increased biodiversity) in the region.

Even though the overall Chocó eco-region within Ecuador is currently facing rapid deforestation rates and a severe biodiversity crisis, the boom in small-scale, local projects promoting forest regeneration, eco- and agri-tourism, environmental education and sustainable community development may have an unexpectedly high impact on matrix diversification. However, it must be emphasized that although there are now a multitude of projects of this sort – all having similar stated objectives of conservation and community development – they are not all the same. This is something that has been made clear through observation of the two case studies presented in this dissertation. These differences have been helpful to glean some basic insights into what could make a project more successful in achieving its objectives.

### **7.1 Factors to Consider**

At the most basic level, any program aimed at promoting both biodiversity conservation and sustainable community development must count on the earnest and interested participation of local community members. There must be an overall sense of community initiative, empowerment and integration within these projects, be they initiated by the community members themselves, by outside institutions, or as the product of collaboration between different parties.

In order for locals to take initiative in these projects, there must be an obvious and palpable practicality in their participation. This is especially true in the case of communities where sustainable living and agricultural practices are no longer the norm, and where land tenure patterns have led to single-family farms rather than communally-held lands. In many cases, it has been important that local community members be able to discern sustained, long-term benefit or profit from these projects in order for them to



participate within them – and thus qualify such projects as successful. This dissertation examined a couple of the most prominent factors in this process: ecotourism and social capital within the context of networks linking to globalized markets. An additional element of importance was the related dimension of the nature of spatial dynamics between the projects and their respective community members.

Throughout this study, special attention has been given to the topic of ecotourism and its subcategory of agri-tourism. This has been primarily in response to the currently widely-held view of ecotourism as the ideal model for non-extractive use of natural resources, and is therefore the most sustainable form of joint conservation and community development ventures. Ecotourism may indeed have the potential to provide significant revenue to projects, and this is illustrated particularly well in the case of Río Muchacho. In some cases, it has also had interesting effects in the creation of smaller “copy-cat” projects in agroforestry. However, the manner in which an ecotourism enterprise is managed may be an even more important factor in determining the success of these projects relative to their purported goals. The concept of ecotourism *per se* cannot be considered the most effective way to achieve both biodiversity conservation and sustainable rural development in the Ecuadorian Chocó.

A second factor of significance has been the strengthening of social capital, local organization and reliable networks linking farmers more directly to global markets. This, as observed by Bebbington (1997), has been of crucial significance in creating “islands of sustainability” throughout rural Andean areas. As observed in the ACBG, the farmers’ association created by Eliza Manteca/Fundación Golondrinas and with help from the government agency SECAP, much has been done to improve the organization of local

farmers and allow them to renegotiate their relationships with the market and other outside actors. In the effort to produce high-quality, sustainable coffee and cacao to national and international niche markets, members of the ACBG have begun to follow agroforestry models put forth by Manteca (Fundación Golondrinas) and other SECAP technicians. Observations made in this study would appear to indicate that there is great potential for improving and diversifying the matrix through the agroforestry practices encouraged by this project. Again, a longer range study of the impacts of these activities will better offer concrete conclusions regarding impact on overall forest cover in this particular area.

In addition to the aforementioned factors of ecotourism and social capital and networks, the contrasting case studies examined in this dissertation reveal the need to structure any program within an appropriate local spatial context of outreach activities, as well as to maintain a multilateral exchange of information, resources and feedback between local community members and their respective projects. This is of critical importance in creating an environment conducive to increased community participation and empowerment within the projects' programs.

In any discussion surrounding conservation and community development, it is also important to add that care should be taken in not adopting a generalized image of communities as small and homogeneous spatial units (Agrawal and Gibson 1999). This has often been a tendency in conservationist thinking, because it permits a collective approach to the complex socio-political aspects of conservation, in what Sundberg (1998) refers to as the "depoliticization of conservation." Even though the overarching goal may be that of biodiversity conservation and sustainable development in the Ecuadorian

Chocó as a whole, projects must adapt to the micro-scale and local contexts throughout this region in order to be effective in the long run.

## **7.2 Additional Long-Term Considerations**

### *Environmental education*

In a year of observing and working among different local projects aimed at promoting biodiversity conservation throughout the Chocó eco-region and elsewhere in Ecuador, I noticed much emphasis was given to the importance of environmental education for children. Every project coordinator interviewed for this study considered environmental education to be the most important long-term strategy for conservation in their region.

Darío Proaño from Río Muchacho asserted that environmental education is “the most consistent process whereby the project will be able to change the current ways in which the land is managed” (from interview with Proaño, 8/31/10). Eliza Manteca from Fundación Golondrinas echoed this by stating that the only long-term hope the forests of the Chocó have is that young children be educated in the importance of managing and protecting the forests and watersheds of their region. “We cannot rely on the adults to effect lasting changes; we cannot change the way they’ve been thinking their entire lives, unless they can somehow profit from conservation. The children, on the other hand, can be taught to think about the intrinsic importance of their environment, and this is how conservation and sustainability will be achieved in the long-term” (from interview with Manteca, 1/24/11).

In another part of the Chocó, within the Mache-Chindul reserve, I spoke to biologist Mónica González, who had dedicated the last ten years of her life to a now

defunct environmental education program for children in communities living within the reserve. This program was composed of a network of 17 schoolteachers from 14 different communities backing the initiative. González lamented that there was still “much work to do” with the adults in the community, and that there was a significant divide between the ways in which adults and children viewed nature (from interview with González, 11/8/10).

All three coordinators interviewed provided interesting anecdotal accounts of the ways in which children receiving environmental education were beginning to confront their parents and other adults about environmental issues. There was Jair, from a Río Muchacho community, who convinced his father to stop burning garbage and to begin a compost pile instead; there were the children of a Mache-Chindul community who reprimanded the adults in their community for cutting down a tree on school grounds; or Edgar and Danilo, former students at the environmental school at Río Muchacho who wanted to farm in a more sustainable way, and challenged their father to do so (from various interviews conducted between 2010 and 2011).

Environmental education in schools throughout the communities of the Ecuadorian Chocó will certainly be a factor to consider in any future long-term studies in this region. From the examples provided by this dissertation’s two case studies, this is also an endeavor that can be approached in very different manners (see Chapter 3). However, at this point, observations remain at the level of anecdotal accounts, and further conjectures can only be made after several more years among communities where the environmental education programs are effectively sustained. It could also potentially

serve as a basis of a more comprehensive longitudinal study of some very specific communities in the region.



**Figure 7.1** Schoolchildren from two different communities in the Golondrinas-managed region volunteering to plant citrus trees in their gardens.

*The prospect of a wildlife corridor*

Returning to the original premise of my fieldwork in the Ecuadorian Chocó, a relevant question would be whether the observations made in this study – and matrix ecology in general – could contribute to the establishment of an effective and *realistic* wildlife corridor in the region between Mache-Chindul and Cotacachi-Cayapas. I would argue that the approach adopted in this study would in fact be the only possible way to meet the proposed corridor objective. The matrix between the two major ecological reserves, as well as a significant portion of the reserves themselves, are inhabited by people. Ignoring this fact and focusing corridor efforts solely on uninhabited areas suitable for reforestation programs is unrealistic and can only result in a costly misuse of effort and resources.

A wildlife corridor project would inevitably require a multi-scalar approach in its design. In addition to searching widely for areas containing viable forest fragments in successional stages embedded within the matrix, studies must be made on the ground at a very local scale visiting communities where agroforestry could realistically be practiced. Given the increasing presence of local and community-run projects aiming to promote biodiversity conservation and sustainable development in the region, these should also be incorporated (and perhaps even given priority) within a larger scope of linked territories of human-managed ecosystems with the capacity of providing diversity to the matrix.

Taking into consideration local environmental, social and structural contexts, if community outreach activities are undertaken by outside entities (such as an international conservation NGO, for example), there must be a clear and discernable potential for local community members to derive some kind of practical benefit or sustained profit from

participating in a wildlife corridor project. Social capital must be strengthened, particularly in the form of local organizations and networks. This could be of critical importance regardless of the specific enterprise focus within the community (e.g. eco- or agri-tourism, farming cooperatives catering to niche markets, etc.). If agroforestry is to be practiced, efforts must be made to establish direct linkages to outside markets, as in the example of ACBG's sustainable coffee production for elite and niche markets in Ecuador and the rest of the world. Training in this regard should also be provided if needed, such as that which has been provided by the SECAP, in association with Fundación Golondrinas, to the ACBG. Additionally, attention must be given to the long-term viability of any project of this sort. Following the advice of project coordinators with much experience in this region, efforts to establish an environmental education program among children from all communities involved could prove to be of significant long-range impact.

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