CHAPTER 1: Introduction

1.1. Research Project

The creation of protected areas had for a long time been the preferred approach to biological conservation across the world. Ecologically important and sensitive areas are placed under management plans that tend to limit human development activities in them. Although often challenged on ethical grounds, this approach has managed to place within some type of protected area[1] more than 12 million km^2 worldwide (Boukhari 2000). Yet, increasing pressure from the ever-growing human population has converted many of these areas in conservation "islands" surrounded by often-incompatible land uses. This pattern is especially apparent in the tropics, where the world's biological diversity and human population is concentrated. Even in Costa Rica, considered a leader in the field of tropical conservation, protected areas are threatened by increasing habitat fragmentation and isolation resulting from deforestation and agricultural land use practices. In response, in Costa Rica and other parts of the world, new conservation models are applied where human development and conservation objectives are deemed compatible and are merged together in integrated conservation and development projects (ICDPs). Buffer zones are often designed around protected areas as part of ICDP initiatives.

This research initiates and examines the process of designing and managing a buffer zone for Los Cusingos Neotropical Bird Sanctuary within the ICDP paradigm, as part of the broader Las Nubes Conservation Program. The research also explores the role of community participation in establishing the buffer zone.

[1] Under the 1992 Rio Convention, a protected area is "a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives"

There are two central questions that the research addresses:

1. What are the values and the challenges of designing a buffer zone on privately owned agricultural land?
2. How does community participation in buffer zones – and in general ICDPs - affect project success?

The main objectives associated with the research questions are:

- To examine the feasibility and conservation value of a buffer zone for Los Cusingos.
- To develop recommendations for the design and management of a buffer zone in the area.
- To develop a common vision between the communities within the Las Nubes – Los Cusingos corridor.
- To gather existing ecological, social, and economic information of the study area and develop a data base management system to set the foundation for the establishment of such a buffer zone.
- To draw larger conclusions on the value of community participation on ICDP initiatives.

The major paper's results provide valuable insight to the research questions in the form of a case study. It is the intent of the major paper to present the ICDP community with helpful suggestions for the improved design of ICDPs in the broader region.

1.2. Research Context

This section presents the research context at the Faculty of Environmental Studies (FES) within which the research fieldwork in Costa Rica was conducted and this major paper prepared. The major paper is part of a series of MES research projects that have been conducted in southern Costa Rica in association with FES's "Las Nubes Center for Neotropical Research and Conservation." Most of these projects were part of the research center's major research initiative, referred to as the "Las Nubes Project."

Las Nubes Project

Since 1998, the Faculty of Environmental Studies (FES) at York University has had a formal partnership with the Tropical Science Center (TSC), a non-profit ecological research and conservation NGO in Costa Rica, founded in 1962. This partnership was in part initiated as a result of Dr. Woody Fisher's, a Toronto physician, 1998 donation to York University of 128 hectares of tropical forest – known as Las Nubes (The Clouds) – in the El General valley of Southern Costa Rica (Figure 1.1). Since 1999, FES and TSC have initiated several joint conservation projects and twelve graduate students have completed their master's research in the Las Nubes region. This close partnership is known as the "Las Nubes Project."

The objective of the Las Nubes Project is the protection of regional landscape-scale biodiversity through the ecologically sound agricultural practices (particularly in the prevailing coffee farms), a system of privately owned reserves, community participation, environmental education, and local sustainable community development. The core of the landscape approach to biodiversity conservation consists of the established Las Nubes Biological Reserve, Los Cusingos Neotropical Bird Sanctuary (which is owned and

managed by TSC), and the Peñas Blancas River sub-watershed that incorporates the two protected areas. In this partnership, the TSC has been instrumental in providing infrastructural, methodological, and logistical support to field researchers while The Fisher Fund for Neotropical Conservation was established to finance infrastructure and graduate research work through fundraising efforts.

Past MES research has in part focused on examining the social, economic, and ecological effects of various coffee production systems in the region. These projects have developed a wealth of information on land use practices and local communities, which is proving invaluable to new researchers. This major paper was designed having in mind existing knowledge and future needs of the Las Nubes Project. It should not be examined in isolation, since it is unlikely that the given research objectives could have been pursued and accomplished within the given time frame in a previously unstudied area.

The major paper examines the design process of a buffer zone for Los Cusingos Neotropical Bird Sanctuary. Los Cusingos is one of the core components of the Las Nubes project, situated at the lower end of the Rio Penas Blancas sub-watershed. Its protection status is in recognition of the fact that Los Cusingos is the last lowland tropical semi-deciduous forest in southern Costa Rica and one of the few remaining forests along the Pacific slope of Central America. Satellite images of the region indicate increased encroachment of development and agriculture around Los Cusingos over the past twenty years. In fact, the seasonally dry tropical forest has been identified as the most threatened ecosystem in American tropics (Janzen 1983). Preserving the genetic value of Los Cusingos, as a source of the gene pool of tropical flora, is essential for future restoration of degraded landscape in the region. In addition, Los Cusingos provides important habitat

both for resident tropical birds that migrate seasonally between higher and lower elevations and Neotropical migrants that summer in North America.

1.3. Organization of Major Paper

The introductory chapter of the major paper – Chapter 1 – presents the central questions addressed through this research. This chapter also discusses the close research context within the research should be viewed – The Las Nubes Project. The rest of the major paper is divided in two parts. Chapters 2-4 provide the framework and background for the research. Specifically, Chapter 2 discusses the new conservation paradigm – Integrated Conservation and Development Projects (ICDPs). Chapter 3 explores the history and emerging patterns of community participation in conservation, emphasizing on ICDPs. Chapter 4 provides an in depth description of buffer zone design, management, benefits, and constrains. Chapters 5-7 examine the fieldwork component of the research conducted in Costa Rica. Chapter 5 describes the research site and the methods used for community meetings, informal interviews, and the development of the database system (DBMS). Emphasis is put on the organization and implementation of community meetings and workshops. Chapter 6 presents and discusses the results of the research – the development of a common vision for the region, issues raised in the community meetings and interviews, and the base data generated for future projects. Chapter 7 concludes the major paper and provides recommendations for the buffer zone design and management, future participatory projects within the region, and the use of the common vision developed. Finally, it discusses future research needs in the area.

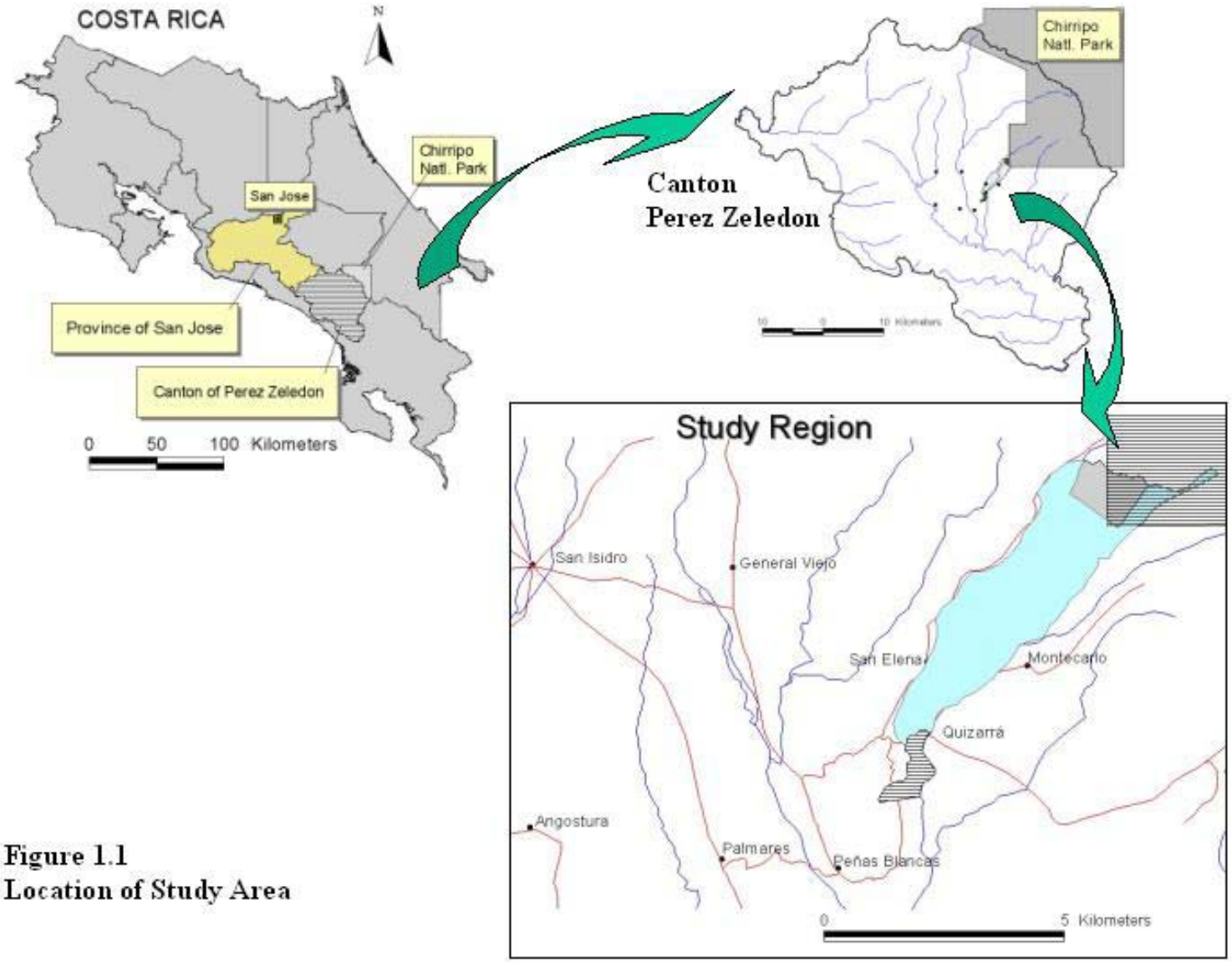


Figure 1.1
Location of Study Area

CHAPTER 2: Integrated Conservation and Development Projects

> *"...in the future protected areas will have to be linked more effectively to sustainable development. [...] A key challenge is to find ways of expanding protected areas without [...] increasing hardship for indigenous peoples or clashing with the legitimate aspirations of other human communities."*
>
> - Nigel Dudley et al.

2.1. Traditional Conservation Approaches and the New Paradigm

The rationale for efforts to conserve the biological diversity of this world does not warrant much of a debate. Whether we value biodiversity because of the "unmined riches" that we may discover in plants and animals, the ecosystem processes supported by it (like climate patterns, soil formation, and water quality), the potential for new food sources, or simply for aesthetic and cultural reasons, there is little argument that we depend on biodiversity, on one way or another, for our survival and quality of life.

Historically, biodiversity conservation has been pursued through a strict preservation approach, where protected areas were established to secure areas from human development. However, this "fences and fines" approach is proving to be insufficient to maintain biodiversity in the long run (Newmark and Hough 2000, Dudley et al.1999, McLarney 1999, Gezon 1997, Alpert 1995). Edge effects diminishing the effectiveness of existing reserves, difficulties finding new suitable and affordable land for protection, and increasing human pressure for utilization of protected areas and the adjacent lands, are only a few of the problems the "fences and fines" approach is facing (Newmark and Hough 2000, Medellín 1999). Clashes between the needs of conservation biology and people have led to a "people vs. parks" dilemma. It is now widely recognized that in order for protected areas to expand and connect with each other, protected area management has to develop cooperative relationships with local communities. As the

introductory quote by Dudley et al. states, conservation biology has to be linked to sustainable development (1999), taking into account local people and their needs for health, food, shelter, and financial security.

Over the past twenty years, a new paradigm for the protection of natural areas has emerged, one that attempts to reconcile natural resource use and conservation (Kremen et al. 1999, Alpert 1995) - *integrated conservation and development*. The integrated conservation and development (hereafter referred as ICDP) approach combines objectives from rural development and protected area management, and it is based on the hypothesis that conservation and development are *mutually* dependent rather than inherently conflicting (Alpert 1995). The field applications of the theory are usually referred to as Integrated Conservation and Development Projects or ICDPs.

This chapter briefly reviews the history of the ICDP concept, the rationale for its recent popularity, and ICDPs' structure. It then concentrates on evaluation of current ICDPs' success, constraints to their success and progress, and suggestions for overcoming the difficulties and achieving the desirable future. Finally, the chapter concludes with an examination of Costa Rican case studies, and a review of the Las Nubes project in terms of ICDP theory.

2.2. History of ICDPs

Even though efforts to link wildlife conservation and local development in a few protected areas in Africa date back to the 1950's (Newmark and Hough 2000), the ICDPs approach to conservation became widely popular only in the 1980's and 1990s. ICDPs were not the first attempt to "incorporate the needs and aspirations of local residents in the management of parks and reserves (Alpert 1995)" either. In 1970's, UNESCO's Man

and the Biosphere program attempted to reconcile conservation and development by separating them in space through the creation of Biosphere Reserves. In the same way that commercial, industrial, and residential uses are zoned within cities, Biosphere Reserves were designed to have core and buffer zones where different levels of human activities are allowed.

In 1980, the World Conservation Strategy addressed the practical difficulties of the Biosphere Reserve approach and suggested, for the first time in an international influence report, that conservation and development "should be directly linked, such that each fosters the other (Alpert 1995)" (IUCN 1980). Since then, funding organizations such as the World Bank and IMF have supported the ICDP theory extensively. A recent review showed that more than 50 ICDPs have been established in more than 20 countries (Newmark and Hough 2000), but the number is likely much higher.

2.3. Rationale for ICDP popularity

The ICDP theory has gained considerable popularity among both conservation and development advocates, despite the fact that, as discussed later on, the success results reported thus far from the field have not been very promising. Some reasons for the popularity of ICDPs are discussed briefly in this section.

- Across the globe, wildlife populations have been declining at an alarming rate, primarily because of habitat loss (Newmark and Hough 2000). According to Kiss (1990), over 65% of Africa's wildlife habitat has been lost due to activities "fueled" by human population growth and poverty (i.e. agricultural expansion, deforestation, overgrazing). Considering the human "underlying determinants" of the habitat loss,

the World Conservation Strategy argued that the linkage between conservation and development is rational (IUCN 1980).

- The increasing ecological isolation of existing protected areas has led many protected areas to exist as "islands" amid areas where land-use changes have been profound (Dudley et al. 1999), severely affecting their ability to conserve biodiversity. Establishing new protected areas is becoming ever more difficult. Recognizing these problems, many conservation scientists believe that the only way to enlarge and link the existing protected areas network, development and conservation needs have to be integrated – therefore embracing the concept of ICDPs (Newmark and Hough 2000).
- ICDPs are seen as sensitive to issues of social justice. Many donors consider ICDPs as a means to help and develop support with the local population, which often bears much of the social and economic costs associated with protected areas (Newmark and Hough 2000).
- Finally, as it is becoming increasingly clear that past methods of protected area management have been ineffective in protecting biodiversity and gaining local communities' support, ICDPs are seen as an attractive, viable alternative (Newmark and Hough 2000).

2.4. Defining ICDPs

2.4.1. Definitions

In reviewing related literature, it is quickly noted that there is not one universally accepted definition for the ICDP approach to conservation. Hughes and Flintan (2001) describe ICDPs as having a "working definition" that is emerging as the field progresses. A high number of projects, with great design variation, have attempted combining local

development and biological conservation in one way or another. Many of them claim to be ICDPs. Terms such as community-based conservation (CBC), community-based natural resource management (CBNRM), community wildlife management (CWM), people-centered conservation and development, and eco-development often are presented as equivalent to ICDPs. Clearly some of them are, but not all of them. There is value in a broadly accepted definition for the term. This section discusses a few definitions and selects/recommends one that is used for the purposes of this paper and the Las Nubes Project.

Recently, a prominent author suggested that ICDPs should be defined as "an approach that aims to meet social development priorities and conservation (Worah 2000)." Personally, I do not agree with the broad aspect of such a definition and I share the concerns of Hughes and Flintan (2001) that accepting it would "indicate a complete convergence with sustainable development thinking, which seeks to address sustainable rural development in general." The emphasis of an ICDP definition should clearly indicate that it is foremost a conservation biology approach. The integration aspect of the concept involves the reconciliation of conservation and development objectives at the level of the overall goal with primary goal of biological conservation (Franks 2002). Projects that merely mix "conservation" and "development" activities at the implementation level – but not the conceptual – are not true ICDPs.

Further literature suggestions include the differentiation between 1st and 2nd and 3rd generation ICDPs (Borrini-Feyerabend 2000). The 1st generation ICDPs (1980's) refer to initiatives where conservation and development agencies loosely cooperate under an "umbrella" project to implement mostly independent projects for their respective

objectives. These ICDPs lack a true integration at the implementation stage. The 2nd generation ICDPs (1990's) refer to a similar structure with increased communication, integration, and synergy between the implementing agencies. The 3rd generation ICDPs (2000's) refer to initiatives where local communities and institutions are active participants in the design and implementation of the projects, receiving only facilitation services and technical and financial support from outside agencies. Although there is some value in such differentiation, they refer mostly to methodological differences of the ICDP approach as opposed to the theoretical framework of the concept. Therefore, it is recommended that their classification be not reflected in the definition or lead to three separate definitions.

According to a definition by CARE:

"ICDP is an approach to the management of natural resources in areas of biodiversity importance that aims to reconcile the biodiversity conservation and socio-economic development interests of multiple stakeholders at local, national and international levels."

This is a well-expressed definition. However, its focus only on areas of biodiversity importance is debatable. Alpert's (1995) writings describe indirectly ICDP as:

…an approach to conservation biology based on the premise that conservation and development are mutually dependent rather than inherently conflicting and therefore should be directly linked so that each fosters the other.

The following adaptation of the CARE and Alpert definitions, in this author's mind, provides a complete and concise definition of the ICDP approach to conservation. It is this definition that is used in reference to ICDPs in the major paper.

"ICDP is an approach to conservation biology that aims to reconcile the biological conservation and socio-economic development interests of multiple stakeholders based on the premise that conservation and development are mutually dependent rather than inherently conflicting."

2.4.2. Common Structure and Strategy Features

The above definition refers to the theoretical framework of the ICDP approach. It does not refer to the methodological component of it. Deciding on some common methodological characteristics of the approach would facilitate the identification of ICDPs in the field. Based on literature reviews, a brief presentation of common structure and strategy features in ICDPs follows.

Although the structure of ICDPs can be very diverse, there are some characteristics that are typically present in all initiatives. Specifically:

- Biodiversity conservation is the primary goal.
- There is recognition of the need to address socio-economic requirements of local communities.
- They are often linked to protected areas.
- They tend to be externally motivated by conservation organizations or development agencies (Hughes and Flintan 2001).
- Implementation is usually assigned to an NGO, under the supervision of a national ministry. Government agencies often provide staff support and foreign donors offer funding and technical aid (Alpert 1995, Hughes and Flintan 2001). The NGOs may be either international, as is typically the case in Africa, or national, as is often the case in Latin America (West and Brechin 1991).

The strategy used by ICDPs to link development and conservation typically includes one or more of following approaches:

- Provide alternative sources of natural resources outside of protected areas (i.e. promote fuel wood plantations instead of logging in natural areas)
- Provide sources of cash income as an alternative to consumption of protected area resources (i.e. income from tourism, employment within protected areas)
- Provide direct incentives for conservation of biodiversity through sustainable harvest of resources, while promoting awareness of the connection between resource availability and conservation (i.e. revenue from limited wildlife hunting, irrigation water and the preservation of forest cover) (Kremen et al. 1994, Alpert 1995).

2.5. Success Record of ICDPs

To date, ICDPs are viewed as a promising but unproven approach to promoting conservation while improving human living standards. The underlying hypothesis of ICDPs, that rural development can promote successful conservation of biodiversity, "remains virtually untested" (Kremen et al. 1994).

A number of ICDP success assessments have been conducted in the last decade, such as the ones by Wells et al. (1992), Kremen et al (1994), and Newmark and Hough (2000). The reports conclude that almost all ICDPs assessed did not achieve either one or both of their objectives – biological conservation and development. For example, of the 36 ICDPs reviewed by Kremen et al. (1994) (Table 2.1), only five "were able to show a positive relationship between development efforts and conservation of endangered biological resources."

According to some project evaluators, the limited success rate could be due to early stage of implementation evaluations, when the ICDPs were too new to be judged for meeting their objectives (Alpert 1995, Newmark and Hough 2000). Although this observation could be true in some cases, several ICDPs have now been in operation for over a decade and therefore this should be less of an issue; still, promising results from the field have yet to come (Newmark and Hough 2000).

On the other hand, a recent review on ICDP literature by Hughes and Flintan (2001) propones a more optimistic outlook on ICDPs' success. They state that the rather pessimistic outlook expressed in some reports "is not, however, a universal feature of the analytical ICDP literature reviewed, and it would seem that there are grounds for optimism within components of some projects." They also believe that the rather recent appearance of ICDPs has not allowed for the integration of lessons learned in the field to practice.

2.6. ICDP Success and Progress Constraints

Existing literature has suggested multiple possible explanations for the apparent limited success rate of ICDPs. Newmark and Hough (2000) grouped constraints to success in four categories: assessment problems, internal constrains, external forces, and erroneous assumptions. This section reviews the causes of limited ICDP success based on this classification.

Table 2.1: List of ICDPs reviewed by Kremen et al. (1994).

(Of the 36 ICDPs presented in the table, "only five were able to show a positive relationship between development efforts and conservation of endangered biological resources (Kremen et al. 1994)).

Table 1. Ecological monitoring programs of integrated conservation and development projects (ICDP).

			Extent of Ecological Monitoring			
Project	*Reference*	*Country*	*None*[a]	*Impact*[b]	*Comprehensive*[c]	*Proposed*[d]
ICDPs Providing Economic Alternatives Outside Reserves						
Uluru (Ayers Rock-Mount Olga)	1	Australia			X	
Kakadu National Park	1	Australia			X	
Nazinga Game Ranch	2,3	Bukina Faso		X		
Bururi Forest Reserve	3	Burundi	X			
Rumonge, Vyanda, and Kigwena Reserves	3	Burundi	X			
Oku Mountain Forest Project	4	Cameroon		X		
Dzanga-Sangha Dense forest Reserve	2	CAR		X		
Osa Peninsula	3	Costa Rica	X			
Talamanca Region	3	Costa Rica	X			
La Amistad	5	Costa Rica		X		
Coastal Wetlands Conservation	2	Ghana		X		
Dumoga-Bone National Park	3	Indonesia	X			
Amboseli National Prak	2,3	Kenya		X		
Ranomafana National Park Project	5	Madagascar	X			X
Project Masoala	5	Madagascar		X		X
Beza Mahafaly	2,3	Madagascar		X		
Andohahela Integral Reserve	3	Madagascar	X			X
Amber Mountain Complex	4	Madagascar	X			
Mananara	5	Madagascar	X			
Sian Ka'an Biosphere	3	Mexico	X			
Annapurna Conservation Area (ACAP)	3,1	Nepal	X			
Royal Chitwan National Park	3,1	Nepal		X		X
Makalu-Barun Conservation Project	1	Nepal	X			
Air-Tenere Nature Reserve	2,3	Niger	X			
Central Selva	3	Peru	X			
East Usambara Mountains	3	Tanzania	X			
Khao Yai National Park	3	Thailand	X			
Queen Elizabeth Park	2	Uganda	X			
Ruwenzori Mountains	2	Uganda	X			
Zambia Wetlands Project	2	Zambia		X		
ICDPs Providing Economic Alternatives Within Reserves						
Development of WMA Concept	2	Botswana		X		
Pacaya-Samiria	1	Peru	X			X
ADMADE	1	Zambia		X		
CAMPFIRE	4	Zimbabwe		X		
Luangwa Development Project	2,3	Zambia		X		
Volcanoes National Park	2,3	Rwanda		X		
Monarch Butterfly Reserves	2,3	Mexico		X		

[a] *None = no ecological monitoring currently in place.*
[b] *Impact = monitoring of target resources.*
[c] *Comprehensive = both biodiversity and targeted monitoring.*
[d] *Proposed = future phases of the project will include ecological monitoring.*
References: individual ICDP reports to various funding agencies.(1) Kiss 1990; (2) Wells et al. 1992; (3) Brown and Wyckoff-Baird, 1992; (4) project reports; (5) authors' personal knowledge.

2.6.1. Assessment problems

As mentioned earlier, the objective assessment of many ICDPs' success has been compromised by "early stage" evaluations, where the ICDP were too new to be judged. However, this is becoming less of a concern for several ICDPs, because they have now been in operation long enough to expect results (Newmark and Hough 2000).

The biggest constrain of ICDP assessment however, is the apparent lack of ecological monitoring in most ICDPs. The assessment of 36 ICDPs by Kremen et al. (1994) showed

that 19 projects had no ecological monitoring, 16 had limited monitoring, and only 2 had comprehensive monitoring as part of the project design (Table 2.1). But the effects of lack of monitoring are not only limited to evaluation problems. According to Alpert (1995), "almost all projects suffer from a lack of quantitative research needed to develop land-use plans, to decide among alternative prescriptions for management, to set intensities of resource use, and to monitor success." In short, with no monitoring, there is no meaningful feedback, and therefore no future course guiding.

2.6.2. Internal constrains

The first internal constrain of ICDPs lies in the type of incentives offered to local communities. According to Gibson and Marks (1995), many ICDPs offer *public* goods, which may not be sufficient to alter the behavior of individuals. The connections between development and conservation in many ICDPs are often "far too diffuse to ensure success (Kremen et al. 1994)." In other cases, economic incentives offered to local population are ineffective because project designers often overlook the social and cultural importance of activities, such as hunting (Newmark and Hough 2000).

A second internal constrain has to do with the credibility of ICDPs with local populations (Barrett and Arcese 1995). In Africa for instance, the organizational structure of ICDPs often mimics previous ineffective colonial structures – as a result local people remain cautious and uninvolved since the state maintains authority over wildlife issues (Newmark and Hough 2000). In addition, historical confrontations under the "fences and fines" conservation initiatives have made many local communities cautious of conservation projects' commitment to human development (Barrett and Arcese 1995).

A third internal constrain has to do with the harvesting schemes employed by some ICDPs to provide alternative income sources for local communities. Barrett and Arcese (1995) suggest that harvesting of wildlife is often unsustainable because park managers are frequently "under considerable political pressure to maintain a constant flow of benefits to local communities" (i.e. skins, meat) regardless of wildlife population fluctuations or declines. If managers try to reduce the flow of goods, then the ICDP may loose community support.

A fourth internal constraint is an obvious one – development activities are frequently in conflict with biological conservation objectives (Newmark and Hough 2000). Such conflicts are often a result of problematic project design, conservation NGOs' inexperience with development activities (Alpert 1995), or inability of managers to control resource exploitation by local communities (Newmark and Hough 2000). Although these conflicts can at times be reduced, ICDP managers should recognize that "development will come at some cost to biodiversity" and as a result ICDP initiatives should be complemented with the protection of unmodified habitat (Kremen et al. 1994).

2.6.3. External forces

External forces often undermine the objectives of ICDPs. First, forces such as political turmoil and exchange rate fluctuations have severely affected the flow of income from tourism for many ICDPs in Africa (Newmark and Hough 2000). The vulnerability of income sources for local communities to political and economic factors has compromised ICDPs support and success.

Second, external market forces (esp. from urban markets) generate "increasingly strong market incentives" to exploit natural resources, undermining in this way the work of ICDP incentives for conservation (Newmark and Hough 2000).

Third, ICDPs may encourage migration into the project area through successful development incentives (Barrett and Arcese 1995, Newmark and Hough 2000). Increased human population could compromise the sustainability of the initiatives and lead to the collapse of a project. Although such in-migration has not been clearly documented in ICDPs yet, evidence for such patterns exist from previous rural development projects in Africa (Newmark and Hough 2000).

Fourth, ICDPs are not isolated, but "exist within [a] politically charged national and international framework as a highly funded and heavily scrutinized entity (Gezon 1997)." Being at the bottom of "a lengthy chains of command", ICDPs often lack autonomy in decision-making. Project managers have to keep in line with NGO, government, and funding-donor organization guidelines (Gezon 1997).

2.6.4. Erroneous Assumptions

ICDPs have been affected by three major erroneous assumptions. The first assumption is that local communities are inherently hostile to protected areas (Newmark and Hough 2000). This belief holds especially true in Africa, where ICDP designers thought that the colonial legacy of protected areas in Africa meant that the surrounding communities of protected areas are hostile towards them. An attitudinal research that has been done in Africa showed that this assumption is very simplistic, and that in some areas the people resented the park managers as opposed to the parks.

The second assumption is that rural development will automatically lead to conservation (Kremen et al. 1994, Newmark and Hough 2000). Although this may be true in some cases, raising standard of living does not always translate in improved biological conservation. In certain cases, it meant the opposite. Increased affluence led to increased desire for consumption. Newmark and Hough (2000) suggest that instead of simply stimulating the local economy, ICDPs should concentrate on "encouraging landscape-wide compatible land-use adjacent to protected areas."

The third assumption is that buffer zones are panaceas (Newmark and Hough 2000). However, ICDPs have failed to explain how an already overexploited area can both achieve increased productivity and provide additional wildlife habitat (Little 1994).

2.7. Suggestions for a Desirable Future

The previous section identified several constrains and limitations of the existing ICDP model. Although ICDPs have had limited success until now in meeting their objectives, "the strongest strategy for maintaining biodiversity" is still to link conservation and development (Kremen et al. 1994, Alpert 1995, Newmark and Hough 2000). In order for future ICDPs to be successful, the existing approach has to be refined and enhanced. These improvements to the ICDP model can be divided in a) mechanisms that respond to the complexity of ICDP environment, and b) assessment/evaluation of alternatives that address external forces of ICDPs.

2.7.1. Mechanisms that respond to the complexity of ICDP environment

Most ICDP reviews agree that the ICDPs need to improve their flexibility and autonomy (Kremen et al. 1994, Alpert 1995, Gezon 1997, Newmark and Hough 2000).

This will ensure increased ability of ICDPs to adapt to their complex ecological, social, and economic environment as it changes.

Flexibility and autonomy however will not automatically lead to adaptability. The ICDP model has to embrace comprehensive monitoring, evaluation, and reporting (M.E.R.) mechanisms in order to identify and address the ecological, social, and economic constraints faced by ICDPs (Kremen et al. 1994, Alpert 1995, Newmark and Hough 2000). These M.E.R. mechanisms should be part of each ICDP's design, implementation, and evaluation process.

The ICDP model should also enhance its use of adaptive management – "a process by which management activities in a complex […] environment are monitored, evaluated, and reformulated in an interactive fashion so as to evaluate alternative hypotheses, accumulate knowledge […], and reassess long-term objectives (Newmark and Hough 2000). Clearly, adaptive management requires comprehensive M.E.R. mechanisms and autonomy/flexibility of management – as described previously.

Finally, the ICDP model should include "well-articulated objectives and […] rigorous testing of management activities (Newmark and Hough 2000)." These processes are central to the adaptive management concept, and require the use of samples, replicates, and controls.

2.7.2. Assessment/Evaluation of alternatives that address external forces of ICDPs

Success of ICDP initiatives, as described earlier, is susceptible to influence by external forces (i.e. market forces, political turmoil). The ICDP model has to improve its ability to identify and cooperate with alternative approaches that can effectively address these external factors (Alpert 1995, Newmark and Hough 2000). For instance, Alpert

(1995) mentions that ICDPs seem to work best in settings where other factors have kept human population growth in check.

2.8. ICDPs and Costa Rica

Considering Costa Rica's renowned image as a leader in tropical conservation and the presence of world-famous research and conservation institutes in the country, it is of no surprise that several ICDPs have been executed in the country. Similar success constrains have affected these projects as in other parts of the world. On the other hand, Costa Rican ICDPs have been fortunate to operate in an environment of explicit government support for conservation and development initiatives that "exploit resources in a sustained, rational manner that benefit communities close to the resources (Arauz – Almengor et al. 2001)." This section briefly presents and discusses a case study from Ostional National Wildlife Refuge in the Guanacaste region of Costa Rica. This case study was selected because it is refered to in ICDP literature as a successful project – achieving conservation and development objectives (Guiterrez et al. 2000, Hughes and Flintan 2001, Campbell 2002).

Ostional National Wildlife Refuge

The ONWR is located in the counties of Santa Cruz and Nicoya in northwestern Costa Rica (Figure 2.1). It was officially established as a wildlife refuge in 1984, two years after being declared a protected area. Following a series of expansions, as of 1993 the ONWR comprises and area of 300 hectares on land - covering a 200m-wide strip along the coast between Punta India and Punta Guiones – and 800 hectares of sea within a 3-mile maritime limit (Marine Turtle Research Center 1997). It was created to protect

one of the world's most important nesting sites of the Olive Ridley marine turtle (*Lepidochelys olivacea*).

The ONWR is currently under the jurisdiction of the "National System of Conservation Areas" (SINAC) which is in turn directly responsible to the Ministry of the Environment and Energy (MINAE). The refuge is managed as part of the broader "Tempisque Conservation Area", which provides Ostional with a dedicated wildlife ranger. Guards who are paid by the village of Ostional patrol the nesting beaches. (Marine Turtle Research Center 1997).

ONWR ICDP

In contrast with other beaches in Costa Rica, which are nesting sites for marine turtles, the ONWR did not pursue a strict conservation approach to its management or resort to ecotourism for reconciling local development interests with conservation. Instead, it promoted a controlled removal of the Olive Ridley eggs as a means of achieving social growth of the local community without compromising the reproduction and conservation of the species (Arauz – Almengor et al. 2001). This initiative is overseen by Association of Integral Development of Ostional (AIDO) - a local organization.

Marine turtle eggs are considered a delicacy in Costa Rica, served as hors d'oeuvres accompanying beer or drinks. Prior to legalizing controlled egg removal at Ostional in 1986, the national market was supplied solely by illegal harvesting occurring in both the Atlantic and Pacific coasts of Costa Rica. Sustainable egg harvesting at Ostional is possible because of the reproductive behavior of the Olive Ridley. During egg-laying season the females arrive synchronously at the nesting beach (these mass nesting events

are referred to as *arribadas*) in such a way that eggs laid during the first days of an arribadas are destroyed by subsequent laying events (Arauz – Almengor et al. 2001). The ONWR project identified the economic potential of the "doomed eggs" and has put forward a community-based system for managing this natural resource.

Benefits and Challenges

A review of conservation approaches in four marine turtle beaches in Costa Rica (Campbell 2002) has shown that non-consumptive uses of the resource resulted in "elusive" community development benefits and debatable conservation success. Specifically, ecotourism initiatives were developed in an ad hoc manner, which has the potential to negatively impact both the turtles and the local communities. In contrast, the Ostional sustainable legalized egg harvest was evaluated as being successful in eliciting socio-economic benefits for the Ostional community and encouraging local support for wildlife regulations and for additional conservation activities in the region. The report adds that "the legality of the project and the control the community exerted over it was highly valued in the community." Furthermore, the large volume of doomed eggs collected at Ostional (the only beach where egg harvesting is allowed) has maintained a constant national market supply at low prices, thereby discouraging illegal egg traffic. A study by the National University of Costa Rica (Arauz – Almengor et al. 2001) on the marine turtle market has supported this claim, and adds that in areas of the Atlantic side where supply of Ostional eggs is limited there is a higher incidence of illegal harvesting.

On the other hand, it seems that the project's success has not managed to safeguard the future of the ONWR. Although local pressure for unsustainable use of the reserve has been reduced successfully – practically reversing trends, outside interests are

jeopardizing the future of the reserve. A recent editorial article in La Nación (Loaiza – Naranjo 2001), the prominent national newspaper in Costa Rica, described a plan of building a 263-bed hotel within the protected area. The development writes were secured by the developing agency prior to the establishment of the reserve in 1984. According to the same source, the Costa Rican Institute of Tourism reports that there is an "excessive pressure for tourist development" in the area. Another concern for the ONWR project is whether it is sustainable in the long run. What will happen if the national demand for turtle eggs exceeds the Ostional supply capacity?

Lessons for ICDPs in Costa Rica

Clearly, the ONWR case study sends an optimistic message about the feasibility of an ICDP project. At the same time however, it shows that an ICDP should form part of a broader conservation initiative (see 2.7.2.). In itself, it is likely not going to be able to address pressures on conservation at local, national, and international level. The ONWR is a good example where strong, decisive national legislation is needed to support the ICDP initiative. Strong legislation on tourism development would provide support against international (tourist impact) and national (hotel developers) pressures, while the legal egg harvesting addresses local pressures. Costa Rica seems to have the willingness to support such conservation and development initiatives, but it is unclear whether it can resist economic pressures. This conflict of interests is likely relevant to most ICDP initiatives in the country.

2.9. Las Nubes Project

This section examines the Las Nubes project in the context of ICDP issues raised earlier in the chapter. The first sub-section describes why the Las Nubes project should

be viewed as an ICDP. The second sub-section discusses likely success constrains to the project, as identified in section 2.6.

2.9.1. ICDP Features

As described earlier in Chapter 1, the Las Nubes project's objective is to promote regional landscape-scale biodiversity through ecologically sound agricultural practices, community participation, environmental education, and local sustainable community development. The project directly relates to three protected areas: Las Nubes Biological Reserve, Los Cusingos Neotropical Bird Sanctuary, and Chirripo National Park. The project is run by FES in cooperation with TSC, and pursues local participation in its design and implementation.

Even based only on this brief description of the project, it is easy to see that the Las Nubes project indeed meets all the criteria (common features of structure and strategy) discussed in section 2.4.2. Specifically, the Las Nubes project has biodiversity conservation as its primary goal, while recognizing the socio-economic needs and aspirations of the local communities. It is linked to protected areas, and its initiated and implemented by national (TSC) and international (FES) institutions. Funding and technical aid are provided by these institutions. Contrary to some other ICDPs however, there is no direct government involvement in the project.

Unlike other ICDP projects, the Las Nubes project does not focus on reducing exploitation of resource use within the protected areas. Although to some extend this takes place, it is not the main goal. Instead, the Las Nubes project aims at improving the land-use management in the areas outside the protected areas. This is pursued mainly by

promoting sustainable agricultural practices within the farmers and environmental awareness in the local communities.

2.9.2. Likely Constrains

Assessment Problems

The importance of effective MER mechanisms in early stages if ICDPs is mentioned in almost all ICDP reviews. Without such mechanisms, it is difficult – if not impossible – to effectively assess the project. Assessing an ICDP's success is important both for its own success (allows for adaptive management) and for the increase of ICDP knowledge. Only by learning through past failures can the ICDP approach be fine-tuned. This is a serious concern that is being recognized by the Las Nubes project. The project has not put into place complete MER mechanisms yet, but it is in the process of collecting extensive base data that would allow them to be established in the future.

Internal constrains

The Las Nubes project could potentially be affected by all four types of internal constrains identified earlier in the chapter. Each one of them is briefly discussed here.

The first internal constrain involves the ability of ICDP benefits to alter local land-use behavior. There is concern that public benefits can be too weak (and lack direct connection to biodiversity) to result in such changes. Although this is a concern, the Las Nubes project intent is to work directly with local farmers resulting in economic incentives to individual households. If these benefits realize, the benefits will not be public but family-specific. On the other hand, there are some expected benefits of the Las Nubes project that will be public, such as increased water quality and public

infrastructure. If they were the only expected benefits of the project, then there would be reason for serious concern of its success.

The second internal constrain has to do with the credibility of project within local communities. Sometimes, ICDPs use top-down design and implementation methodologies that resemble oppressive colonial systems of the past. This is less of a concern in Costa Rica, since the country has been functioning under a free, stable democratic system for decades now. Furthermore, the government is not directly involved in this project anyways. Nevertheless, it is possible that the involvement of any institution outside the communities will be treated with caution. Experience from the field until now has not supported such fears. On the contrary, local interest and acceptance of research has been high. This is most likely a result of a slow and participatory approach to research design.

The third internal constrain is concerned with the sustainability of any harvesting scheme. Once demand for a natural resource is increased, it may not be possible to maintain sustainable harvest levels. This is mostly a concern in areas where sustainable practices are promoted within undeveloped natural areas (such as forested buffer zones). In the case of the Las Nubes region, most of the land is already under intensive cultivation schemes. There are some forest patches remaining, but local use and reliance on natural resources within the forest patches is limited. If future plans of the Las Nubes project promote harvesting of resources within the forests, this concern will have to be addressed in the project design.

The fourth internal constrain relate to the apparent possibility that development and conservation activities will be in conflict. This is almost a universal challenge for all

ICDPs. It is recognized that local development will come with some cost to conservation objectives. Since the area is already under intensive chemical-reliant agricultural practices, it is likely that there will be a net-gain for biological conservation. The project concentrates on the management of the developed areas as opposed to changing the existing preservation management of Los Cusingos and Las Nubes.

External forces

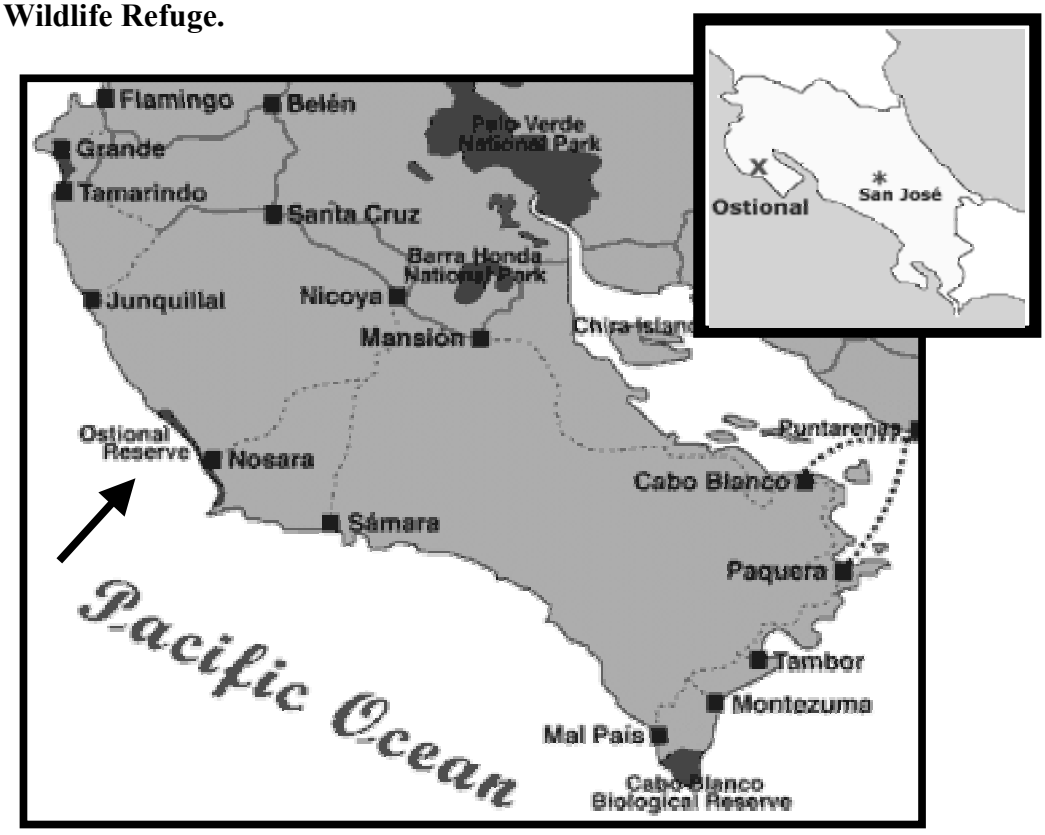
As with any practical project, forces beyond the control of the project managers could undermine the project's success. Recognizing such forces and allowing sufficient flexibility in the project management is probably the best way of dealing with the issue. In cases where the external forces are more accurately identifiable, the project could address them directly in its design. For instance, changing market forces could lead to counterincentives for coffee cultivation and incentives for some other crop. Considering that a big component of the Las Nubes project is the promotion of shade-grown organic coffee, such market changes could affect the project. Over-reliance once land-use management is risky. This is why the Las Nubes project does not concentrate only on coffee farms, but examines over land-use alternatives. Even in the case of a single-strategy approach, such external market forces could be addressed through increased community awareness and project ownership. The Las Nubes project is putting high priority on both of these issues.

2.10. Conclusions

Integrated Conservation and Development remains to date a rational, promising, but unproven theory. The practical applications of the theory (ICDPs) have been slow in meeting their development and conservation objectives and as a result their model is

under scrutiny. Regardless, linking directly conservation and development seems to be still "the strongest strategy" to achieve long-term conservation of biological diversity. The ICDP model has to be substantially refined in order to address successfully its limitations and constraints to success. Integral part in the improvement of the model in the future is the increase of quantitative research associated with ICDPs, the incorporation of comprehensive M.E.R. mechanisms in every stage of the projects, and the acknowledgement that ICDPs should be implemented in conjunction with a broad range of interventions in a landscape-wide scale. The unrushed, participatory, and adaptive/emerging design of the Las Nubes project reflects these recommendations.

Figure 2.1 Map of Nicoya Peninsula, Costa Rica showing the location of Ostional Wildlife Refuge.



(figure synthesized from images found online at the websites of Costa Rica Discover [www.costaricadiscovery.com] and the Marine Turtle Research Center website at [http://www.gema.com/ostional])

CHAPTER 3: Community Participation in Conservation

3.1 Introduction

The concept of community participation is currently widely recognized as an important component of conservation projects – and especially ICDPs. Nonetheless, it remains a challenging process, which requires considerable investment of time and resources. Participation cannot be merely proclaimed, it has to be actively pursued (Clayton et al. 1997). Since there are few universally applicable approaches and methodologies, project managers have to design participatory projects on a case-by-case basis. The end result should be a conservation project that promotes biological/ecological conservation while addressing the needs and aspirations of local communities. This chapter examines the linkages between community participation and conservation. It presents the history of participation in conservation and discusses the strengths and weaknesses of such projects. The Las Nubes project is also examined within that context.

3.2 Historical background

Community participation made its first appearance in the field of 3rd World development in the 50's and 60's. Community development projects involved local people in their efforts to build the infrastructure of rural and urban communities. The typical local involvement, however, promoted by such projects was for already agreed objectives (Clayton et al. 1997). Participants were seen as contributing to the implementation process of national development agendas. The community participation concept took on increased importance in the 70's, as the field of rural development became "disenchanted" with large-scale, top-down development programs (Western et al. 1994). The "McNamara Doctrine" of the World Bank and the "New Directions" of

USAID (both in early 70's) emphasized the importance of focusing on the poor of the world by involving local communities in the design and implementation of the development projects. Integrated Rural Development (IRD) projects became very popular in the late-60's and 70's period. In practice however, very few IRD projects incorporated the communities in the design stages. In several cases the term "participation" was used to gather local support for the implementation stage only (Western et al. 1994). Overall, IRD projects failed to transform theoretical ideas into practical changes in the field of community participation. The majority of IRD projects failed because of overly ambitious goals, high costs, and high dependency on centralized planning (Western et al. 1994, Shepherd 1998). In a way, the IRD approach examined the potential of community participation and showed how not to do it (Shepherd 1998).

All these changes were taking place mainly in the development field. By the early 70's, the conservation field was growing in public awareness but still concentrated on the conservation of high profile endangered species and habitats. By the early 80's though, conservationists were increasingly realizing the inability of protected areas alone to conserve biological diversity. Conservation had to move into the rural areas, especially around protected areas. Still, it was not yet clear how they would approach that. In the meantime, the field of natural resource management (especially irrigation, agriculture, and forestry) was struggling with low project success in rural areas. In an attempt to improve project acceptance and ownership by rural communities, natural resource management projects started experimenting with participatory methodologies (Western et al. 1994). Results from some community forestry projects were quite successful. Communities were consulted in the design and implementation of these projects. Many

projects suffered though from lack of an institutional environment familiar with the new participatory approach to project design and implementation.

By the mid-80's, a) lessons learned from the failure of IRD projects, b) the promising steps of community participation in the field of resource management, c) dissatisfaction with the "fine and fence" preservation approach to conservation, and d) the realization that parks are not enough, lead conservationists to adopt community participation as a conservation approach. At about the same time, conservation and development objectives were brought together in the first ICDPs. At the beginning, community participation was considered an ethical thing to do, but the main rationale for pursuing the participatory approach was practical. There were no other working alternatives for use in rural areas outside of protected areas. Conservation scientists viewed participation as a mean to achieving conservation objectives.

Following the end of Cold War and the collapse of communism in early 90's, community participation in development and conservation projects was seen as an issue of democratization and equitable resource allocation (Western et al. 1994). The centralized control over conservation and natural resources was loosening, and community participation was increasingly seen as a goal rather than a mean. Participatory projects of every type became overly popular. Unfortunately, this increased attention in community participation brought its politicization. Suddenly, who is invited to participate and who benefits from the process became an issue of conflict. Many projects downloaded conservation and development responsibility to rural communities based on the participation principles of "partnership" and "self-management". Little effort was put

into evaluating whether such levels of community involvement translated in increased biological conservation, since community participation was viewed as a goal.

Currently, community participation remains a fashionable term in conservation. However, there is an emerging pattern towards a more well thought approach to participation. In my opinion, biological conservation remains still the primary goal of conservationists. Community involvement in the design, implementation, and evaluation stages of projects is still considered a desired approach – but it has to be approached on a case-by-case basis that incorporates a balance between scientific and local knowledge. Conservation cannot be limited to protected areas, so local communities will be de facto involved in conservation. Dismissing participation altogether would be politically unfeasible and unrealistic and would produce no desirable results. The level of participation is the issue at question.

3.3 Definitions and Interpretations

Participation

There is no one universally accepted definition or interpretation for participation in literature. Development and conservation agencies interpret participation based on their own perspective, understanding, and agenda (Clayton et al. 1997). Table 3.1 presents a selection of interpretations from the 70's to the 90's. None of the definitions are ideal statements. In reviewing them however, one can identify two main purposes for promoting participation in conservation and development projects – participation as a means and participation as an objective.

Table 3.1 – Interpretations of participation in development (cited in Clayton 1997)

"With regard to rural development… participation includes people's involvement in decision-making processes, in implementing programmes, their sharing in the benefits of development programmes and their involvement in efforts to evaluate such programmes." (Cohen and Uphoff 1977)
"Participation is concerned with… organized efforts to increase control over resources and regulative institutions in given social situations on the part of groups and movements of those hitherto excluded from such control" (Pearse and Stifel 1979)
"Community participation [is] an active process by which beneficiary or client groups influence the direction and execution of a development project with a view of enhancing their well-being in terms of income, personal growth, self-reliance or other values they cherish." (Paul 1987)
"Participation can be seen as a process of empowerment of the deprived and the excluded. This view is based on the recognition of differences in political and economic power among different social groups and classes." (Ghai 1990)
"Participatory development stands for partnership…upon the basis of dialogue…This implies negotiation rather than the dominance of an externally set agenda." (OECD 1994)
"Participation is a process through which stakeholders influence and share control over development initiatives and the decision resources which affect them." (World Bank 1994)

The interpretations by Cohen and Uphoff (1977) and Paul (1987) are examples where participation is viewed as a mean to involve local communities in a cooperative or collaborative manner. Participation is sponsored by external agencies and is seen as a way to support the progress towards a project's objectives (Clayton 1997, Karl 2000). This approach of participation has been very widespread with ICDPs.

The interpretations by Pearse and Stifel (1979), Ghai (1990), OECD (1994), and the World Bank (1994) view participation as a goal in itself. People are seen as excluded from the processes that affect their lives and are invited to "gain control", "empower themselves", "become partners" in the context of conservation and development.

The distinction between participation as a means and as a goal is neither clear cut nor mutually exclusive (Western et al. 1994, Clayton 1997). In a sense, the view of participation as a means is the practical interpretation, while its view as a goal is an ethical one. Ideally, a conservation project should include a balance of both.

Community

The concept of community as a conservation agent should also be analyzed carefully. Simplistic notions of what constitutes a community should be avoided. Until recently, an examination of literature reveals "a widespread preoccupation with what might be called the mythic community: small integrated groups using locally evolved norms to manage resources sustainably (Agrawal and Gibson 2001)." Such an interpretation of community fails to attend to differences that can exist within a group of people living in a given geographical area. Unfortunately, many top-down projects using terms such as "community participation" or "community-based" have been designed and implemented based on such a naïve view of community (Shepherd 1998).

As development professionals first discovered, communities are complex entities that could be differentiated by such parameters as – to name a few – status, ethnicity, traditions, political and economic power, religion and social prestige, and sense of common purpose and intentions (Western et al. 1994, Agrawal and Gibson 2001). Some may operate harmoniously, others do not. It is important to recognize this diversity of actors/stakeholders and interests within communities when community-based conservation projects are designed. There should be a careful examination of all group interests, the processes these interests arise from, interactions between groups, and institutions affecting these interactions (Agrawal and Gibson 2001). This can be only achieved by moving away from a blueprint approach to designing community participation projects. It requires a project-specific examination of community.

3.4 Degrees of Participation

Participation can range along a continuum from nominal contribution at the implementation stage of predetermined projects to the empowerment of self-managed projects (Clayton et al. 1997, Karl 2000). The degree of participation depends on the interpretation of participation of the initiating agency.

Many researchers and agencies have proposed a detailed breakdown for the different degrees of participation along the continuum of minimal to intense participation. Despite the different terminologies used, there is little variation in the underlying concepts. A representative breakdown adapted from Clayton et al. (1997) and Karl (2000) is presented in this section. With the exception of the first degree of participation (manipulation or cooption) the rest of the levels act in a cumulative way.

- Manipulation or Cooption: refers to non-participatory projects where any "participatory process" is serving the purpose of indoctrination.
- Information: a one-way communication process in which communities are informed about their rights, responsibilities, and options but have no opportunity to provide feedback.
- Consultation: a two-way communication between stakeholders and project managers but there is no assurance that the community input will be used at all or in the way it intended.
- Consensus-building or Cooperation: stakeholders discuss among themselves and the project managers for the purpose of reaching decisions tolerable to the whole group. Often, vulnerable groups and individuals participate passively.

- Decision-making or Collaboration: when participants make collective decisions to act on a previously agreed consensus. All participants accept the responsibility of their decisions.
- Risk-sharing: it expands on the decision-making degree of participation, by extending accountability of the participants beyond the decision stage to include responsibility for the effects of their decisions (whether beneficial or harmful).
- Partnership: it refers to exchange of opinion between equals working towards a common objective. Equality is referred in terms of balance of respect, decision-making, goal definition, etc..
- Self-management, Empowerment, or Initiating action: this is the "pinnacle of participatory efforts." Participants are involved in a learning process, which optimizes the well-being of all concerned (self-management). Control over decision-making and resources is transferred to all stakeholders (empowerment) and communities are able to initiate action in all stages of the projects (initiating action).

3.5 Timing and Stages of Participation

Another dimension of examining community participation in conservation has to do with the timing of community involvement in the projects. A project cycle consists of many stages. The timing and degree of participation in relation to the project stages can affect the final level of participation. Different stages may employ different – if any – degrees of participation. For instance, at the design stage, local communities may be involved only in an information and consultation level, and in a collaborative degree in implementation stage. This is not desirable, but certainly possible.

Participation is not a "one-time input" into projects either. It should be viewed as a process that evolves through a series of stages (Clayton et al. 1997)[2]. There is no universal set of stages that a participatory project should follow and individual researchers and agencies design their own according to the project's specifications. Nonetheless, there should be a "logical sequence of actions" in the participation stages allowing for participation to develop over a period of time (Clayton et al. 1997). Figure 3.1 includes two sequences of action for community participation developed by an NGO and the Government of Costa Rica. These examples are presented for reference only and are not ideal for every project situation.

Figure 3.1 Examples of stages of participation.

Promoting community participation by NGOs

Creating awareness of project
↳ Developing community leadership
↳ Sharing in decision-making
↳ Learning, Analyzing options, and Planning together
↳ Implementation
↳ Community monitoring
↳ Planning together
↳ Evaluation (Adaptation from Christian Aid, Kenya)

New social participation model for the Republic of Costa Rica (adaptation)

Selection of community
↳ Building local government support
↳ Social mapping
↳ Promoting representation in participation - information
↳ Meetings with community representatives
↳ Pre-planning and Strategic planning workshop
↳ Validation of workshop results
↳ Negotiation
↳ Ratification of decisions and Formalization of agreements
↳ Collaborative Implementation
↳ Follow-up and evaluation

(Presidency of the Republic Government of Costa Rica 2001)

[2] The participation stages should not be confused with the conservation project stages mentioned in section 3.4.1.

3.6 Strengths

The inclusion of participation in conservation projects is a time and resource consuming process. Conservationists resolve to community participation despite the challenges because of the strengths it brings to the project design and implementation. The main arguments for community participation are presented below:

- By including local communities in the projects, the resulting benefits from conservation projects become localized, individual, and specific. This can increase local appreciation of natural resources and biodiversity slowly changing local behaviors overtime. Local feeling of ownership and pride for nature can change the NIMBY (Not in my back yard) approach to conservation projects to PIMBY (Please, in my back yard) (Western et al. 1994). A feeling of ownership of natural resources is required to secure sustainable practices. The RARE Center for Tropical Conservation, a US based conservation NGO, calls its methodology for wildlife protection "Conservation Through Pride."
- It can increase local awareness and support for a project, resulting in increased efficiency and effectiveness of its activities.
- It identifies traditions, morals and ethics of rural communities reducing conflicts between project objectives and local lifestyles.
- It draws on local knowledge about natural resources and community needs leading to improved case-specific design of project activities and objectives.
- It brings out the commitments and insights of otherwise ignored members of community – such as women, helping improve their status (Clayton 1997).

- It contributes to capacity building and empowerment of local communities on issues of development and natural resource management.

3.7 Weaknesses

As with every new methodology there are weaknesses to counterbalance the expected benefits. This section presents arguments against community participation. They are divided in three categories: theoretical, costs, and constrains. By acknowledging these weaknesses, project managers can design their activities better to address them. Some people compare the expected weaknesses – especially costs – to strengths in order to do a cost-analysis of a participatory project. Although possible, Karl (2000) recommends that such an analysis compare the expected costs of a participatory approach against the costs of non-participatory approach.

3.7.1 Theoretical

(Adapted from Clayton et al. 1997)

- Participatory processes can be "irrelevant and a luxury" in cases of extreme poverty. It may be unjustifiable to spend financial resources promoting participation when local communities are in immediate need of food and other basic needs.
- Community participation projects are often driven by "ideological fervour". Project managers are more concerned for promoting an ideological perspective in their activities than securing benefits for the participants.
- Community participation can be used (or result) to download responsibility for conservation and development from the government to the local poor. Although not inherently wrong, this trend – referred to as "shifting of burden" - is rarely accompanied by a shifting of funds and other resources.

- Participation can become a destabilizing force that upsets socio-political balances within communities.

3.7.2 Costs

(Adapted from Western et al. 1994, Clayton et al. 1997, Karl 2000)

- Community participation is a time consuming process. Time costs may be a problem for projects depended on outside donors that have a hurry-up attitude in regards to action and outputs. Time may also be of essence in situations where pressures on nature are severe and there is no room for delay of action.
- There are financial costs associated with all steps of participatory projects, such as consulting, training, and community meeting costs. Financial resources are often a limiting factor on the capabilities of a project.
- Taking part in community participation activities can result in opportunity costs for participants. These may be especially high for marginal groups and women since it could result in increased work burden and decrease in leisure time.
- Participation may also result in unintentional harm to the community structure by upsetting sensitive balances unknown to outsiders.

3.7.3 Constraints

(Adapted from Wells and Brandon 1992, Western et al. 1994, Sanoff 2000)

- In certain communities there may be social structures that inhibit broad participation by all section of the community. Moreover, national or regional governments may feel threatened by the empowerment of rural communities and boycott or limit the degree of participation.

- There has been little evaluation of participatory projects, in part because conservation and development agencies have been reluctant to admit to the limitations and failures of their projects in fear of losing funding donors.
- Community-based participation projects have relied extensively on rapid resource appraisals and not so much on systematic data collection, resulting on decisions unfounded on science.
- Conservation professionals typically have little to no training or experience with participatory methodologies.
- Conservation professionals may start feeling threatened by the shifting of decision-making power and control from their hands to the stakeholders.
- In cases where a project employs complicated technology and there is no skilled group facilitator, the complexity may discourage or inhibit community participation.
- Conservation objectives may be difficult to achieve through community-participation is the local population does not perceive a crisis or threat for nature.
- Achieving representative participation is difficult. The participants involved in the process may not represent the majority but special interests.
- Conservation professional and stakeholders may have excessive expectations from participatory processes, resulting in disappointment when they do not materialize. This can result in lose of faith in participation, affecting future projects.
- Participation can suffer from parochialism. Local communities may be ignorant of broader socio-economic, political, and environmental forces that affect every society. Poor people will likely put their survival above all, and those in search of progress will ignore environmental costs of their actions.

- Nepotism, cheating, and corruption are as much a problem within local communities as in the regional, national, and international arena.

3.8 Participation and ICDPs

By definition ICDPs are more closely tied to rural communities than most conservation projects since they merge conservation and development objectives in areas outside protected areas. Although possible, it is difficult to design and implement successfully such projects without some level of participation from rural communities. Past conflicts and failures of projects relying on top-down, exclusionary approaches have strongly shown the need for involving local people.

Protected area managers were the first to involve local communities in ICDPs and in buffer zone initiatives in particular (Western et al. 1994). The degree of community participation on project design and implementation has matured gradually from consultation into partnership and collaboration. An effort to identify and involve all stakeholders is currently pursued. It is generally agreed though that participation is viewed as a means to the ICDPs' objectives and not as a goal. The ethical mandate to involve local people on decision-making processes that directly affect their livelihoods is almost universally recognized among conservation professionals. Ultimately however, ICDP is a conservation approach and therefore biological conservation is the primary objective. Clarity and focus on priority of goals is essential. Brandon et al. (1998) warns "many of the shortcoming in today's conservation projects are due to the belief among conservationists that what they are doing is conservation when, in fact, they are really doing large-scale social interventions in complicated macro-political settings."

ICDP literature at times expresses skepticism and uncertainty on behalf of conservation professionals about broad, limitless participation (Wells and Brandon 1992, Western et al. 1994, Agrawal and Gibson 2001). All the challenges of participation mentioned earlier in the chapter apply to ICDPs, but some of them are more likely to be the source of that skepticism. First of all, achieving conservation objectives through participation is doubtful if locals do not perceive a crisis or threat to nature. This is likely since poor rural communities are often not aware of broader environmental issues. Moreover, there have been only few organized evaluations of participatory projects, and as a result it has not yet been clear if participation leads to increased conservation. On the other hand, some ICDP reports warn that "failure to equitably involve projected beneficiaries as partners in all phases of project implementation […] has consistently led to disappointing project results (Brown and Wyckoff-Baird 1992)." Conservationists are asked to balance conflicting reports, ethical issues for community participation, and the realization that no community today stands alone. ICDP managers are often faced with the difficult question of which right is more fundamental: that of the community or that of the society (Western et al. 1994)?

Community-based Conservation vs. ICDPs

ICDPs and community-based conservation terms are often used interchangeably in relevant literature resulting in confusion. Their differences lie in the degree and form of community participation employed by the projects. Community-based conservation (CBC) projects imply at least some of the following characteristics: local, voluntary, people oriented, participatory, decentralized, community-based resource management (Western et al. 1994). The key characteristic is community management of a resource

within a conservation framework with at least one of its outcomes to be related to resource users development. CBC projects should not be confused with local resource management activities that are independent of conservation objectives. Cooperative management (co-management) between local communities and conservationists is a popular approach to management of natural resources. In fact, a survey by the WCPA (World Commission on Protected Areas) has shown that even a large number of protected areas are under co-management – including nearly 20% of protected areas in Central America (Protected Area Review 2001).

So, CBC projects are almost always by definition ICDPs. ICDPs do not have to be CBC, since it is possible to pursue conservation and development objectives without community management of the resources.

3.9 Participation and the Las Nubes Conservation Program

The Las Nubes Conservation Program is an ICDP that has the primary objective of enhancing and sustaining decent livelihoods within and ecosystem matrix of sound land-use management, including Los Cusingos/Las Nubes protected areas, biodiversity conservation, and community participation (Daugherty 2002). Both institutions in the FES-TSC partnership support community participation, as demonstrated by some of the MES projects conducted in the study area in the past few years. Participation of local people is deemed necessary both for practical and ethical reasons, but it is not a goal in itself.

By involving people in the design and implementation stages of the Las Nubes project activities, the following positive outcomes are expected:

- Increased awareness of a) environmental issues in the region, b) project recognition and support, c) the TSC-FES partnership, d) Los Cusingos-Las Nubes, and e) the potential market value of certain crops (esp. organic shade-grown coffee0 and non-wood forest products (NWFP).
- Identification of community needs, traditions, and ethics that should be addressed by the development components of the project.
- Capacity building and empowerment of local communities, with an emphasis on women and youth, so that sustainable community development can be achieved.
- Improved use of existing knowledge on agricultural practices – such as coffee - and natural resource use, so that the project can be properly designed for local conditions.
- Develop a feeling of ownership and pride for nature and the project, so that the local active participation can be secured in the future. This is vital since the Las Nubes project relies extensively on the voluntary involvement of local farmers in order to make improvements on current land-use practices.

With the exception of the protected areas of Los Cusingos and Las Nubes, all the land in the study area is privately owned – mainly by local small-scale farmers. Therefore, the local communities will have to be actively involved in the management of the natural resources in the area. Many sub-projects of the Las Nubes project qualify therefore as community-based projects (CBC). According to the Protected Area Review (2001), CBC or co-management approaches should involve the following stages: a) identifying the main stakeholders and their interests, b) jointly developing a vision the area, c) negotiating an agreement to achieve the vision, and d) implementing, monitoring, and

evaluating the agreement. Some of the previous MES research has worked with local communities to identify stakeholders and their interests while the field research component of this major paper jointly developed a common vision for the local communities. There is still more work needed in order to secure local participation that lasts, but the Las Nubes project is on the right path.

Until now, local participation activities invited the whole communities. In the future, as the objectives of the projects become more specific community-wide participation may be at times replaced by group-specific participation. Working with groups can be more effective and efficient in certain cases (Western et al. 1994). For instance, if the general community has agreed on a plan to promote organic agriculture in the area, then a meeting of only local farmers can be held to discuss farming-specific issues. The entire community should still be informed about the results of the group-meetings. Based on experience from this major paper research, participation of local residents in community-meetings involves considerable time and energy investment on their part. Therefore, the frequency and size of the meetings have to be carefully planned not to "burn out" local interest in the project.

The Las Nubes project's commitment to participation could face all the constraints described earlier in section 3.7. However, there are some community and project characteristics that can assist avoiding certain community participation barriers. Specifically:

- The local communities are accustomed to different types of community meetings or gatherings. It is not uncommon for local people, typically men, to participate in public meetings and discuss issues relevant to the community. There are several

community groups and committees that were initiated by the communities. They are dealing with issues of regional interests, including a few with conservation objectives. There are no known national or regional government structures that inhibit local participation. On the contrary, the majority of the farmers are members of regional coffee and sugarcane cooperatives. Costa Rica in general is promoting community participation as a way of achieving rural development and natural resource management.

- The Las Nubes project is committed to a community participation approach to conservation and sustainable community development. This support is based in recognition of the ethical and practical advantages of community participation and not on any external pressure, such as from funding agencies or donors. Therefore, there is no resentment by FES-TSC professionals about shifting-power to local communities.
- The Las Nubes project is cautious about the extensive use of rapid appraisal methods in its projects. When possible, investing in systematic data collection and a slow, methodical process of identifying stakeholders and their interests is preferred.
- There is a focus on realistic and feasible land-use alternatives. Technologically complex practices that would require extensive costly training are avoided.
- The Las Nubes project is an ongoing project, unlike many participatory ICDPs that have a durations of only 3-4 years. There is time to learn and adapt based on feedback from the communities.

3.10 Conclusions

Conservation professionals have realized that biological conservation cannot be pursued only through traditional protected areas. Rural areas are increasingly recognized as a new medium/frontier where biodiversity can be conserved while meeting the development needs of rural communities. In order to effectively do that, it is important that local communities participate in the projects. There are no universal laws about the degree of participation that each project should have. A case-specific approach is recommended, recognizing however that participatory projects should involve the local communities from the very beginning. Doing otherwise typically results in project failures.

The effectiveness of participation has been debated extensively, eliciting "both enthusiastic praise and wary criticism – the latter usually decrying the concept's idealism and impracticality (Western et al. 1994)." Despite numerous reviews of participatory rural development projects, there have been few systematic evaluations on the effect of community participation projects and conservation. Many projects succeed in promoting rural community empowerment, but the results on promoting conservation are inconclusive. ICDP managers must acknowledge the limitations of community participation and objectively evaluate the existing trend of over-reliance on it. Participation is a promising approach to conservation but should not be seen as a panacea for all local conservation problems. "Not all conservation can or should be community based, and mobilizing communities is certainly not, in itself, a guarantee of conservation (Western et al. 1994)." There are several constrains and costs associated with community participation. Despite these difficulties, there are reasons to believe in the value of this

approach. After all, the failures of restrictive resource management and "fine and fence" nature conservation are fresh in memory.

CHAPTER 4: BUFFER ZONES

4.1. The Concept of Buffer Zones

During the past two decades, the concept of buffer zones has developed into a well-known, operational approach in biological conservation. Managers of protected areas see buffer zones as a tool that can assist them achieve the conservation objectives of an area, while addressing the development needs of local populations. It is this attribute of buffer zones that makes them a common component in ICDPs, and why it was decided to incorporate a buffer zone in the design of the Las Nubes project.

This chapter starts with a brief presentation of the evolution of the buffer zone concept. Then, it examines the benefits and constraints of buffer zone use in the Tropics, and reviews their history in Costa Rica. The chapter ends with a discussion on buffer zone relevance for the Las Nubes research project, and some general conclusions.

4.1.1. Evolution of the Concept

The principle of buffer zones has been in use for a long time, before nature conservationists adopted the concept of buffers for protected area management. Originally, people considered certain cultivations around forests and natural reserves to serve as buffers against wildlife leaving the forest and posing danger to people and crops.

In the early seventies, an increase in global awareness of the pressure on biological resources and protected areas led to the inception of buffer zones as a biological conservation strategy (Ebregt and De Greve 2000). The concept of having delineated zones around conservation areas, where land-use activities would be limited, evolved from the desire to control and limit the negative impacts of human activities on the protected areas. Buffer zone received widespread attention in 1974, with Unesco's Man

and the Biosphere program (MAB). MAB proposed a zoning strategy for biosphere reserves, which consisted of a core area, a buffer zone, and a transition area (UNESCO 2002). The core area and the buffer zone have definite boundaries, while the transition zone is not strictly delineated (Li et al. 1998). The core area is designed to give long-term protection to natural ecosystems and excludes all human use except for controlled scientific research. Buffer zones are typically adjacent to core areas, inside or outside of them, and allow for human activities that do not conflict with the protection of the core area. Development activities are permitted in the transition area (Li et al. 1998). This zoning design for conservation quickly became popular and spread to other protected areas. In most cases, however, the buffer zone concept assumed also the management objectives of the transition area. Nowadays, most of the time there is no distinction being made between the two.

In the early eighties, the field of protected area management showed an increasing interest in stakeholders and traditional user rights (Sayer 1991). The Third Congress of National Parks and Protected Areas at Bali in 1982 introduced at a global level the message that biological conservation should take into consideration the needs of local people. In 1984, the MAB/Unesco Biosphere Reserves Action Plan adopted at Minsk, USSR, reinforced the concept of conservation working with human development. In addition to these international initiatives, field feedback from protected area managers suggested that indeed this was not only an ethical thing to do, but it was proving to be necessary for the success of conservation projects (Sayer 1991). Responding to this change in conservation mentality, the buffer zone concept gradually shifted to a more "socio-ecological concept than solely a geographically delineated area with imposed

restrictions on use (Ebregt and De Greve 2000).” The terms “extension buffering” and “socio-buffering” have been used to describe the two approaches to buffer zone function, but are not used widely (MacKinnon et al.1986).

During the remaining of the eighties, as the conservation world was looking for new systems and ideas that would allow to bridge the gap between immediate local people needs and long-term conservation objectives, buffer zones gained popularity. In fact, by early nineties, virtually all proposals for protecting natural areas incorporated some form of buffer zone use (Wells and Brandon 1992). However, given the widespread use of buffer zones term - in “almost any initiative involving people that takes place near a protected area (Wells and Brandon 1992)” - the concept has not been adequately defined. A lack of consensus remains on issues involving the objectives, location, size, shape, and management of buffer zones (Wind and Prins 1989). By the mid-nineties, some buffer zone evaluation reports were clearly concerned with the increasing ambiguity of the concept and indiscriminate use of the term (Martino 2001). They suggested a more restricted use of the buffer zone term, that emphasized the concept’s focus on primarily protected area conservation and secondly on economic and social benefits (Wells and Brandon 1993).

Overall, the buffer zone concept, as it has developed to date, is based on the premise that sustainable land use practices within the buffer zones can satisfy local natural resource needs without affecting the conservation objectives in the core area (Hall 2001). In fact, it is often expected that sustainable activities in the zone can help restore degraded land and effectively assist in expanding the wildlife habitat in a region.

4.1.2. Definitions

Several definitions have been suggested over the years for buffer zones, reflecting the changes the concept has undergone and the different ways that the buffer zone issue can be approached. According to the Shorter Oxford Dictionary, a buffer zone refers to an area lying between two or more others serving to reduce the possibility of damaging interactions between them. This definition implies a two way interaction between the two areas separated by the buffer zone. Several definitions proposed for the use of the term in nature conservation context, recognize or emphasize only one of the two ways of interaction. For example, Wind and Prins (1989) suggested the following brief definition:

"Areas outside the protected area that are designed to protect parks."

Similarly, in a more extensive definition Sayer (1991) suggested:

"A zone, peripheral to a national park or equivalent reserve, where restrictions placed upon resource use or special development measures are undertaken to enhance the conservation value of the area."

The above two definitions reflect the emphasis on the protected area management aspect of the term, where buffer zones serve only to avoid negative human impact on the protected area. Ebregt and De Greve (2000) refer to this approach as the "hard-core" conservationist's approach. The same authors refer to the following two definitions as examples of the socio-conservationist's approach.

"Areas adjacent to protected areas, on which land use is partially restricted to give an added layer of protection to the protected area itself while providing valued benefits to neighboring rural communities." (Mackinnon et al. 1986)

> *"Any area, often peripheral to a protected area, inside or outside, in which activities are implemented or the area managed with the aim of enhancing the positive and reducing negative impacts of conservation on neighboring communities and of neighboring communities to conservation."* (Wild and Mutebi, 1996)

The land surrounding Los Cusingos Neotropical Bird Sanctuary is all privately owned, unlike the land in some buffer zones that may be communally owned or be property of the same owner as the core area. Considering these characteristics, the definition that corresponds best with the principles of the Las Nubes project is the last one. It expresses the two-way interaction that the buffer zone has to address with its design, and does not refer to "restrictions" that could alienate the private landowners in the region.

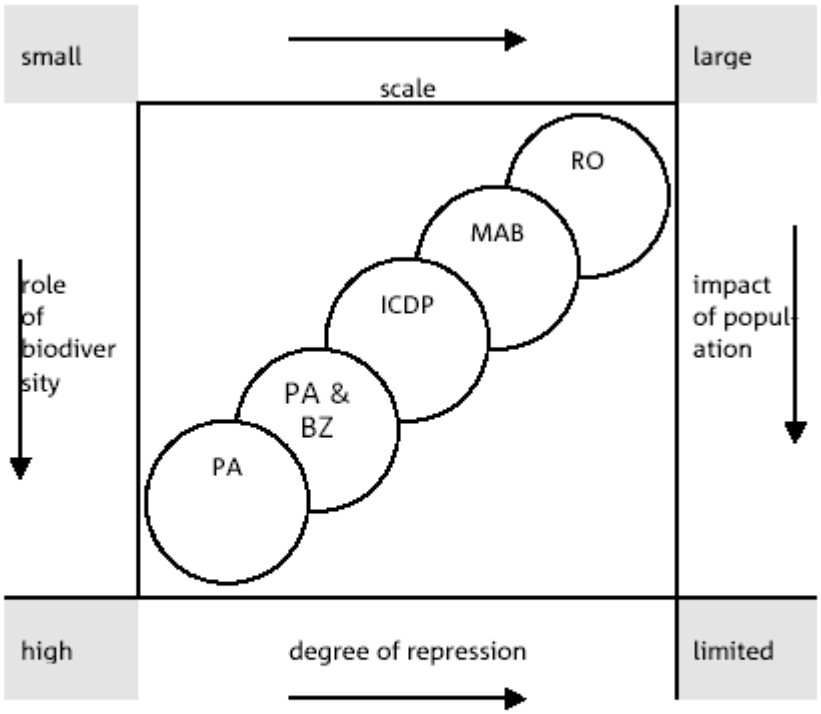
4.2. Buffer Zone Design and Management

4.2.1. Management

There are various approaches to buffer zone management, deriving from the different previously described views on the buffer zone concept. Buffer zones are a *means* to protected area management and not the objective. As such, the conservation approach of the broader project that incorporates the buffer zone dictates the buffer's management. A buffer zone adjacent to a conservation area managed through a strict conservation approach may be managed as an extension of the core area – reducing the impact of human activities on the core area. On the other hand, a buffer zone which forms part of a biosphere reserve will likely be managed in a way that conserves diversity, maintains healthy ecosystems, and meets the needs of local people (Hall 2001).

Consequently, we can better understand buffer zone management approaches by examining the different nature conservation approaches (Figure 4.1) (Ebregt and De Greve 2000).

Figure 4.1 Various conservation approaches and relations between them



PA protected area approach
PA+BZ protected area and buffer zone approach
ICDP integrated conservation and development approach
MAB man and biosphere approach
RO land use planning approach

(figure taken from Ebregt and De Greve 2000)

Buffer zones that are part of strict protected area (PA + BZ) approach programs are managed in a way that takes into high consideration the role of biodiversity in the area. The importance of population needs and the level of discomfort (repression) generated by the buffer zone management are of less importance. Buffer zones, which are part of ICDP, MAB, and land use planning (RO) approach programs, take into consideration

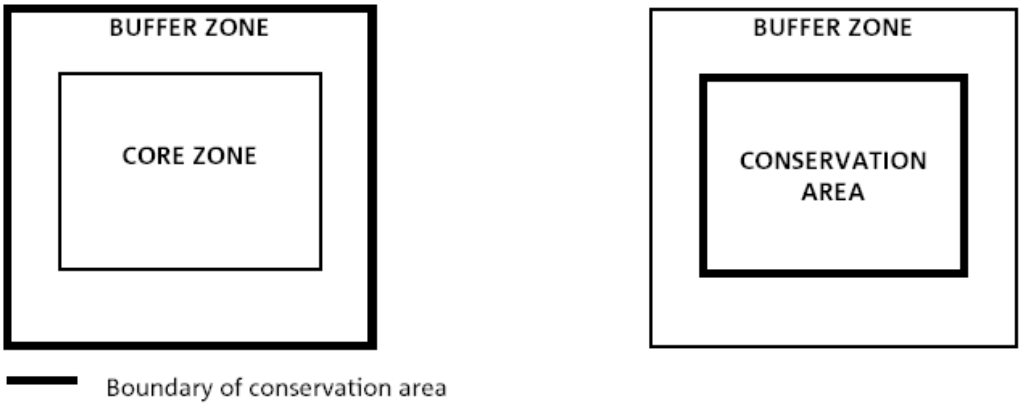
both the local populations and the nature conservation objectives. This is known as a bi-polar approach to conservation.

In ICDPs, socio-economic sustainable rural development is an important objective, but conservation is the starting point. The Las Nubes project is best described under the ICDP conservation approach, and therefore the management of the buffer zone around Los Cusingos is approached from that theoretical framework.

In addition to the management approach of the conservation area associated with a buffer zone, land ownership and the legal context also affect the selection of a buffer zone's management approach (Sayer 1991, Wells and Brandon 1993, Ebregt and De Greve 2000).

The importance of land ownership within a buffer zone on its management is intuitive. If the land is owned by the same entity as the core area (often state owned), the buffer zone could serve as an extension of the core area, forming together with it the conservation area (Figure 4.2) - protecting it from negative human influences. Management in these cases is efficient (Sayer 1991). Protected area managers may consider forming a buffer zone in a case of total land ownership, if local rural communities are traditionally dependent on natural resources within the buffer zone. International agreements, such as Article 11 of Convention No. 107 of the International Labour Organization, recognize the rights of tribal and indigenous peoples to access of their traditional lands. Sustainable extractive use by local communities can be arranged through management agreements. Allowing regulated access in the buffer zone avoids confrontation with the local communities and contributes to rural development.

Figure 4.2 Two buffer zone designs



(figure taken from Ebregt and De Greve, 2000)

The difficulties for park managers are even greater when they do not own the buffer zone land. Sayer (1991) suggests that in such cases, clarifying who has title to the land is essential in order to avoid the known "tragedy of the commons" degradation of the land. The formation and management of a buffer zone in cases of privately owned land is a complex process that requires thorough examination of the socio-economic issues in the neighboring communities and the conservation requirements of the protected area (Ebregt and De Greve 2000).

Understanding the limitations and powers provided by the legal context of an area is also vital for effective management of the buffer zones. Complex regulatory and enforcement mechanisms may be at play when managers attempt to regulate human activities in the buffer zone. Most institutions managing protected areas "lack the legal authority, jurisdiction and mandate to establish or manage buffer zones (Wells and

Brandon 1993)." Furthermore, they may lack training, resources, experience, or willingness to get involved in an integrated approach of conservation and development.

In summary, it is the protected area management approach that weighs heavier on the management of the buffer zone, and not the other way around. However, certain characteristics of the buffer zone, such as land ownership and legal context also influence the selected management approach for the zone.

4.2.2 Design

In the early steps of buffer zone use as a conservation tool, attempts were made to develop models and guidelines for buffer zone design that could be applied broadly (Lusigi 1981, MacKinnon et al. 1986). It soon became obvious that this was not practically possible because of the complexity and uniqueness of the issues that have to be addressed by each buffer zone design. Nowadays, the blueprint approach in designing buffer zones has for the most part been abandoned. Instead, a situation-specific design approach is recommended (Sayer 1991, Ebregt and De Greve 2000, McQuistan 2002).

Nevertheless, certain general recommendations can be made about the design process of the buffer zones. This section presents the major criteria and conditions that have to be addressed in the design of a buffer zone. They are divided in the following categories: purpose, size/shape, ecology, and economic, social, and legal considerations.

Buffer Zone Purpose

When a buffer zone is considered for a protected area, before designing one, it is necessary to assess the added value it will have (Ebregt and De Greve 2000). It is important to clarify the objectives of the buffer zone. Will it increase the protection of the conservation area, or will it contribute to the economic development of surrounding

communities whose support is important for the successful management of the core area? Answers to such questions are important since the design should reflect the buffer zone's purpose and management objectives.

Ideally, the buffer zone and the protected area should be designed together. However, this is rarely the case. Most of the approximately 300 biosphere reserves established worldwide were superimposed on existing protected areas (Wells and Brandon 1993). So, the added buffer zones could take into consideration the protected area design, but not vice versa. Not including the buffer zones in the design and management of protected areas from the beginning could lead to limited success of the buffer zones objectives.
The agencies that manage the core areas often lack the training, willingness, and resources to modify their management approach to account for the new buffer zone (Sayer 1991, Wells and Brandon 1993).

Size/Shape

Deciding on the preferred size of a buffer zone is a complex process that requires consideration of several parameters. It should take into account the availability of land, local land-use practices, ecological needs, and the future management objectives of the buffer zone. If the intent of the buffer zone is to act as an extension of the conservation area, providing additional wildlife habitat, and buffering against negative human impacts, then the bigger the size the better. However, from an economic point of view there is an optimal size for every buffer zone type. There is a marginal point where the cost of further increasing the size of the buffer zone is higher than the increase in benefits from the enlargement (Ebregt and De Greve 2000). Unfortunately, identifying this marginal

point in size is difficult, since it is rarely possible to assign a clear monetary value on the ecological benefits of a buffer zone.

Agreeing on a minimum buffer zone size may be easier. Buffer zones allow controlled natural resource use by local communities will have to be large enough to sustainably support these practices (Ebregt and De Greve 2000). Buffer zones that gradually degrade are not functioning properly. Therefore, monitoring of natural resources is an important component of buffer zone management.

In addition to the size of the buffer zone, its shape has to be decided as well. In the early 80's, the proponents of a blueprint approach to buffer zone design were developing guidelines for preferred shapes – as well as sizes (Figures 4.3-4.4). They were based on theory and not on practical observations (Wells and Brandon 1992). For instance, it was suggested that buffer zones have the same width all around a protected area. Nowadays, it is agreed that buffer zone designs should not adhere to such generalizations. In fact, Li et al. (1999) suggest "the most unjustifiable aspect of design of the buffer zone for reserves is that its width is usually the same size all around the reserve and does not vary with the importance of the influences in the different sections around the reserve." In the same journal article, Li et al. (1999) propose a complex equation for selecting the buffer zone width and shape. The equation design is based on Analytic Hierarchy Process (AHP). This proposed approach is new and other conservation scientists have not reviewed it yet, to this author's knowledge. However, judging by the complexity of the formula and the extensive field data that it requires, it is unlikely that this approach to size/shape design will be practical and widely implemented.

Ecological Aspects of Design

Most buffer zones have a conservation component in their management objectives, even if their primary mandate is promoting sustainable rural development. A buffer zone can focus on different scales of biological conservation, such as landscape, habitat, and/or species conservation (Ebregt and De Greve 2000). It is important that it is made clear at the design stage of the buffer zone what conservation approach is selected. This requires a thorough understanding of local species ecology and their needs.

Some of the ecological factors that have to be addressed at the design stage are:

- Soil factors, including soil type, slope, water retention ability etc.
- Habitat use of species and migration patterns – This is especially important for buffer zones that may function as biological corridors and lie on migration routes of species.
- Size of the protected area and its ecological needs (i.e. reduction of edge effects).
- Degree of habitat fragmentation in the area.
- Geomorphology of the area, such as elevation.

Economic Aspects of Design

Although it is often not seen as such by conservation scientists, designing and establishing a buffer zone is an economic activity. The natural resources of an area are being put to use with the objective of increasing society's benefits received from that area. Realizing this aspect of buffer zone design is important for the zone's future success. The problem is that the health of the environment is "a public, non-marketable commodity (Ebregt and De Greve 2000)." As a result, there is no readily available demand curve that shows the marginal value to society of each additional unit of the

benefit. Furthermore, the ecological system responds slower to changes than the economic system. This disparity in time scales constitutes a big challenge for cost analysis of environmental projects within the existing economic paradigm. Nevertheless, addressing the issue in the best available manner is arguably better than ignoring it.

Ideally, the design process of a buffer zone should consider the associated costs to society of at least two scenarios – one where a buffer zone is established next to a protected area and one where it does not. The costs should then be compared to the expected benefits of a buffer zone. This cost analysis should take into consideration both the explicit and implicit costs of each scenario (Ebregt and De Greve 2000). Explicit costs are considered the monetary expenses for establishing and managing a buffer zone (i.e. infrastructure work, monitoring and management costs, land acquisition, compensations). Implicit costs refer to the value of non-monetary impacts that the addition of a buffer zone will have to local communities (i.e. loss of access to certain resources, time and energy investment for obtaining new skills, social and cultural heritage inconveniences). Identifying and accurately calculating the implicit costs of activities is a challenge. Literature reviews recommend that further research into experiences from the field with respect to evaluation of buffer zone impacts is required in order to successfully integrate economic considerations into the buffer zone design process (Sayer 1991, Ebregt and De Greve 2000).

Legal Aspects of Design

Developing an understanding of the legal framework for a proposed buffer zone is crucial at the design stage. It facilitates early identification of possible legal obstacles or supportive legislation. Various levels of legislation, such as international treaties and

conventions and national or local level legislations may determine the legal aspects of a buffer zone establishment. For instance, the existence of national legislations for establishing extractive, hunting, or indigenous reserves can provide an ideal framework for the establishment and management of a buffer zone. Unfortunately, few countries have such supporting legislation. Literature strongly suggests the expansion of the national legal framework to include such types of reserve categories that can form the basis for buffer zones (Sayer 1991, Ebregt and De Greve 2000). The same sources also suggest that a strong legal framework for protecting and managing the core-protected area is required. Without it, there is no rationale or credibility of a buffer zone around it. How can the buffer zone management objectives be reached, if the local populations do not acknowledge the status even of the core area?

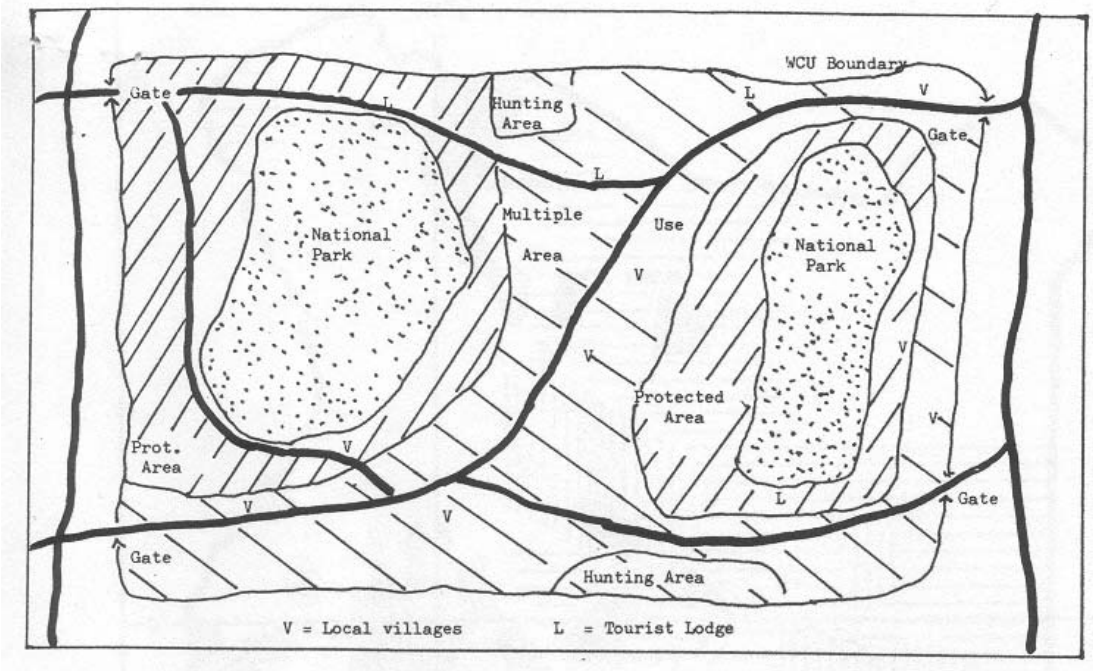
Establishing such a supportive legal framework during the design stage of a buffer zone can be problematic in remote parts of the country where government institutions are absent or weak (Sayer 1991). In such cases, informal arrangements with individuals, local communities, or government agencies can help bypass the legal gap and set a fertile legal ground for the establishment of the buffer zone.

Social Aspects of Design

A buffer zone will affect the use and management of natural resources available to the local communities, whether state or privately owned. This can lead to multi-aspect social changes – such as gender balances, traditional practices, and food production patterns. Therefore, it is important that the design of the buffer zone and its management plan is reached through a negotiation process that includes and recognizes the contribution of all stakeholders. In order to obtain such meaningful feedback and participation from local

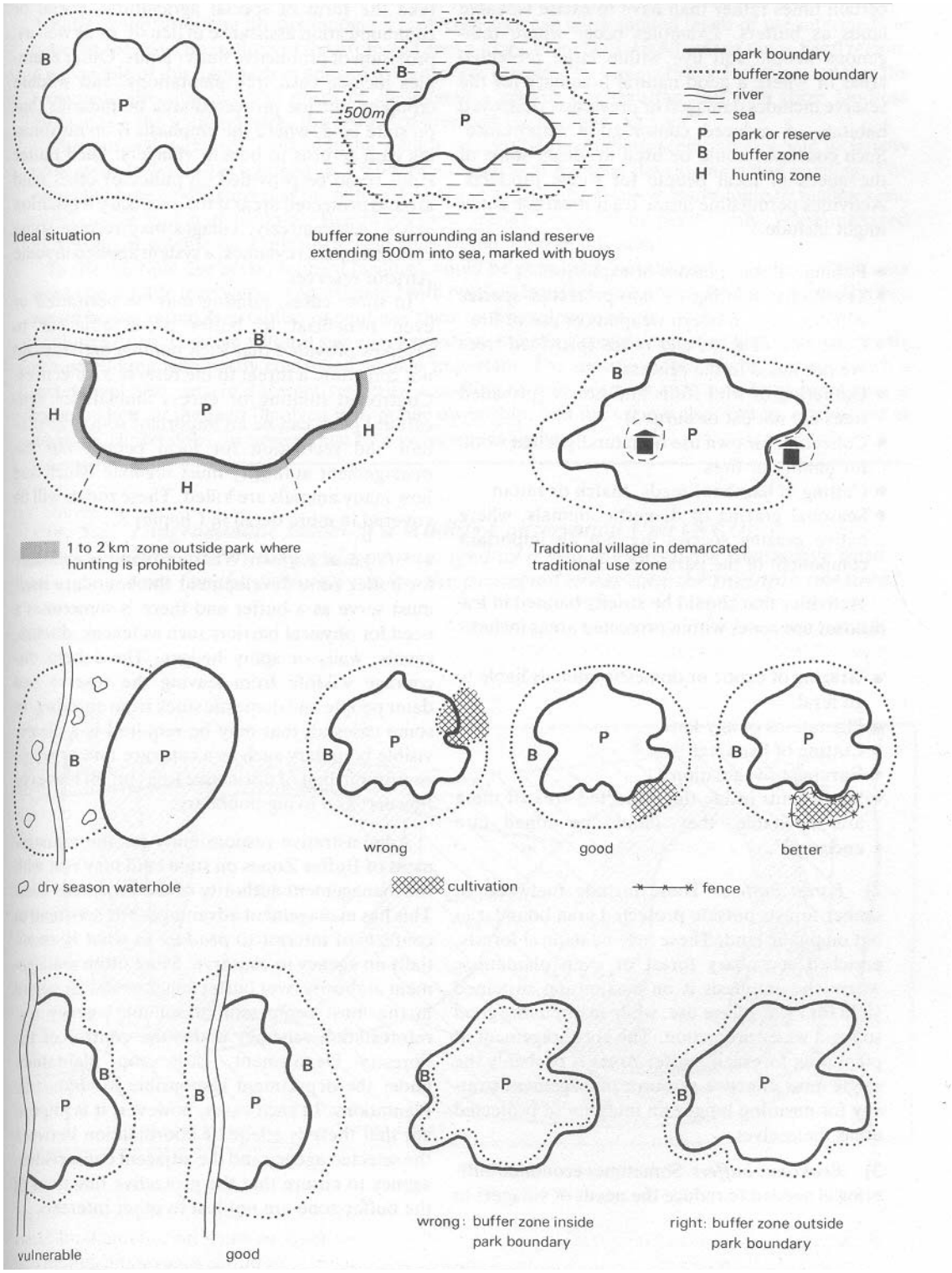
communities, the stakeholders have to appreciate the expected short-term and long-term benefits and drawbacks of a buffer zone (Ebregt and De Greve 2000). Transparency of the decision making process increases public faith, credibility, and ownership of the buffer zone.

Figure 4.3 Proposed model of a conservation unit consisting of core areas (National Parks), Buffer Zones (Protected Areas), and Transition Zones (Multiple Use Areas) *(Hunting areas should be acceptable mainly in areas where there is subsistence hunting).*



(figure taken from Lusigi 1981)

Figure 4.4: Examples of Buffer Zone Designs for Protected Areas



(figure taken from Van Lavieren, 1983)

4.2.3. Types of Buffer Zones

Based on the different field conditions and management approaches under which buffer zones are operating, several buffer zone models have evolved. This section briefly describes some of those buffer zone types (MacKinnon et al., 1986; Ebregt and De Greve, 2000). The list is not exhaustive. Many of these buffer zone types are referred to by more than one term. A given buffer zone may fall within the definition of more than one type.

Traditional Use Zone

When traditional use of natural resources by local people is taking place close or within a conservation area, the protected area management approach has to address the needs of these people. Often, traditional use zones are established where local practices can be continued – possibly with some restrictions to ensure sustainability of the resources within the zone. Typically, the resource use activities in the traditional use zones are for subsistence purposes, such as non-timber forest products, hunting, and fishing.

Forest Buffer Zone

Natural or planted forests surrounding a core, forested, area are sometimes referred to as forest buffer zones. They have been one of the oldest known buffer zone types, designed to allow controlled use of the forest resources in the buffer zone. They provide some protection to the core area, such as reducing edge effects, and may contribute to the increase of wildlife habitat. Also, unharvested surplus biomass from forest plantations can increase food supply for browsing species.

Economic Buffer Zone

Typically located outside conservation areas, this buffer zone type has an economic development emphasis. Adapted agricultural practices that support higher biodiversity are pursued over more intensive land-use practices. Depending on the conservation approach, the buffers may act as buffers against negative human impact on the core area, against crop-raiding animals, or both. One of the risks of economic buffer zones is that their economic emphasis can attract people from other areas, resulting in an increase on human pressure on nature.

Physical Buffer Zone

Although not precisely a buffer zone, physical barriers that serve to protect conservation areas are also referred to as physical buffer zones. The physical buffer zones can be natural, such as rivers and cliffs, or artificial, such as fences, walls, and canals. Their value lies in their ability to clearly demark the boundaries of conservation areas, prevent wildlife from leaving the area, and keeping people from entering it. These performed functions are similar to those of buffer zones, and this is why they are sometimes referred to as such.

Streamside Buffer Zone

Also known as riparian zones, streamside buffer zones are forest or vegetation strips along water courses. They are maintained in order to reduce soil erosion, act as filters for water run off from nearby logging and agriculture activities, and help with biodiversity conservation. Depending on the length, width, and connectivity of these zones, they may serve as wildlife habitat and/or as biological corridors between core areas. Laws in many

places regulate the maintenance and width of these zones. Bank slope and river size are two of the most important factors considered in their design.

Social Buffer Zone

The social buffer zone design uses the cultural differences of indigenous and other local populations in order to form a barrier between a protected area and its surroundings. For instance, if land-use rights on indigenous land are restricted to people of a specific indigenous group, outsiders can not invade the indigenous "buffer zone" or the protected area. The task then is limited to promoting sustainable land-use practices among the indigenous groups. Social buffer zones promote cultural identity and increase project ownership. They usually are expensive to implement and can be implemented only in a few areas.

Fire Buffer Zone

Fire buffer zones, as their name implies, are created around conservation areas in fire prone areas to provide protection from wild fires. Their design typically includes approximately 40-meter zones of green vegetation that act as fire breaks. Allowing certain types of agriculture around the protected areas can serve the same purpose.

4.3. Benefits and Constrains of Buffer Zones

4.3.1. Benefits

Buffer zones have been very popular as a conservation tool because they are perceived to provide a wide variety of benefits depending on the type of buffer zone and the socio-economic conditions in the local communities. This section presents some of these benefits categorized in three categories - biological, social, and economic. The list is not conclusive, since including all possible benefits would be impractical and likely not

possible. A specific buffer zone may provide several of those benefits. The debate on whether some of these perceived benefits are actually realizable in practice is ongoing in academic journals. It is not the intention of this section to evaluate the benefits. The list of benefits presented here was developed based on reviewing the works of Lusigi (1981), Sayer (1991), Wells and Brandon (1992, 1993), and Ebregt and De Greve (2000).

Biological

The biological benefits of buffer zones are the most readily apparent to people and as a result often the least disputed. Most of the benefits are product of the buffer zone effectively expanding the effectiveness of the protected area by keeping negative human impacts further away from the boundaries of the protected area (Wells and Brandon 1992).

A buffer zone provides biological benefits by:

- Acting as a filter or barrier to uncontrolled human access and use of the core-protected area.
- Supporting environmental processes, such as water retention, filtration, and protection.
- Increasing wildlife habitat.
- Keeping exotic plants and animals away from the core area borders.
- Providing increased protection to the core area against severe weather phenomena and soil erosion.

Social

The social benefits of buffer zones are more debatable. Scientists who are skeptical about social benefits are concerned that it is not practically possible to provide such benefits and achieve true sustainable land-use practices at the same time.

A buffer zone provides social benefits by:

- Building local and regional support for conservation projects.
- Promoting sustainable use of natural resources and increasing environmental awareness.
- Introducing public participatory methodologies to the local communities as a mean of planning and implementing programs.
- Providing a mechanism where conservation and local development conflicts can be addressed.
- Compensating local people for opportunity losses due to access restrictions to the core area.

Economic

Identifying economic benefits is very important in order to build local support for a buffer zone project, especially if the buffer zone is going to be established on private land. Rural communities adjacent to protected areas often tend to be impoverished, resulting in reduced willingness to participate in any project that involves high economic risks on their part without likely economic returns.

A buffer zone provides economic benefits by:

- Generating income for local communities through tourism and other nature related activities in the buffer zone area – especially in cases where strictly protected areas may restrict such activities.
- Introducing more efficient land use practices, new crops, and new technologies, increasing productivity.
- Creating new employment opportunities.
- Improving local infrastructure, which in turns can affect positively the local economy.
- Securing the direct and indirect value from biodiversity and the conservation of habitat for future generations.

4.3.2. Constraints

"The buffer zone concept, although deceptively simple and intuitively very appealing, thus faces considerable challenges." (Wells and Brandon 1992)

Recent reviews of buffer zone case studies have shown that there is a clear gap between buffer zones in principle and in practice (Sayer 1991, Wells and Brandon 1993, Ebregt and De Greve 2000). Although the concept of buffer zones has been extensively used in the last twenty years, there are very few convincing working models of the concept (Sayer, 1991). This section presents a summary of constrains of buffer zone projects, as suggested by reviewed literature. They are categorized in ecological, socio-economic, and methodological causes. The list is not, and does not intent to be, comprehensive.

Ecological Constraints

Most of identified ecological causes for failure mentioned in literature have to do with inadequate knowledge and understanding of the environmental parameters in the core and buffer zone area. For instance, in some cases soil and climatic conditions were not taken into account when new crops or forestry species were introduced in the buffer zone area, leading to failure. Also, inter-species interactions for protected species have to be understood before going forward with any changes in the ecosystems. Potential pest species have to be identified as well, in order to reduce conflicts between wildlife and local human activities.

According to Wells and Brandon (1993) a major constraint to buffer zone success has been the inability of conservation scientists to adequately determine the sustainable exploitation limits for natural resources in the proposed buffer zones. Tropical ecosystems, where most buffer zones have been located, are very complex. Determining the long term effects of multi-species harvesting management plans is a big challenge. Even when an acceptable estimation is available, the complexity of the regulatory and enforcement mechanisms is often a daunting.

Finally, as described in chapter 2, conservation objectives have been often in conflict with development objectives, despite the theoretical integrated approach to the projects. This is a cause of failure that haunts ICDPs and consequently buffer zones as an important ICDP component.

Socio-economic Constraints

The majority of the socio-economic problems faced by buffer zone projects stem either from the use of a top-down design and management approach of the buffer zone or

a half-hearted implementation of the concept of community representation. For instance, reviews of buffer zone projects found that often the buffer zone objectives were not in line with local people's aspirations, local communities did not develop sufficient ownership of the buffer zone, and socio-cultural characteristics (i.e. intra-household resource use differences) were not properly accounted for (Ebregt and De Greve 2000).

Moreover, in many cases buffer zone managers gave too much emphasis on social and economic advantages expected to result from the buffer zone establishment, which eventually did not materialize. That led to a loss of faith and resentment of local people towards the buffer zone.

According to Wells and Brandon (1992), one of the most serious constrains of buffer zone success has been the fact that changes of mentality take a long time and the limited benefits that flow to local people have not been able to change behavior towards natural resource use.

Furthermore, in the few cases that a cost analysis was done for the establishment of a buffer zone, the analysis failed to take into account the environmental, non-monetary, non-market, values. This led to an underestimation of the costs and benefits of the projects, resulting in misdirection of the design and management process.

Methodological Causes

A series of methodological errors and constrains have been suggested by scholars. The most commonly cited one is, as mentioned earlier, the use of a top-down implementation approach which did not take into account the local community needs and aspirations, cultural issues, and knowledge. Also very important seems to be the short time frame of many buffer zone projects. Many of projects did not last more than five

years, a period that is insufficient to consolidate all the parameters that play part in the establishment of a buffer zone and to modify existing unsustainable behaviors (Sayer 1991, Ebregt and De Greve 2000).

Other methodological problems arose from: the use of too detailed management and technical plans, the unsustainable practice of using subsidies and salaries to promote sustainable natural resource use, unclear definition demarcations of buffer zone boundaries, and the promotion of too sophisticated and complex land use alternatives.

4.4. Buffer Zones in Costa Rica

Costa Rica is renowned worldwide as a progressive country in the field of conservation. Although the country's "green" reputation can be debated, currently, over 25 per cent of its land is under some form of protection (Evans 1999). Many of these protected areas in Costa Rica either have buffer zones, or are acting as buffer zones for other protected areas with more limitations on human activities. This section provides a brief description of a well-known complex of protected areas in Costa Rica where the buffer zone concept is utilized – La Amistad Biosphere Reserve. The two most prominent La Amistad buffer zone initiatives are examined, in order to better appreciate the challenges of buffer zone design and management.

La Amistad Biosphere Reserve

In 1982, La Amistad Biosphere Reserve was established through bi-national cooperation between Costa Rica and Panama. One year later, it was also recognized as a World Heritage Site. The Costa Rican sector of the reserve covers 6126km² (12% of the country's area) and consists of 15 areas of different protection levels. Specifically, the biosphere reserve includes three National Parks, one Protected Zone, two Biological

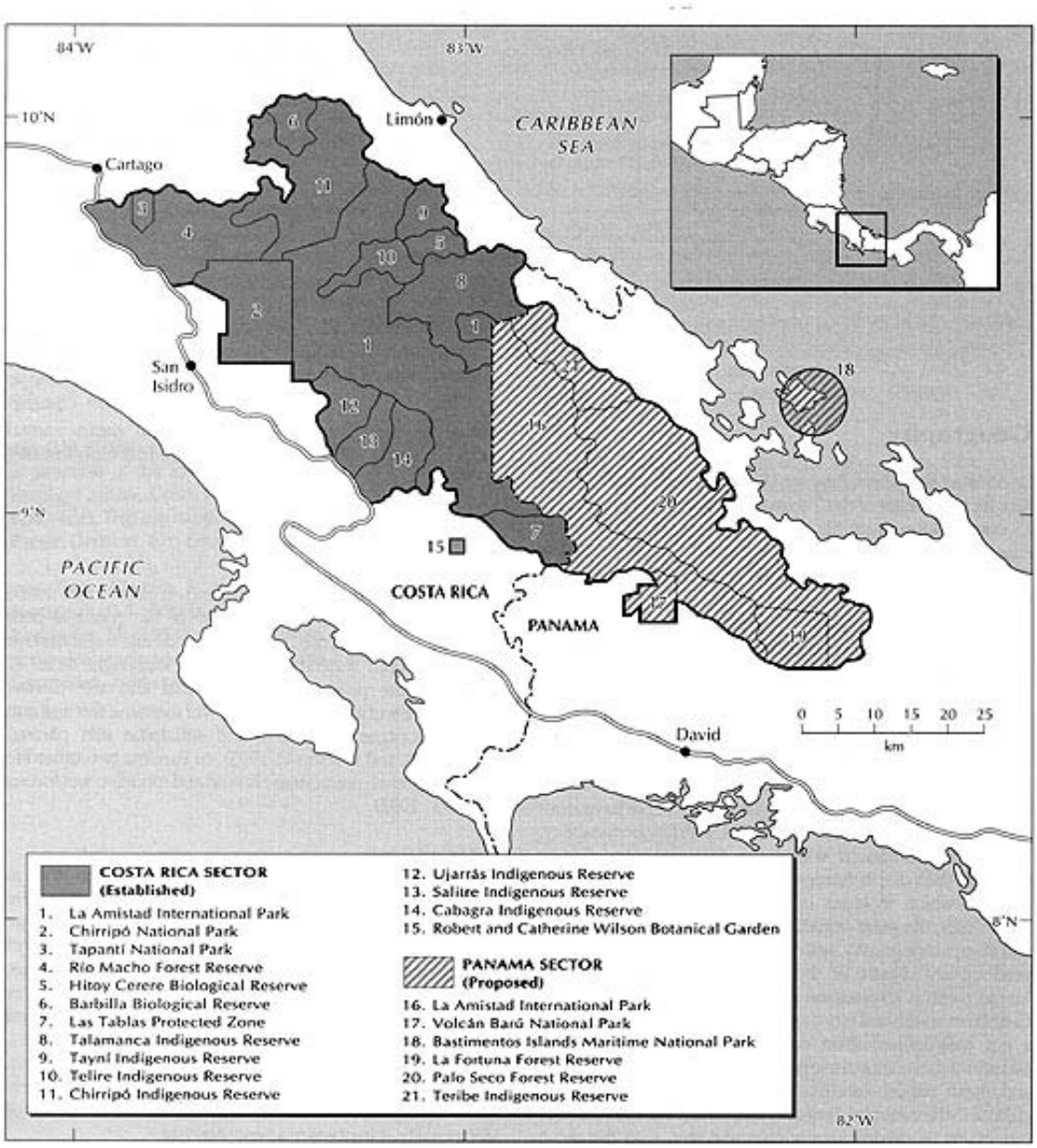
Reserves, one Forest Reserve, seven indigenous reserves, and one Botanical Garden (Figure 4.5). The Panamanian sector (not yet of a biosphere reserve status) includes three National Parks, one Forest Reserve, one Protection Forest, and one indigenous reservation.

The national parks serve as the core of the biosphere reserve, with the remaining conservation units acting as buffer zones. Depending on the status of each adjacent area, different levels of economic activities are allowed. For instance, traditional land use practices are allowed in the indigenous reserves. As mentioned earlier in this chapter, indigenous reserves can act as buffer zones that block access to the core area's natural resources to outsiders.

La Amistad is a good example of a protected area with a buffer zone that was established mainly through national scale debate. The government's contribution was at the legislative level, introducing legislation that regulates land use practices in the various conservation units and indigenous reserves. Much of the land in the buffer zone of the reserve is privately or communally owned. The extent of community participation in the design of the buffer zone, however, is unclear.

Two community-based projects have taken place within the buffer zone of La Amistad with the purpose of improving the buffer zone management. They are the AMISCONDE project and the Talamanca ANAI initiative.

Figure 4.5 La Amistad Biosphere Reserve – Costa Rica and Panama



(figure taken from Smithsonian Institute - National Museum of National History website)

AMISCONDE

The AMISCONDE (Amistad Conservation and Development) project has been a joint initiative between Conservation International, the Tropical Science Center in Costa Rica and FUNDESPA, a conservation group in Panama, with support from Texas A&M University and McDonald's Corporation (USA). Through the utilization of participatory methodologies, the project has promoted sustainable community development practices and biological conservation. Specifically, in the first five years of the project (1993-1998) the AMISCONDE project worked on soil conservation and reforestation, forestry nursery, youth group organizations, environmental education, capacity building, and administering a local credit fund to farmers and environmental groups (TSC, 2002). The efforts of AMISCONDE concentrate on communities within the buffer zone of La Amistad. AMISCONDE is currently in the design process of establishing an organic shade-grown coffee certification program with small communities on the Pacific slope of La Amistad, including the communities of Las Nubes region communities of Santa Elena and Quizarrá.

ANAI/ASACODE initiative in Talamanca

ANAI[3] is a local NGO of the Talamanca region of Costa Rica. Since the early 1980s, ANAI has been working with local communities in the region with the aim of "integrating conservation of the natural ecosystem with the development needs of rural peoples (Sayer 1991)." Most known of all has been the ANAI program of aiding indigenous people to reforest degraded land in their reserves adjacent to La Amistad and promoting the introduction of new fruit trees for sustainable economic development of

[3] ANAI stands for Association of New Alchemists and its name is but a simple reference to the 70's routes of the group from North American hippies. It is predominantly run by Costa Ricans.

the natives. A participatory approach has been used for the design and implementation of ANAI's projects.

ASACODE (San Miguel's Association for Conservation and Development) is a grassroots association of eight small-scale farmers who communally manage 62 hectares of forest in the Talamanca region, within or near La Amistad's buffer zone. ASACODE, with the aid of ANAI, are managing the forest for biological conservation, limited timber harvesting, and non-timber products. I personally visited the site in 1997 and was impressed by the commitment of the local farmers to use sustainable timber harvesting techniques, such as the use of water buffalo for extraction and selective tree removal. ASACODE also maintains a small low-impact cabin in the forest that is used for income-generating ecotourism activities and environmental education.

The AMISCONDE and ANAI/ASACODE initiatives are internationally known initiatives within the buffer zone of La Amistad. They are not though the only ones. The Las Nubes Biological Reserve is adjacent to Chirripó National Park, which is part of the La Amistad Biosphere Reserve. So, a buffer zone around Los Cusingos and the proposed biological corridor connecting Los Cusingos and Las Nubes is part of the broader buffer zone for the biosphere reserve.

4.5. Specifics of Los Cusingos buffer zone

In this section, the issues raised earlier in the chapter are examined in the context of the proposed buffer zone for Los Cusingos Neotropical Bird Sanctuary. Specifically, the focus is on the purpose, design, management, and expected benefits of a buffer zone in the area. For general background information of the study area refer to chapter 5. Possible constrains to successful implementation of the buffer zone are only briefly identified in

this section. They are discussed at some length in the recommendations section of the last chapter.

4.5.1. Purpose and Objectives

The primary purpose of establishing the buffer zone is to improve the environmental services provided by Los Cusingos (LC). The buffer zone's ecological objectives are to:

- Reduce negative edge effects for Los Cusingos - a small and isolated protected area.
- Expand suitable habitat for local wildlife, emphasizing on birds. Also, contribute to the conservation of local tree species.
- Increase Los Cusingos's connectivity to other near by forest patches and ultimately contribute to the proposed biological corridor connecting Los Cusingos with Las Nubes and Chirripo National Park.
- Improve local water quality through reforesting riparian zones and pasture areas.
- Restore degraded land.

The secondary purpose of the buffer zone is to contribute to the sustainable economic development of the local communities by: a) increasing community involvement in and awareness of environmental issues, and b) promoting sustainable alternatives to existing land-use practices.

4.5.2. Design

The design of the buffer zone has to reflect the purpose of the buffer zone, while addressing the ecological, social, and economic characteristics of the area. A major contribution of the work conducted by York University MES students to date has been to

collect such base data to facilitate design and management of the buffer zone and of the biological corridor in the future.

All the criteria listed in section 4.2.2. apply to the design process of Los Cusingos buffer zone. Several unique criteria also have to be considered. Specifically:

- Most of the area around Los Cusingos is cultivated. Coffee, sugar cane, and pasture fields are the predominant land-use.
- The proposed buffer zone has to be located outside the protected area, on private land.
- Land ownership is well defined around Los Cusingos and consists mainly of small acreage farming plots.
- There are three communities around Los Cusingos. It is highly possible that local farmhouses will be located within the buffer zone.
- There is high local awareness about the existence of Los Cusingos.
- Río Peñas Blancas forms a natural border-buffer along one side of the reserve.
- Existing privately-owned forest fragments exist near the reserve.
- There is little dependence of local communities on the use of natural resources within the reserve.

In addition to these considerations, the design of the buffer zone has to be participatory, involving local communities in all the stages of the process. Cost is also a concern.

4.5.3. Management

The management of the zone is going to be based on the ICDP theoretical framework. This is the case because biological conservation is the primary objective of the buffer

zone, but it is pursued in a manner that addresses the development needs of the local communities.

The management of the buffer zone has to be community-based. There are three reasons for this approach to management:

- There is no legal jurisdiction of York University or Tropical Science Center over the management of the buffer zone area, since it is privately owned.
- Local ownership of the project is deemed necessary for the success of ICDP projects.
- It is ethically sensible to involve stakeholders in the management of areas that directly affect their life.
- There are only limited or no funds that would allow full-time personnel to oversee the logistical management of the buffer zone. Therefore, community participation helps in the implementation aspect of the management as well.

The management plan should also be easy to comprehend lacking complicated technical terms. Its implementation should not rely on technologically demanding methods, since local farmers will implement it in the field.

4.5.4 Benefits

The objectives described earlier in this section would be the primary expected benefits of the buffer zone around Los Cusingos. However, there are some secondary benefits that are not directly related to the objectives.

Specifically, establishing the buffer zone will:

- Introduce participatory methodologies to the local communities. This approach could then be used for other programs in the region. In a sense, it is contributing to capacity building in the area.
- Establish a framework for regional level of cooperation between the different communities.
- Serve as a learning experience for future projects of the same scale within Costa Rica or Central America.
- Strengthen the relationship between TSC, FES, and the local communities.

4.5.5 Constraints

It is difficult to know at this introductory stage what the main constrains to success will be once the design and management of the buffer zone is on the way. Following chapters look at failure causes in more detail. This section introduces only those constrains that are expected based on literature reviews and existing knowledge of the study area.

- The high number of landowners that will have to be involved in the effective management of the buffer zone is likely going to be a challenge. Achieving cooperation within big groups is difficult.
- The socio-economic benefits of sustainable land use practices over pre-existing practices may not materialize to the extent expected by participants, leading to project disappointment.
- Considering that the process is initiated by FES graduate students who are located far away from the study area, a lack of continuity to the project may be a serious concern.

Since the land is privately owned, it will be a challenge to persuade local farmers that it is a benefit for them to restrict certain existing activities within the buffer zone, when they have currently unrestricted use of the area (Wells and Brandon 1992).

4.6. Conclusions

In conclusion, this section summarizes several points about buffer zones that were emphasized the most in the reviewed literature. Clearly, these issues will have to be addressed in the buffer zone at Los Cusingos, as they are of universal relevance.

Of these points, there are five that are fundamental – a distillation of current status in the buffer zone field.

1.The buffer zone concept is straightforward and intuitive, but there are few successful working models in the field that have managed to achieve their objectives.

2. The blueprint approach to design and management of buffer zones has for the most part failed. A case-by-case approach is highly recommended.

3. Involving the stakeholders at the early stages of the process is not only an ethical approach to buffer zone establishment, but also vital to the long-term success of the project. The typical top-down project implementation approach is neither effective nor sustainable.

4. The design and management of buffer zones is a long-term process that requires lasting commitment from the involved parties (local communities, initiating agencies, protected area managers, funding agencies). Project plans of 3-4 years length are likely going to lead to failure.

5. The basic reason for creating a buffer zone is to mitigate threats and constraints to the protected area. Therefore, in order to be able to assess the need a buffer zone and

design it, it is imperative that the threats to the core area are clearly identified – involving local people.

Other important points raised by literature are:

- Monitoring and evaluation mechanisms have to be incorporated in the management process of the buffer zone.
- New land use practices and technologies introduced by buffer zones should be low risk, easy to adopt, designed based on local input, culturally sensitive, produce visible results/benefits, and be similar to existing well-known or traditional practices.
- The buffer zone projects should commence with a slow, steady, and realistic start that is based on true contribution from stakeholders.
- The buffer zone design should build on existing local institutions, in order to be sustainable in the long term.
- Detailed management and technical plans are not useful. Flexibility in combination with an adaptive management approach is more important.

CHAPTER 5: Research Methods

5.1 Description of the study area

This section presents a brief background of Costa Rica, the El General valley, Los Cusingos and Las Nubes protected areas, and the communities of the study area. The presentations are not exhaustive but rather aim at setting the context for the research. The cited references provide more in-depth information on the issues raised here.

5.1.1 Costa Rica

Costa Rica is a democratic republic of 4.1 million people and Central America's smallest country with 51,100 km^2. Costa Rica borders both the Caribbean Sea and the North Pacific Ocean, stretching from Nicaragua to Panama. Comprised of coastal plains separated by a range of volcanic mountains, the country has a tropical climate with a dry season in the spring (approx. December to April) and a rainy season in the summer and early fall (approx. May to November). The official language is Spanish, while English is occasionally spoken. Whites comprise 96% of the population with the remaining being mostly black, Amerindians and Chinese minorities. Religiously, the country has a big Roman Catholic population (76%), with protestant sects making up most of the rest (CIA 2002).

It is one of the safest and more politically stable countries in the region. Largely an agricultural country, Costa Rica exports mainly coffee, bananas, timber and beef. In the last 15 years, the tourism industry has become an increasing factor in the economy, being as of 1992 (Evans 1999) the top generator of foreign revenue. Land ownership is widespread. Unemployment and poverty levels within the population are considerably lower than any of the other Central American countries, while the country has the highest

GNP per capita in the region ($6,700 in terms of purchasing power parities) (CIA 2002). Poverty has been substantially reduced over the past 15 years, and a strong social safety net has been put into place. A total of 95% of the population has access to improved water sources, 96% are literate, and the life expectancy is currently at 74 years (CIDA 2002). Costa Rica ranks 43rd (out of 173 countries) in 2002 in the Human Development Index (HDI) and 41st (out of 146 countries) in 2001 in the Gender-related Development Index (GHI) (UNDP 2002).

As of 2000, 52% of the population lives in rural areas (CIDA 2002). One fifth of the labor force is working in agriculture cultivating the nation's arable land (4%) (CIA 2002). Approximately 85% of the agricultural producers are small landowners with less than 10 hectares, while large landowners make up 3% of the producers and own 47% of agriculture land (Watson et al. 1998. cited in Znajda 2000). In the recent years, low coffee prices and an overabundance of bananas have hurt the agricultural sector.

Costa Rica has a long conservation history and is often referred to as the "Green Republic" or the "Garden of the Americas." Currently, 28% of its area is covered by the national system of protecting natural areas – one of Latin America's most complex (Evans 1999). This system aims at protecting the natural resources and amazing biodiversity of the country. Costa Rica boasts a fauna that includes 220 species of reptiles, 160 species of amphibians, 280 species of mammals, more than 850 species of birds and 9,000 plants. Estimated insect biodiversity ranges in the tenths of thousands but the number continuously rises as new species are being identified every year (Evans 1999). Of the total bird biodiversity in Costa Rica, over 200 species are migratory – the majority Neartctic breeding migrants. Although likely underestimated, at least 50-75 bird

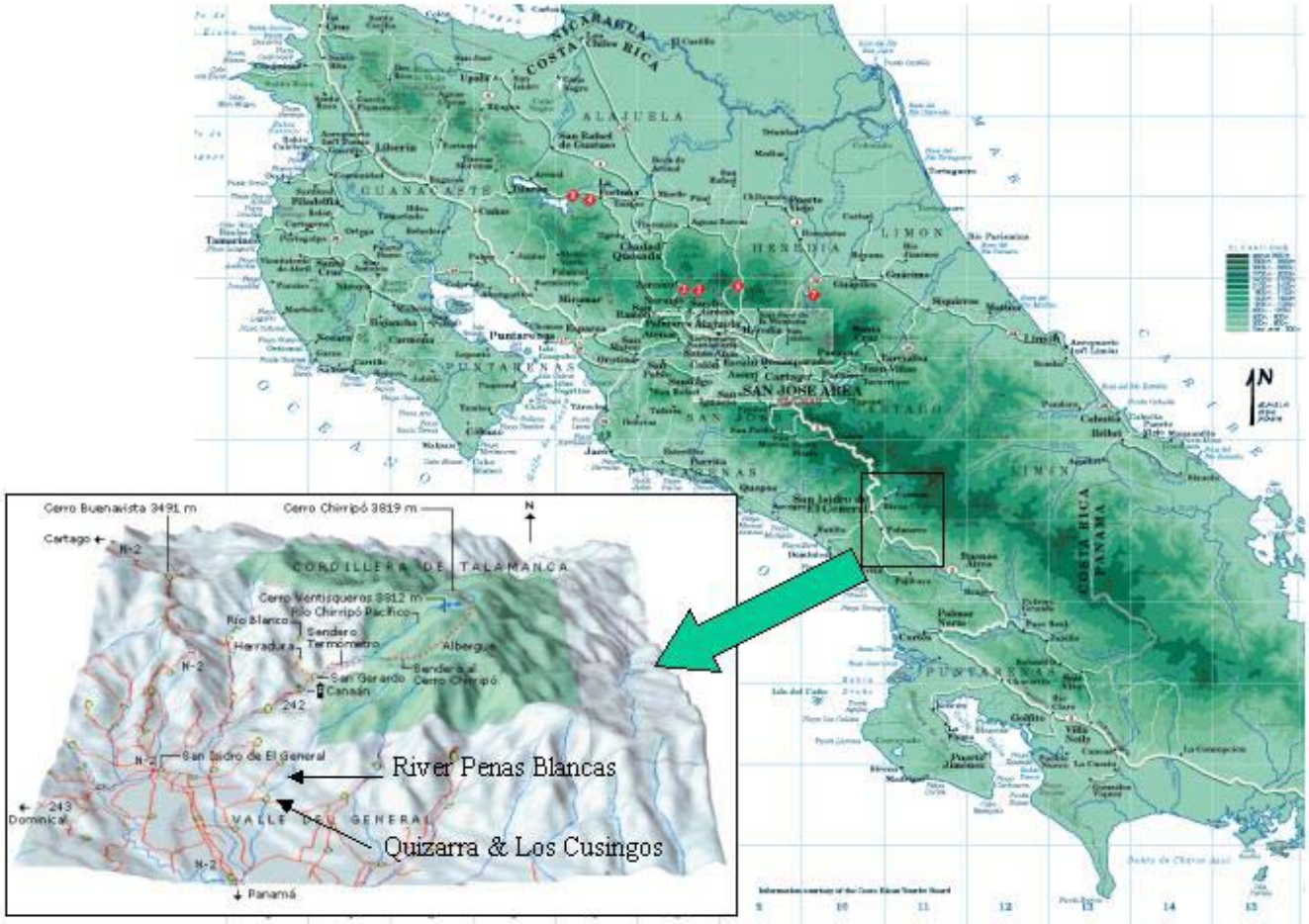
species undertake altitudinal migrations each season (Znajda 2000). Despite the conservation efforts of Costa Rica, habitat loss is still a major threat for wildlife and especially avifauna. Depending on the definition of forested area, Costa Rica had in 1940's between 65-75% forest cover (Bixby and Palloni 1996). The 70's was a period of high annual deforestation rates for Costa Rica, reaching 4% of forested areas (Rainforest Alliance Network 2002). By 1997 the amount of forest remaining in Costa Rica was estimated at 15,169 km^2 (30% of national area) with 43% of this in protected areas or private land (Iremonger et al. 1997). Although this trend has been curved, deforestation still remains a problem.

5.1.2 El General Valley and the Study Area

The study site is located approximately 10 km outside the town of San Isidro de General, the capital of the canton of Pérez Zeledón. The canton lies at the southern end of the San José province and is transected by the El General river which runs NW to SE along the synonymous valley. The El General valley is nestled between the Talamanca mountain range to the N-NW and the Fila Costena (coastal range) to the S-SE (Figure 5.1).

The population of the Pérez Zeledón canton was approximately 125,000 in 1999 and it is increasing steadily (Instituto Nacional de Estadística y Censos 2002). The town of San Isidro is the major economic and civic center for southwestern Costa Rica. The majority of the population (60-70%) lives in the rural areas at the periphery of San Isidro and is typically involved in agriculture. Coffee, sugar cane, and cattle production are the dominating agricultural activities. A total of 12,000 hectares are cultivated for coffee

Figure 5.1: El General Valley and the Study Region



(12.9% of all coffee area in Costa Rica) which contribute 10% of the national production levels (Znajda 2000).

The Las Nubes project study area is centered on a 6km stretch of the Penas Blancas river sub-watershed, delimited by the Las Nubes Biological Station as its upstream limit and the Los Cusingos Neotropical Bird Sanctuary as its downstream limit (Figure 1.1). The broader study area extends to include surrounding land outside the watershed and it is not strictly defined. It is nevertheless commonly understood by the researchers that the project objectives are limited within an imaginary polygon defined by the communities of Hermosa, Penas Blancas and San Francisco at the southern end and Chirripo National Park at the northern end. Three communities are included within the broader study area: Santa Elena, Quizarrá, and Montecarlo. However, people residing outside the area, most importantly from the communities of Penas Blancas and La Hermosa may own land within the study area.

The elevation of the study area ranges approximately from 600 meters around Los Cusingos to 1500 at the peak of Las Nubes. Farms at the lower elevation end of the study area are typically cultivated for coffee and sugar cane, while higher elevation areas (>900 meters) are under less intensive land-use practices, namely large size pastures. Several small-size forest patches exist in the area, providing protection to primary and secondary forest. With the exception of some rich, dark soil areas along the streams, the area is characterized by acidic soils (ultisols) (Znajda 2000).

5.1.3 Los Cusingos Neotropical Bird Sanctuary and Surrounding Areas

Los Cusingos takes its name from the Spanish common name for Fiery-billed aracari *(Pteroglossus frantzii)* – a bird in the toucan family endemic to the area. The 78 hectares

bird sanctuary has been the home of renowned ornithologist Alexander Skutch for the last 60 years. Although Dr. Skutch still lives on the reserve, Los Cusingos is currently owned and managed by the TSC. The surrounding area consists mainly of coffee and sugar cane plantations, cattle pastures and some forested patches. Cultivated land extends up to the edge of the reserve on three of its sides, while the Penas Blancas River forms a natural barrier/buffer on the eastern side of the protected area (Figure 7.1). Although there is secondary forest at the opposite side of the river, in strict terms Los Cusingos is a forest island. About half of the property is considered to be primary forest and the remaining is secondary forest that naturally developed in what was once pasture prior to Dr. Skutch acquiring the farm. There is a small open area within Los Cusingos near the entrance, which includes the property's infrastructure: Dr. Skutch's house, a classroom, a small cabina for visitors, and a house for the caretaker of the property. There is an established trail network in the reserve, but it is not well maintained at the moment. According to the Holdridge Life Zone System (Holdridge 1967), Los Cusingos is classified as Tropical Premontane Wet Forest. Vegetation is characterized by diverse tree species forming a 25-30 meter canopy, covered by epiphytes such as lianas, bromeliads, and orchids (Znajda 2000). Dr. Skutch has studied extensively the avifauna of Los Cusingos and the surrounding areas. A total of 307 species have been recorded over the years within the property and 171 have been documented to breed in it. Approximately 30 of them are Neotropical migrants (TSC report cited in Znajda 2000). However, it is unlikely that to date there are as many species present within Los Cusingos. Over the years many species have disappeared apparently because of increasing habitat destruction due to deforestation in the surrounding areas. Yet, there are some promising trends in the last

few years. For instance, the Chestnut-mandibled toucan that was considered gone (Znajda 2000) from the area for years has been breeding again as of 2002 (Rojas personal communication). Although there has not been a comprehensive study of the mammal fauna of Los Cusingos, white-faced a capuchin monkeys *(Cebus capucinus)*, three-toed sloths *(Bradypus variegatus*), tayras (*Eira barbara*), agoutis *(Agouti paca)*, anteaters *(Tamandua mexicana)* and raccoons *(Procyon lotor and Procyon cancrivorus)* are still seen within and around Los Cusingos. Little is known about the reptilian, amphibian, and insect diversity of the area.

5.1.4 Las Nubes Biological Reserve

The Las Nubes protected area has a size of 124 hectares and is classified as Tropical Premontane and Lower Montane Rain Forest according to the Holdridge Life Zone System (Holdridge 1967). It is situated at the slope of a hill and ranges in elevation from 1200 to 1500 meters. The Penas Blancas River forms the southwestern boundary of the property. The river runs downstream passing by Los Cusingos and joins the El General River, which eventually meets the Pacific Ocean. The northeastern section of Las Nubes (51%) lies within the Chirripó National Park. To the south, Las Nubes borders with a farm that maintains forest in the areas adjacent to the reserve. Pastures with few remaining standing trees are the dominating land-use in the areas around Las Nubes.

Las Nubes itself consists of 94% primary, uniform and unaltered forest and 6% secondary forest that has naturally regenerated in areas previously used as pastures. Even though the pasture areas were abandoned less than 10 years ago, forest regeneration is in an advanced stage because of the high productivity of the soil, high precipitation, and remnant trees that were left standing in the pastures (Gonzallez-Villegas 1998). The

primary forest is characterized by canopy of 30-40 meter height, high quantity and diversity of epiphytes, and high tree density (Mora 1998). In collaboration with the National Institute of Biodiversity (INBio), the TSC has completed a quick tree inventory of Las Nubes identifying at least 65 species. There has not yet been an in depth survey of the fauna of the reserve. A study by MES student Sandra Znajda (2000) identified over 20 bird species in Las Nubes. Without doubt, the total number is several times higher than that. Mammals such as jaguars (*Panthera onca*), pumas (*Felis concolor*) and other felines, red-brocket deer (*Mazama americana*), white-collared peccaries (*Pecari tajacu*), coatis (*Nasua narica*), three-toed sloths, anteaters, agoutis, pacas (*Dasyprocta punctata*), otters (*Lutra longicaudis*), white-faced capuchin monkeys, raccoons and tayras are thought to live within Las Nubes and adjacent Chirripó National Park.

5.1.5 Local Communities

The two main communities in the area are Santa Elena and Quizarrá, with populations of 734 and 325 people respectively (Ministerio de Salud 1999). Quizarrá is located North-Northeast of Los Cusingos at an elevation of 700m, and Santa Elena is a few kilometers North-Northwest away at an elevation of 800m (Figure 7.1). Montecarlo is a third smaller community located north of Quizarrá.

All three communities share a similar history. Like the rest of the El General valley communities, they were established by settlers from the Central Valley in the early 1900's (Znajda 2000). The first settlers were predominantly occupied with maize, bean, and tobacco cultivation and raising pigs. Coffee has been traditionally cultivated in the region at least since 1940's, but it did not become a cash crop until the 1960's. By the 1970's coffee cultivation was intensified with the removal of much of the shade trees in

the fields, and the introduction of chemicals and farming equipment (Dr. Skutch cited in Znajda 2000). Today, coffee and sugarcane are the dominant cash crops, with preference between the two shifting depending on international prices, available labor, and field size. Many local farmers have experience with both crops and are members of the regional coffee and sugarcane cooperative – COOPEAGRI.

The structure of each community is similar to the rest and is typical of most small villages in the broader region. Homes are spread along one or two main unpaved roads. The distance between homes is bigger at the periphery of the communities and decreases near a central core area, which typically includes a church, a primary school, at least one small general store (pulpería), a soccer field, and a community hall (roughly in that order of social importance to the residents). Houses are one story and with few exceptions have electricity, running water, a television and a refrigerator. Many houses have washer-driers and gas or electric stoves as well. Although some households grow some of their own food, most families typically rely on the San Isidro food market and grocery-cars that drive by. Each community has several unoccupied dwellings which are either older households of the first residents, seasonal dwellings for coffee pickers – typically Nicaraguans – that are hired during harvest season, or households of people who have left to work abroad – most often than not to the United States.

Some households have motor vehicles, which tend to be old jeep-style cars 20-30 years old. Cars are typically used for family transportation within the communities, trips to San Isidro, and for use in the fields. Men going to the fields often use bicycles. Motorcycles are becoming common with the younger generations. A public bus service to and from San Isidro is offered twice daily and the trip lasts approximately 40minutes

to 1 hour each way. The bus does not reach Montecarlo. Its residents have to walk to Quizarrá for the service.

Santa Elena and Quizarrá are each served by one public telephone located in front of the main pulpería. Households do not have phone lines and very few residents have a mobile phone. Connection with the rest of the country and the world is achieved through television. Although newspapers exist in San Isidro, they are not sold in the local pulperías and the residents are not accustomed to reading them.

The state does not provide civic services within the communities. Although there used to be a small police station in Santa Elena, it has been closed. The closer police station is in Penas Blancas. There is a health center in Quizarrá, which operates only once a week. It is served by a doctor and two nurses that visit most of the small communities in the broader region. More doctors and a hospital are available in San Isidro. The region does not have a secondary school. Students that intent to continue past grade 6 have to take a bus to General Viejo or to San Isidro. A night secondary school is also available.

A Development Committee represents each community to the state. Its members and the president are elected. There is no mayor or similar position in rural Costa Rica. The Development Committee is the only formal institution recognized legally by the state. Although theoretically it is involved in a variety of development issues, the Development Committee is primarily concerned with the road conditions in each community. Several other communities and groups have voluntarily been organized in each community, dealing with (but not limited) issues of education, religion, water resources, sports, agriculture, and conservation. Many residents are actively involved in one or more of

these groups. Community involvement is well established in these communities, but mainly for men.

The relations between the three communities are friendly and intermarriage is very common. Yet, residents of each community are proud of their identity and are to a certain extend judgmental of the other communities. Santa Elena is bigger and has more of a community feeling that Quizarrá that is smaller, has bigger farms, and the houses are more spread out. Montecarlo is the smallest and less influential of the three.

5.2 Schedule of Fieldwork

The field component of this major paper was carried out between May 1, 2002 and August 1, 2002. With the exception of short trips to San José and other places of the country for the purpose of data collection, interviews, and research, I – the researcher – resided within the study area on a small coffee farmhouse. The house is located at the edge of the Santa Elena community but is about equal distance from the core of both Quizarrá and Santa Elena.

During the first two weeks, I participated with a group of York University volunteers in the construction of a tree nursery in the Parque Natural of Quizarrá. A total of 3,500 seeds and more than 10 species of native wood trees were planted with the aim of being used as shade trees in coffee farms and for local reforestation programs of degraded lands. The local conservation NGO COCOFORES manages the municipal plot where the tree nursery was established and assisted in its creation. In addition, the volunteers participated in environmental education activities at the Santa Elena primary school, which culminated with the presentation of a theatrical play on the value of trees for ecosystem health. Although the original fieldwork schedule of this research did not

include participation in these activities, they were part of the broader Las Nubes project in these communities. The volunteer experience also proved to be invaluable since it brought great name and project recognition in the region, and especially within Santa Elena residents. It was an excellent way of introducing myself to these communities and earn their acceptance.

In the period between May 15 and June 7, I concentrated on collecting base data of the study site and examined the fields surrounding Los Cusingos. The original plan was to develop a land-use map of the surrounding areas, but technical problems with the GPS equipment did not allow that. Instead, efforts were concentrated on collecting existing data – mainly through TSC. Several informal meetings with community members took place in that period as well. I also met and discussed my progress and plans with TSC.

The week of June 9-16 was dedicated to designing the first community meeting and inviting the residents of Santa Elena, Quizarrá, and Montecarlo to attend. The meeting was held on June 16. The period following the first meeting involved more base data collection and analysis of the results of the first meeting. A small meeting was organized on July 20 with a group of volunteer-representatives of the first community meeting to prepare for the second meeting. Several informal interviews and visits to local farms took place in the mean time.

The week of July 20-27 was dedicated to preparing for the second community meeting and inviting once again the three communities. This meeting was organized in cooperation with MES graduate student Monica Vazquez. Monica had also been working in the region on an ecotourism related project since May. Following the July 27

community meeting, I concluded my research in the area and updated TSC on my fieldwork outcomes.

5.3 Methods

This section presents the methods used during fieldwork to achieve the outcomes of the research. The primary objective of the research was to examine the feasibility and value of a buffer zone for Los Cusingos Neotropical Bird Sanctuary and to develop detailed recommendations for the design and management of such a buffer zone. The secondary objective involved the assessment of community participation's role in promoting buffer zone project – and in general ICDPs- success.

5.3.1 DBMS and Land-use map

ICDP managers require a good understanding of the social, economic, and ecological conditions in which their project will be implemented. This is also true for the Las Nubes project and the design of a buffer zone for Los Cusingos, especially since the research activities focus on privately owned land and therefore close cooperation with local communities is required. Awareness of local needs, aspirations and lifestyle is essential for custom-design of community activities. Accurate base data also facilitate the monitoring of project progress and success. Monitoring and evaluation mechanisms are essential for ICDPs (Kremen et al. 1994).

For the purposes of this major paper research, I collected existing ecological and geographical data available from previous TSC and FES studies. Some of these data are of primary sources (developed by FES or TSC) and some are secondary (developed by third parties not affiliated to Las Nubes project). They are being organized in a database management system (DBMS) using in part a geographical information system (GIS).

Although part of the work is being done in Canada, some base data were collected while in Costa Rica. Emphasis was placed on locating data relevant to the land-use around Los Cusingos. A GPS unit was used to collect land-use data of the area – but technical difficulties hampered this process. An understanding of current land-use status is required for the design of the buffer zone.

Once completed, the final outcome will be a digital DBMS that will assist researchers of the Las Nubes project to: a) design the buffer zone, b) design future projects, c) present their projects' results to third parties, and d) monitor and evaluate in the long-term Las Nubes project's success in promoting conservation and development in the region. The DBMS is designed in such a way that future researchers will be able to expand on it as they collect more base data.

5.3.2 Informal Interviews with Local Farmers

Over the period of May-August 2002, I conducted a total of seven informal interviews with farmers from Santa Elena and Quizarrá. All of the interviews included a walking tour of the farm. The primary purpose of the informal interviews was improving my understanding of the structure of local farms and the challenges farmers are facing. This knowledge allowed for adaptation of the community meetings' agenda so that issues raised by the farmers were addressed. Additional interview goals were:

- To collect material for presentation in the community meetings; namely a video-interview with a local farmer who currently uses a variety of shade trees in his coffee fields.
- To evaluate the feasibility of a buffer zone and to develop recommendations for the design and management of a buffer zone in the area.

- To maintain and expand the networking of the Las Nubes project with local farmers. To increase understanding of the needs of local farmers, their willingness to try new things, and their conservation awareness. To inform farmers of the goals of the Las Nubes project.
- To discuss with farmers an organic shade-grown coffee certification program promoted by AMISCONDE within the communities of Quizarrá and Santa Elena. Promoting organic shade-grown coffee cultivation is a major objective of the Las Nubes project within the broader goal of promoting sustainable livelihoods in the region.

The informal structure of the interviews was selected over more structured methodologies because it allows for greater learning potential and better recording of attitudinal information (Norman et al. 1995). (Table 5.1 presents a comparison of general characteristics of informal and formal interviews/surveys.)

Informal interviews are also less time consuming and are considered a rapid appraisal methodology. The danger of ICDPs' over reliance on rapid appraisal methodologies was examined earlier in Chapter 2.6. Nevertheless, rapid appraisal was deemed appropriate in the given situation because a) the interviews were not used as surveys and b) no decisions will be made based solely on their results. Instead, the informal interviews were used as a quick way of identifying issues of interest to be raised in the community meetings, where all participants have an opportunity to express their views. Norman et al. (1995) agrees that informal interviews "are particularly appropriate whenever open-ended learning is needed or desired" and "[…] can be used to better design and complement/supplement

other data collection methods" – such as the community meetings organized by this research.

TABLE 5.1: Comparing general characteristics of formal and informal interviews/surveys

CHARACTERISTIC	INFORMAL	FORMAL
Background information required	Minimal	Substantial
Time allocation by researchers:		
Preparation	Less	More
Implementation	More	Less
Analysis/writing	Less	More
Total time	Less	More
Hypotheses: Required beforehand	Not essential	Essential
Created during	Yes	No
Likely discipline interaction	More likely	Less likely
Implementation:		
Questionnaire used?	No	Yes
Interviewers	FSD worker(s)	Mainly enumerators
Potential for creativity/literation	Maximum	Minimal
Potential for learning/verification	Mainly learning	Mainly verification
Potential for representative sample	Less likely	More likely
Potential quality of information:		
Attitudinal	Better	Poorer
Qualitative	Better	Poorer
Quantitative	Poorer	Better
Probability of high: Sampling errors	Higher	Lower
Measurement errors	No difference	No difference
Value of statistical techniques in analysis	Little	Great

Although a set of standard questions was developed for interviews early on during the fieldwork season, no questionnaire was used and each interview was not limited to that original list of questions. Questions were designed to elicit open conversation regarding: farming practices, social and economic issues affecting farming decisions, willingness to experiment with new farming ideas, experiences with shade-grown coffee, cost and use

of chemicals as pesticides and fertilizers, labor requirements of different practices, and the Las Nubes project and its plan for a buffer zone and a biological corridor. Often, the discussion touched on poaching problems and community development needs such as education/work opportunities and the bad road conditions.

The interviewing process is best described by Rhoades' (1982) four stages in interviewing process: approach, warm-up, dialogue, and departure (Table 5.2)

Table 5.2: The four stages in interviewing process of Rhoades (1982)
(adapted based on citations in Norman et al. (1995)).

Approach. Keep a low profile; interview when it is convenient for the farming family; whenever possible, conduct the interview at the farm,
Warm-Up. Use a polite form of address; take time to approach the survey topics (i.e., be prepared to talk on other topics of interest to the farmer); if desirable, indicate you are there to learn and he/she is the expert,
Dialogue. Be natural and relaxed; let the discussion flow and be flexible with the ordering of the questions; use plain understandable language and terms farmers can relate to; make sure the questions take into account the cultural setting, avoid sensitive questions at first, and, if possible, obtain such information through indirect questioning; if the farmer can't answer a question, try rephrasing it; don't ask questions that are too abstract; observe the farmer's reactions to questions, because these may reveal a great deal about his/her concerns or reservations; remember that what people say and do may be different; record the information in writing during the interview only if the farmer does not appear to be inhibited or suspicious; don't let the interview last more than 30 to 45 minutes unless the farmer is talkative, etc.
Departure. Bring the conversation to an end when the topics have been discussed or the farmer can spare no more time, thank the farmer for his/her time, and depart respectfully.

The details and objectives of the project were explained to each potential interviewee and permission to participate was requested. No informed consent statements were used, as it was believed to hinder the formation of trust and informality necessary for such exchanges (Znajda 2000). The interviewed farmers were selected and approached based on information from local organizations and personal invitations by the farmers themselves. At the end of the first community meeting, many farmers expressed their willingness to give me a tour of their farm. Farmers from both Quizarrá and Santa Elena

were interviewed. The name of the interviewed farmers is included in Appendix A of the major paper.

In addition to the interviews described above, a series of unofficial interviews, meetings, and gatherings were arranged during the fieldwork season with people and organizations involved in conservation and development (Appendix A). These conversations provided valuable information, ideas, and recommendations for the research that were from a different angle than the advice from my supervisor and advisors. Conversation opportunities appeared daily in places like the soccer field, the pulperías, on the bus etc. with community members, which was one of the great benefits of living within the communities.

5.3.3 Community meetings

A total of two community meetings were organized, inviting the residents of Santa Elena, Quizarrá, and Montecarlo. The first meeting was held on June 16, 2002 and the second on July 27, 2002. Moreover, a gathering took place on July 20, 2002 with volunteers from the first meeting. They assisted in the completion of an exercise that commenced during the first meeting, so that the results could be presented in the second.

The primary objective of these community meetings was the community-based development of a common vision for the region, addressing issues of conservation and development. This common vision is a step towards: a) establishing inter-community participation in development and conservation, b) identifying needs of the communities, and c) raising awareness within the communities of these needs. Developing this common vision set the foundation for the future design of the buffer zone and its management plan.

A secondary objective of the community meetings was to draw conclusions on the value of community participation on the given project and ICDPs in general. Although the meetings provided valuable insight on community participation, no exercises or activities were designed for that purpose.

Preparation: Design and Logistics

The agenda of the first community meeting was designed and organized by myself, using suggestions from literature and advice from local community members who had experience with community gatherings. The second community meeting was designed in collaboration with MES graduate student Monica Vazquez, since her research plan also involved a community meeting. In order to be sensitive to the time constrains of the farmers and to reduce the possibility of a community "burn out" from too many meeting in a short time period, we combined our research plans in one meeting. It was not possible to fully involve local people in the design of the community meeting agendas because of time constrains (both for the researchers and the community members). However, the agenda was designed to be flexible enough to adapt to the dynamics of each meeting.

In both cases, the first step in designing the meeting was to decide on the appropriate degree of participation. The initiating agent was Monica and myself, as the representatives of the Las Nubes project. Reviewing the weaknesses and strengths of different levels of participation (discussed in Chapter 3) and the general philosophy of the Las Nubes project in regards to participation, it was decided that both meetings use a "partnership" level of participation (see section 3.3). Partnership refers to exchange of opinion between equals working towards a common objective. The researchers act as

moderators and set a loose meeting agenda. The community participation in the meetings was seen primarily as a mean to the objectives and not as a goal. Once the level of participation and the agenda was decided, the logistical preparation for the meeting started. The place, date, and time had to be selected first.

Place: Since the meetings were taking place in the rainy season, it was important that the selected place provided protection against the elements. At first, the community centers of Santa Elena and Quizarrá were considered. However, their location was deemed problematic because they were too far away for members of the other communities. In addition to distance, it was brought to the researchers attention that inter-community politics could result in low turn out from communities if the meeting was not held in a neutral place. Acknowledging this possibility, permission was requested from the TSC to use Los Cusingos as the place for the two meetings. Los Cusingos is located roughly in the middle of the distance between Santa Elena and Quizarrá (Montecarlo is too far away and isolated), and it has an outside classroom and kitchen area built for such activities. Moreover, although local communities are well aware of the location of Los Cusingos, very few people actually have experience visiting the place. So, it was an opportunity to benefit from people's curiosity and increase local awareness of the services provided at Los Cusingos.

Timing: The date, day, and time of the meetings had to be carefully selected as well. In regards to date, the following issues had to be taken into consideration: a) the date should allow for sufficient preparation time, b) it should not be too close to other community meetings, in order to avoid "attendance" competition, c) take into account local celebrations and special events (i.e. the two-week summer school vacations period,

when many residents leave the region to visit family and friends). The first community unavoidably was scheduled the same day as Father's Day, but avoided cultural conflict by starting after lunch – when traditionally the family gets together for Father's Day lunch. The day is also important. During the week, most people are busy working in the fields or in San Isidro. On Saturdays, people have free time to go to the San Isidro food market for groceries and in the evening there is a church service. Sunday on the other hand is the day-off for people. There is no church service on Sundays, the markets and stores are closed, and people do not go to the fields. Both meetings were scheduled on Sundays. The time of the day for the meeting had to take into account the rain. Typically, rain started in late afternoon. Most people walk to community meetings. We were told that it is unlikely many people would attend if it starts raining before the starting time. On the other hand, we should also take into account that people would like to return home dry as well. Balancing these two factors during the rainy season is almost impossible for any gathering that lasts several hours. In the end, the first community meeting was scheduled for 4 hours, starting at 2pm and the second one was a full-day meeting starting at 8am and finishing around 4pm. To the surprise of all, it did not rain in both cases until after the meetings were over.

Several other logistical issues had to be arranged prior to the meetings. It is common in Costa Rica for lengthy community gatherings to provide some refreshment. In the case of the second community meeting, serving lunch and a refreshment was required since the meeting was daylong. Providing food in the meetings was important because: a) it was suggested to increase attendance if it is mentioned in the invitations, b) it contributes to a general feeling of satisfaction from attending public gathering, c) it facilitates the

attendance of women from the community, because they do not have to cook after they return home from the meeting. Local members warned us however not to overdue it with what we offered to people, because it would set precedence that future gatherings of local organizations and Las Nubes activities may not be able to meet due to cost. Two women from the community were hired to assist with the design and preparation of lunch and the refreshment. Disposable plastic cups and plates were used for serving the food, despite the wrong message that their use was sending, because it was not possible to find paper plates/cups or reusable ones.

Another concern with the preparation for the community meetings was the possibility of children attending the meeting. In the invitations of the first community meeting, it was made clear to the local residents that the meeting was for adults only. Unless children were teenagers, it would be better if they did not attend. Nevertheless, a group of 20 children attended the first meeting. There were no arrangements for them and if they remained with the adults they would certainly affect the quality of the meeting because of their short attention span. Luckily, MES students who were present in the meeting voluntarily entertained the children for the entire duration of the meeting. Acknowledging the difficulties that parents expressed to leave their children home alone or with relatives, the second community meeting invited the local communities to attend with their children. Food and space accommodations were made for the children. A workshop was designed just for then near the end of the day, and in the morning two hired local teenagers looked after them. The children seized to be a problem. Instead, they contributed to the feeling that the whole region was participated. Moreover, the children

had the opportunity to get exposed to the natural beauty of Los Cusingos and participate in environmental education activities.

A final issue that had to be arranged was the seating capacity of the classroom. The classroom does not have sufficient number of chairs for big gatherings. For the first meeting, 20 chairs were rented from San Isidro. Their cost and transportation however was problematic. For the second meeting, 25 chairs were borrowed from Santa Elena's primary school. Local residents helped with their transportation to and from the school. In addition, a party-tent was put in place for the second meeting to provide additional space for the community meeting and the workshops and provide protection in the event of rain. The director of Santa Elena School was instrumental in locating, transporting, and setting up the tent. Finally, Eden Chinchilla – the administrator of Los Cusingos – and his wife Lizbeth provided invaluable assistance in every stage of the community meetings preparation and execution.

Invitation

All three communities were invited to the two community meetings. In order for the common vision to have any local recognition, a broad participation in the community meetings was required. Children were not included in the activities of the first community meeting. It was deemed appropriate however, as described above, to incorporate them in the design of the second meeting.

A one-page invitation was prepared for each meeting (Appendix B). Approximately 400 copies of each were printed. Community members reviewed the invitations for language inconsistencies and content. They were distributed to the communities in the following ways: a) a copy was handed to each student in the three regional primary

schools to take home, b) invitations were posted in public spaces, such as the pulperías, bars, public phones, and churches, and c) copies were distributed personally door-to-door. For each meeting, approximately 15-20 houses were visited in the communities of Santa Elena and Quizarrá. No home visits were made in Montecarlo. At each house, an invitation was given and I would go over its content. Emphasis was put on clarifying that this was a community meeting, not a presentation, and that everybody were invited. A special effort was made to invite women of all ages to participate. It was suggested that they come with their friends and neighbors, knowing that they would feel more comfortable attending as a group rather than alone. Depending on the questions that each resident had, an overview of the scope of the specific research and the Las Nubes project was provided. Considering that the invitation time may be the only project exposure for the people who could not attend, I spent a lot of time answering questions.

Inviting the local communities required about a week. Invitations were handed first to the schools, and then I visited the houses. By the end of the week, word of mouth was ahead of me and most visited homes were aware of the community meeting. Most houses were selected based on accessibility from the main roads. A few houses were selected however, after the recommendation of local residents, because they were homes of members of the Development Committees of Santa Elena and Quizarrá. I talked to several of their members. Their participation was important because the development committees would be the first to benefit from a common vision in the region. Furthermore, it was important not to include the Development Committee members and make them feel bypassed or undermined. Every effort was made during the community

meetings to emphasize that the common vision is for the community and not for Las Nubes project.

The participation level at the community meetings was unprecedented for local gathering standards and previous Las Nubes activities. Approximately 70 adults and 20 children attended the first meeting. About 50 of the adults were actively involved in the exercises. For the second meeting, approximately 55-60 adults and 15-20 children attended. Almost all were involved. There was approximately an equal representation among men and women, young and old.

Workshops and Presentations

A series of workshops and presentations were included in the two community meetings. They served three purposes:

a) They diversified the agenda of the meetings ensuring that participants were not becoming bored or loosing their attention. The workshops made the overall experience of attending the meetings more rewarding and enjoyable for the participants. Satisfaction is important in order to maintain high levels of participation if future Las Nubes activities.

b) They provided community capacity building, contributing in part to community development. In personal discussions with community members, capacity building activities were valued the most. It was seen as a direct way of offering something to the community in the short term.

c) Including the workshops and presentations in the invitations acted as an attention "hook", contributing to the overall high participation rates of both meetings.

The first community meeting included a presentation by myself on new technologies and the way they can assist local community development. The presentation covered briefly the use of satellite images, aerial photos, GIS, and the Internet as a way of collecting information for ones project. Emphasis was placed on identifying ways that these technologies could be used by the community – either on their own or in cooperation with the Las Nubes project. A short video recorded at a local coffee farm was used to initiate discussion on the advantages and disadvantages of shade-grown coffee. At the end, the participants had an opportunity to learn a bit about the new organic shade-grown certification program by AMISCONDE – a program headed by Conservation International.

For the second community meeting, a total of three workshops were organized. Monica Vazquez had an instrumental role in identifying and contacting the people who gave the workshops. The workshops were given at the end of the meeting and each participant could participate only in one, because they were offered simultaneously. One workshop, aimed mainly for women, presented ways of making floral arrangements using locally available flowers and plants. It was imparted by Sergio Montero from San Isidro's florist store "La Gardenia." The second workshop, aimed mainly for men, was on making rustic furniture and articrafts using wood pieces/branches readily availably locally in the tree-pruning season. German Venegas from Cajón organized this workshop. Making this articrafts and furniture is his full-time job. Roger Piedra, an artist from San José, gave the third workshop. It was aimed mainly for children. The workshop involved recycling newspaper and reusing metal cans and plastic bottles in order to make papier-mâché articrafts. All workshops were free for the participants, who were only asked to bring

tools and some supplies (i.e. flowers from their garden, aluminum cans). The three professionals who gave the workshops volunteered their time and donated some of the material. Monica and I covered their travel expenses and paid for the remaining material. The workshops were greatly appreciated by the participants, judging from the smiling faces and positive comments.

Group exercises and Common Vision

The main purpose of the community meetings was the preparation of the common vision for the region and the development of a list of alternative practices for community development. Pending time availability, the original plan involved exercises for the evaluation and prioritization of these alternatives and the identification of threats/obstacles to the successful fulfillment of the common vision.

These objectives were pursued through a series of exercises in groups of different sizes. In all of these activities, I first introduced the exercise and its objective and then acted as a moderator. I normally refrained expressing my personal opinion in these exercises so as not to affect the results. The intent was to truly involve the participants in a community-based design of a common vision. In certain occasions, I encouraged participants that were not very active to express their opinion. All of the activities worked out as planed, but they required almost twice as much time as originally thought. Nevertheless, there was no rush to finish the exercises hastily even if it meant postponing or skipping other exercises in the agenda. It was deemed better to achieve little and properly than rush and get arguable results. During the meetings, I was in often consultation with people whom I knew well in order to evaluate the participants' fatigue.

In the first community meeting, I gave a short presentation on the value of having a common vision and proceeded to divide the participants in five smaller working groups. Each group was given a big sheet of paper, markers and a working space. Their task was to identify the categories/issues that the common vision should address. They were also required to attempt a first written expression of their vision for each topic. After a certain period of time, the groups were reunited together and asked to present their results. Working as a whole group, common themes and topics were identified and a final list of topics was created. Since the time was running out and there were other activities pending, I asked for a group of volunteers to meet with me on a later date – and prior to the second meeting. Together, we would meet to finalize this exercise and develop the first draft of the vision. The following exercise involved a brain storming section for identifying possible alternative development activities for the region. Despite the fact that people were already tired, a list was created and the group prioritized the alternatives so that I could collect information on them for the next meeting. It was based on these recommendations that the workshop topics were selected for the second community meeting.

The group of volunteers met with Monica Vazquez and I on July 20, 2002. Unfortunately, from the 5 original volunteers only 3 attended. They were all young women from Santa Elena. Despite the lack of representation from the other communities, an effort was made to complete the draft. The structure and design was decided as a group. Based on the decisions made in these first two meetings, a first draft for the vision was prepared. Monica Vazquez helped greatly with the preparation of the text in Spanish.

The first exercise of the second community meeting involved working again in five small groups to review the common vision draft. The groups came back with recommendations for changes and additions to the draft. The suggestions were discussed with the whole group and the first version of the vision was completed (Appendix C). A copy of the vision will be distributed to the school children to take home soon in early 2003. Unfortunately, there was no time left to conduct an exercise that would identify threats to that vision. A third community meeting would be required for that.

CHAPTER 6: Results

6.1 DBMS

Data collected in Costa Rica

The emphasis of the data collection was on geographic and ecological data that can assist with the design of the buffer zone. I collected little such data in the field because of technical difficulties. The new data that I collected for the Las Nubes project database were:

a) GIS atlas of Costa Rica: The atlas is a collection of GIS layers developed by the GIS Laboratory EIF-ITCR as part of the "ATLAS COSTA RICA 2000" project. It consists of GIS layers created by various agencies, such as CATIE[4], Universidad Nacional, the TSC, Ministerio de Agricultura y Ganadería, and INBio[5]. It includes geographical, geological, ecological, conservation, and infrastructural information for the entire country.

b) Aerial photographs of study region: Obtained three 1997 aerial photographs in true color covering the entire study region. They are approximately at 1:50,000 scale. Since there are no topographical maps in that scale for areas outside the Central Valley, the photographs can serve as a map of the area when used in conjunction with the superimposed road and river network GIS layers, developed by TSC. The photographs also provide valuable land-use information.

c) Digital map of property delineations for farm lots in the region: The two digital images provide much needed information on the size, location, and boundaries of local

[4] Centro Agronómico Tropical de Investigación y Enseñanza (Tropical Agricultural Research and Higher Education Center) - www.catie.ac.cr
[5] Instituto Nacional de Biodiversidad (National Institute of Biodiversity) - www.inbio.ac.cr

farms. They are part of the Pérez Zeledón canton's project to update the existing hard-copy maps dating back to the mid-70's. The data can assist a lot with the design of the buffer zone around Los Cusingos.

Data included in the DBMS

In addition to the data collected in the field, the Las Nubes project DBMS includes all the data collected and developed by previous Las Nubes researchers. It includes major papers, publications, relevant bibliography and gray literature, maps, GIS data, photographs, survey material etc. The DBMS should provide researchers with the best available data for the design of the buffer zone and future projects.

DBMS Format

The DBMS consists of digital and non-digital components. Whenever possible, non-digital data are transferred in a digital form because they are easier to store and manage in that format. The digital data in turn are divided in GIS and non-GIS data. At the moment of the preparation of this major paper, the DBMS is still at the design stage of the database structure (Appendix D). The expected completion date of the first version of the DBMS is Spring 2003.

6.2 Awareness of the Las Nubes project

During the farmer interviews and numerous discussions with community members, I was able to develop an understanding of the local level of awareness of the Las Nubes Project. The results are not scientific since there was no formal survey conducted and the interviewee sample is likely not representative. Nevertheless, I feel that the observations made are indicative and worrisome. If deemed necessary, future studies should explore the issues raised by this rapid assessment in a more scientifically rigid manner.

Most of the local residents in the communities are aware that students from Canada have been conducting research in the region for some time and some also recognize York University's name. However, name recognition for the terms Las Nubes project, FES, and TSC is low. This is especially surprising for the Tropical Science Center, since it is the owner of Los Cusingos and a national organization. The location of Los Cusingos is widely known – referred to as "Finca Los Cusingos." Little is known though about Los Cusingos itself. Many of the people attending the community meetings mentioned to me that they had either never been inside the "farm" or it had been many years. The majority of the people know who Dr. Alexander Skutch is and most expressed surprise to find that he is no more the owner of Los Cusingos. Their feelings towards Dr. Skutch vary. In general, he is viewed as a respected local figure and draws compassion because of his old age and health condition. On the other hand, few have read any of his books and they believe that his hermit-like lifestyle did not allow for sharing of his knowledge with the locals. Several people are aware of Las Nubes as a farm but few of those know that York University owns the property. A couple of people approached me in hopes of finding employment as guardians or administrators for Las Nubes. They are aware that Eden Chinchilla is employed at Los Cusingos and assumed that similar positions may be created in the near future for Las Nubes. Moreover, two locals approached other MES students and myself to inform us of property being sold in the region, including a lot adjacent to Los Cusingos. Apparently, there is a local notion that the Las Nubes project is interested in buying more land.

Overall, the level of awareness about the Las Nubes project and its components is relatively low, patchy, and at times even erroneous. A local feeling of pride and

ownership for Los Cusingos and Las Nubes is needed to gather local support for biological conservation. Furthermore, local communities should have a better understanding of the Las Nubes project and the FES-TSC partnership. Information has to originate from the project researchers and its activities as opposed to rumors. Without doubt, the community meetings, interviews, discussions, invitations, workshops and presentations of this major paper research provided extensive exposure of local communities to the Las Nubes project. These efforts need continuation. I strongly believe that the TSC has to become more active with its presence in the area. Even basic presentations of TSC employees in events such the annual science fair at the Santa Elena school could provide the much-needed exposure.

6.3 Feasibility of the buffer zone

During my fieldwork, it became apparent that many farmers in the region are willing to explore alternatives to current land-use practices, if the risk involved is acceptable. Low coffee and sugarcane prices in the recent years are the reason for this trend. While prices were high, there was no incentive to try new practices. The combination of the willingness to experiment and a relative high level of environmental awareness make for a fertile ground for a buffer zone project – fertile, but not yet ready. Although a high percentage of the population expresses concern about environmental issues, their level of comprehending ecological and biological concepts is simplistic. The concept of a buffer zone is not understood in its entirety. In fact, the buffer zone term was rarely used during the community meetings in order to avoid confusion.

Given the current situation, a buffer zone could be developed in practice through the promotion of agricultural practices such as organic shade-grown coffee. People could

benefit financially while increasing tree coverage and wildlife habitat in the areas around Los Cusingos. However, despite the short term development and conservation benefits of such an approach the buffer zone would not be secured in the long term. There would be a lack of a regional conceptual understanding that the area was managed as a buffer zone. That means that there would be no commitment to maintain the buffering effects in case the socio-economic conditions changed in favor of short-term profitable but unsustainable practices. In order for the buffer zone to be effective in the long run, the Las Nubes project has to promote the feeling of regional ownership for the forested and protected areas, the biological diversity they protect, and the buffer zone. Specific recommendations for the buffer zone are provided in chapter 7.

6.4 Common Vision

With the completion of the second community meeting, the participants had conceptualized the format of their common vision, selected the issues that they deemed important to include in it, evaluated the first draft, and completed the first version of the vision (Appendix C). Indeed this was a community-based design of a vision for the region. The role of FES researchers was limited to an initiating and moderating role, with assistance at the write up stage of the draft.

The vision consists of two sections. The first one discusses the value of developing such a vision: a) contribute to reaching the objectives, goals, and priorities established by the communities, b) promote integrated development through the cooperation of neighboring communities, c) help develop a management plan for the region, and d) strengthen the process of regional integration. The second section consists of eight thematic categories for regional cooperation. The categories are: Health, Transportation,

Employment opportunities, Communication, Social issues, Public safety, Education, and the Environment. Each category includes 2-4 brief statements clarifying the vision of the communities regarding each issue. The clarifying statements on the environment refer to: a) a trash disposal and recycling plan, b) sustainable natural resource use in the region, c) securing the quantity and quality of the local water resources, and d) addressing illegal hunting, fishing, and logging activities.

On my recommendation, these statements do not provide *specific* action directives. Instead, they describe the ideal envisioned state and provide only general recommendations on how to reach that state. I made that recommendation to the participants, explaining that specific recommendations should be made only after the threats to the vision have been identified by the community in a future meeting. They agreed with my recommendation.

In my opinion, the community-based methodology of designing the common vision was successful in achieving its main objective (the vision) and instilling the feeling of ownership, pride, and accomplishment in the participants. The first step has been made. It is important that the vision is used properly in the future as a step stone for future participatory projects, including the buffer zone. Specific recommendations on how to better benefit from the common vision are discussed in Chapter 7.

6.5 The Value of Community Participation

The experience of this major paper research with community participation conforms to those described in relevant literature (see Chapter 3). Indeed, community participation is a time and cost demanding approach to project design and implementation. Nonetheless, it is critical for ICDP projects focusing outside protected areas and

specifically on privately owned lands. By involving local communities in the design of the common vision of this research, the following things were achieved:

- Developed a common vision that reflects the community needs and aspirations of the participants.
- Improved local awareness and ownership of the Las Nubes project.
- Contributed to the capacity building and empowerment of the local communities.

None of these outcomes would have been achieved with a non-participatory approach. At the same time, the observations made during this research support many of the concerns raised in Chapter 3 regarding the weaknesses of participatory methodologies in ICDPs. First of all, achieving representative participation is a challenge that requires a commitment of time and resources on the side of the project managers. On average, one out of six days of my fieldwork was dedicated to inviting local communities to the community meetings. Yet, mobilizing communities is certainly not, in itself, a guarantee of conservation. Project managers have to maintain a focus on the primary objectives of the project. It should be remembered that community participation is foremost a mean to conservation and development - not a goal. Project managers have to be flexible in their research design to adapt to field conditions and select the appropriate level of participation for a given project. Based on my personal experience in the Las Nubes region, I believe that the self-management/empowerment level of participation (see 3.3) is inappropriate for use at the design stage of the Las Nubes project because:

a) local communities seem to have willingness to participate in community projects but not the fervor to initiate them.

b) Local communities perceive a crisis in terms of development and economic conditions in their region but not in terms of natural resources and conservation. Considering that, self-management levels of participation at the design stage of the Las Nubes projects would likely concentrate on development objective only.

Overall, I share the skepticism and uncertainty of conservation professionals on the value of broad, limitless participation (Wells and Brandon 1992, Western et al. 1994, Agrawal and Gibson 2001). On the other hand, I believe that the Las Nubes project requires the extensive use of community participation; but use participatory activities only after acknowledging and objectively evaluating their limitations. Despite the ethical mandate for participatory methodologies, participation is not a panacea for all types of projects.

6.6 Capacity Building

The floral arrangement and woodwork workshops offered during the second community meeting were the main capacity building activities of this study. They were very successful in attracting the interest of the community members and without doubt many participants attended the community meeting because of the workshops. In my opinion, their value as a capacity building activity lies less in the new skills they demonstrated to the locals and more on the message they carried: "There are interesting, realistic, income-making alternatives to coffee and sugarcane cultivation." The workshops served as a teaser for the curious and entrepreneurial minds in the community. Prior to the workshops, Monica Vazquez and myself explained that the workshops offered were selected based on suggestions we received from the participants in the first

community meeting and are only an example of the variety of different options available to people. Even if someone in the community does decide to start making floral arrangements or wooden furniture, it will not be possible for everybody to do that. Moreover, if two students from Canada could put together a couple of workshops for the community, so could they. At the end of the community meeting we provided the contact information of people at INA (Instituto Nacional de Aprendizaje). We had conducted them and found out that people from INA at San Isidro could come to the community to give a presentation on the capacity building programs they offer. I find it unlikely that more than few of the participants recorded the contact information, but I agree with INA in that there is value in having the community themselves contact them. Apparently, INA had offered some programs in the communities in the past, but they did not maintain the minimum attendance of 15 people per class. This is another example of the locals' lack of initiative and commitment mentioned in the previous section. It is important that the Las Nubes project does not develop a relationship of dependence with the communities, where we are the only ones to organize and offer workshops. It is important to have local initiatives.

In addition to the workshops, there were two presentations delivered during the community meetings; one from Monica Vazquez on ecotourism and one by myself on new technologies. They were less of hands on activities than the workshops, but they also offered a view on the possibilities for local development. Finally, as a result of the discussion with three Santa Elena young women (who volunteered at the end of the first community to work on the vision draft), a new young women's group for Santa Elena was established. A few days before the second community meeting, Monica and I met

with a group of 10 young women. We asked and got permission to use a classroom at the primary school of Santa Elena. At the meeting, on the request of the ladies Monica and I gave some ideas, support, and confidence to their initiative to develop new working opportunities for them. It became apparent in the meeting the frustration that many women feel in the communities with the limited working opportunities available for them. They complained about the male machismo that inhibits them from pursuing paying jobs in San Isidro. The success of this initiative is realistically small, but it shows that there are people willing to start something new. Future research in the Las Nubes area should approach the young women's group and provide them with as much support as possible.

6.7 Environmental Education

A series of environmental education activities were delivered as part of this study. Although none of the activities were part of the original research plan, they were added because they were deemed of importance for the broader Las Nubes project. Specifically: a) a workshop for children was offered at the last community meeting, which used art to teach children the value of recycling and reusing items that we typically consider trash, b) three presentations were given at the Montecarlo primary school explaining the 3 R's (Reuse, Reduce, Recycle) of trash disposal, and c) the presentation on new technologies given to adult participants at the first community meeting included an extensive section on habitat fragmentation and the effect it can have on wildlife. Moreover, in May 2002 the York volunteers presented an original theatrical play to the Santa Elena School that discussed the connection between forest habitat and wild birds.

The main objective of the environmental education is to promote awareness and appreciation of the beauty and value of nature. As discussed earlier, the local communities are aware of certain environmental issues, but typically there is no in depth understanding of the complexity of the issues. Educating local communities about natural resources and biological conservation is a vital step towards generating public support and acceptance of the Las Nubes project. As Audubon president and CEO John Flicker said, "people will work to protect what they value, and value only what they understand."

Future Las Nubes studies should include more environmental education activities in order to achieve in the long run a positive improvement on environmental behavior in the region. There is often the notion that children are easier to teach new concepts and that their optimism and enthusiasm can influence others around them, such as their parents. Therefore, environmental education should concentrate on children. However, a study conducted in Costa Rica found that child-to-parent transfer of environmental information is rare and sporadic (Sutherland and Ham 1992 cited in Harrington 2001). Given the urgency of most environmental problems, the study recommends that environmental education should be designed both for adults and children.

CHAPTER 7: Recommendations and Conclusions

7.1 Building on the Common vision

The common vision is an important first step towards community-based conservation and development in the region. It helps coordinate the efforts of the local development committees by providing them with a list of clear goals in several different categories. Being the culmination of two community meetings, the vision also acts as a reminder to the participants that their efforts were fruitful and may generate a feeling of accomplishment. It is important to capitalize on the positive impression left by the preparation of the vision. There should be a continuation of community activities that will build on the vision and develop ultimately a management plan for the region/buffer zone. The following paragraphs present some recommendations on how to proceed in the near future. The proposed steps are only suggestions that should be adapted accordingly based on available data and feedback from the community.

The first step would be to maintain regional recognition of the common vision. In early Spring 2003, a copy of the common vision will be distributed to the local primary schools for children to take home. The timing should be appropriate so as to assist with the arrival of York volunteers, and assumingly some researchers, in early summer 2003.

The next step would then be to organize individual meetings with the development committees of Santa Elena and Quizarrá[6]. In these meetings, the vision should be presented as a tool for the committees. It is essential not to create the feeling that the Las Nubes project's actions are bypassing or challenging the authority of the committees.

[6] Montecarlo does not have a development committee. It is recommended that either a development committee is organized in Montecarlo, or at least some representatives from Montecarlo are invited in these meetings. Moreover, the development committee of Penas Blancas should be also invited, since much of the land around Los Cusingos is within the boundaries of Penas Blancas community.

This is a possibility and it requires careful and diplomatic handling. The researchers should discuss the benefits of establishing regular common meetings between the committees of the two communities. This idea was raised in the second community meeting and it was well received by the participants. The researchers can initiate – and if requested, moderate – the first meeting. These meetings and the development of the common vision could help expand the scope of the committees. Currently, their focus has been limited to improving the roads. In fact, local people told me that practically the development committee should be renamed to "road committee."

Concurrently, a series of community meetings[7] should be held in order to identify and prioritize the threats to the envisioned state of each category in the common vision. Then, a list of recommendations for addressing the threats has to be developed. The entire process has to be participatory with the Las Nubes researchers acting as initiators and moderators of these meetings. The members of the development committees have to be invited. If possible, the committees' feedback should be requested for the design of these community meetings. In that way, a relationship of collaboration, rather than competition, can be established between the committees and the Las Nubes project.

There are various methodologies that can be used in these meetings for identifying threats and developing practical solutions. The TRA (Threat Reduction Assessment) protocol, developed by the Biodiversity Support Program (BSP) of the World Wildlife Fund (WWF), is one such methodology (Margoluis and Salafsky 2001). The TRA methodology may be preferred over more traditional, quantitative, methodologies because it can be implemented and its results understood by local community members

[7] Based on the experience with the community meetings of June and July 2002, at least two community meetings will be required.

with have little scientific background. Originally designed for project monitoring and evaluation, the TRA can be adapted to serve also as a protocol for identifying threats to conservation and development. Ultimately, it can be part of the management plan for the Los Cusingos buffer zone.

Once the community meetings are completed and a list of recommended actions has been developed, a new meeting with the development committees should be organized. The researchers should introduce the suggested actions, emphasizing that they are the result of regional community participation. Ideally, the development committees should use the suggestions of the meetings to initiate their own projects.

7.2 Buffer Zone Recommendations

This section presents a series of recommendations on the design and management of the buffer zone. They are based on my personal observations in the field, discussions with people in the study region, and suggestions from buffer zone literature. These recommendations can be used to direct future work on the buffer zone. Ultimately however, the design and management plan of the buffer zone has to be a result of community participation.

Design

Figure 7.1 presents a proposition on the size and shape of the Los Cusingos buffer zone. Although it is unlikely that a buffer zone of that size will be functional in the near future, there is value in envisioning early on the design of the buffer zone so as to better design future research activities. The proposed design reflects the purpose and design considerations mentioned in section 4.5.1-2. The following parameters are the practical consequences of those considerations.

- The borders of the buffer zone should be easily identified landmarks. In that way, it will be easier to inform locals about the location of the buffer zone. The proposed buffer zone design uses for the most part the road and river networks to delineate the boundaries.
- Since the buffer zone will be entirely located on private land and there is no intent to impose mandatory land-use limitations on local farmers, there is no obvious socio-economic limitation on the size of the buffer zone. The capacity of the Las Nubes project to promote sustainable land-use practices in the region is currently the main limitation to size. Specifically, the number of possible communities and landowners incorporated in the buffer zone will depend on the resources of the Las Nubes project. The proposed size is in part arbitrary and will have to be adapted as new limiting parameters are identified. Currently, it incorporates approximately 150 properties lots (Figure 7.2). The number of landowners corresponding to these lots is not yet known.
- The Los Cusingos buffer zone is going to be part of the biological corridor to Las Nubes. The tentative design of the biological corridor (Figure 7.4) is limited to lands within the Rio Penas Blancas watershed and does not take into account the existing forest fragments in the area. The corridor's primary objective is to facilitate wildlife movement and not to provide wildlife habitat. Los Cusingos could become a dead-end for wildlife movement because of its small size and current isolation from forest fragments. The proposed design focuses on an east-west orientation (as opposed to the north-south of the biological corridor) with the aim of connecting Los Cusingos to the remaining forest fragments in the area.

- The proposed design incorporates segments of many local streams and rivers, in response to the buffer zone's ecological objective of improving local water quality.

Priority Areas

Recognizing that the participatory design of the buffer zone may take time to complete, seven areas around Los Cusingos have been indicated in Figure 7.3 for priority consideration in future Las Nubes project studies. These areas are essential for increasing the connectivity of Los Cusingos and decreasing the negative edge effects on the core of the protected area. The following paragraphs present the importance of each area and discuss its specific characteristics. They are numbered according to their perceived order of priority.

Area 1: This is an area on the west side of Los Cusingos. It is almost entirely used for sugarcane production, with the exception of some areas next to Los Cusingos where coffee is grown. The coffee fields are mostly partially shaded with poró, the locally predominant tree used for shade in the coffee farms. A thin strip of forest is maintained in part along the border with Los Cusingos and there are also some degraded areas that are overgrown with ferns and grass. The cemetery for the region is located at the Northeastern end of that area. Promoting sustainable land-use practices and increasing the tree cover in this area will greatly reduce the edge effects on Los Cusingos. In my opinion, Area 1 and Area 3 are the most exposed sides of Los Cusingos. On the contrary, the Penas Blancas River, a forest fragment and an uncultivated floodplain provide some natural protection from edge effects on the eastern side of Los Cusingos.

Figure 7.1: (This is not a community-based design).

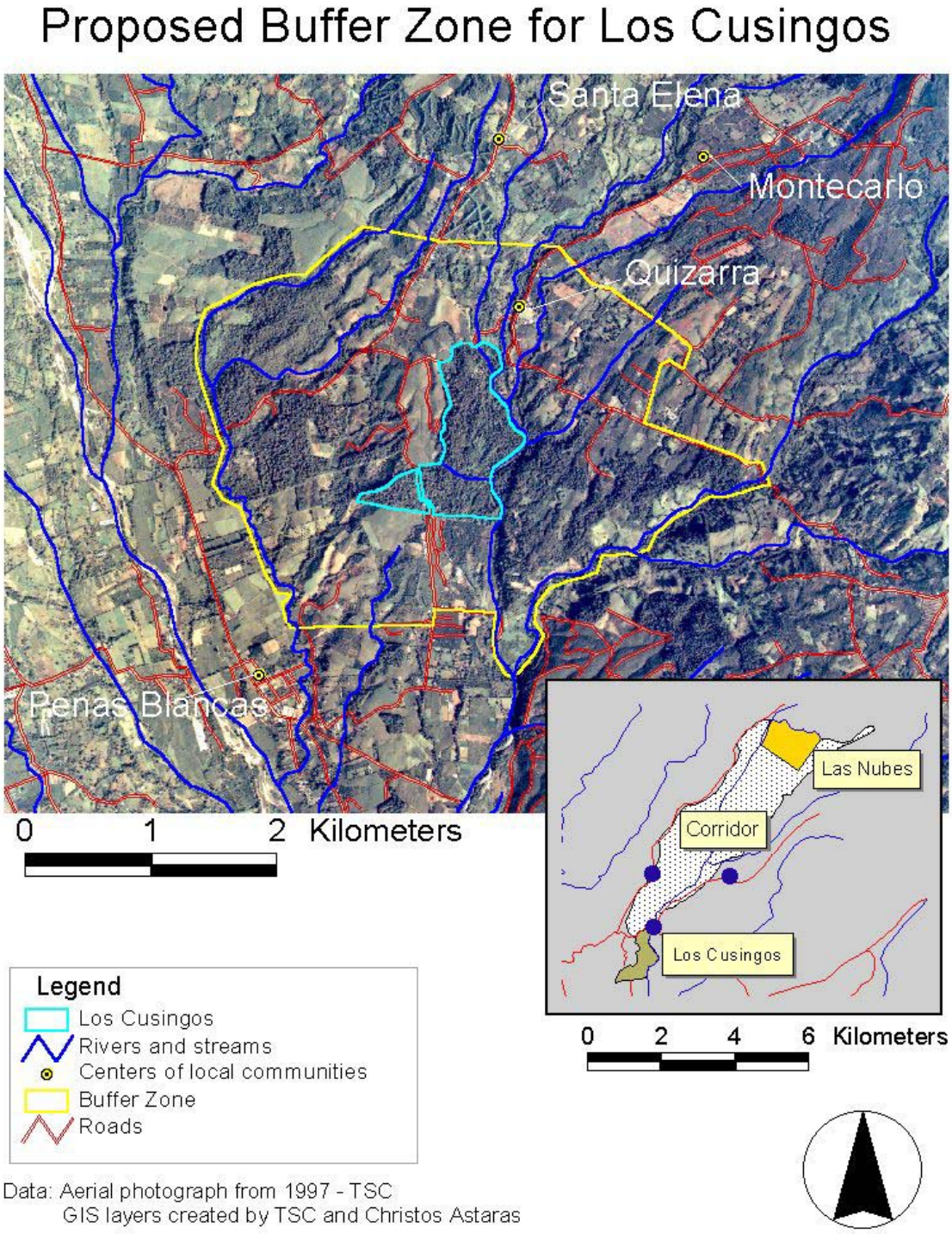


Figure 7.2: Map of Property Boundaries in the Study Region

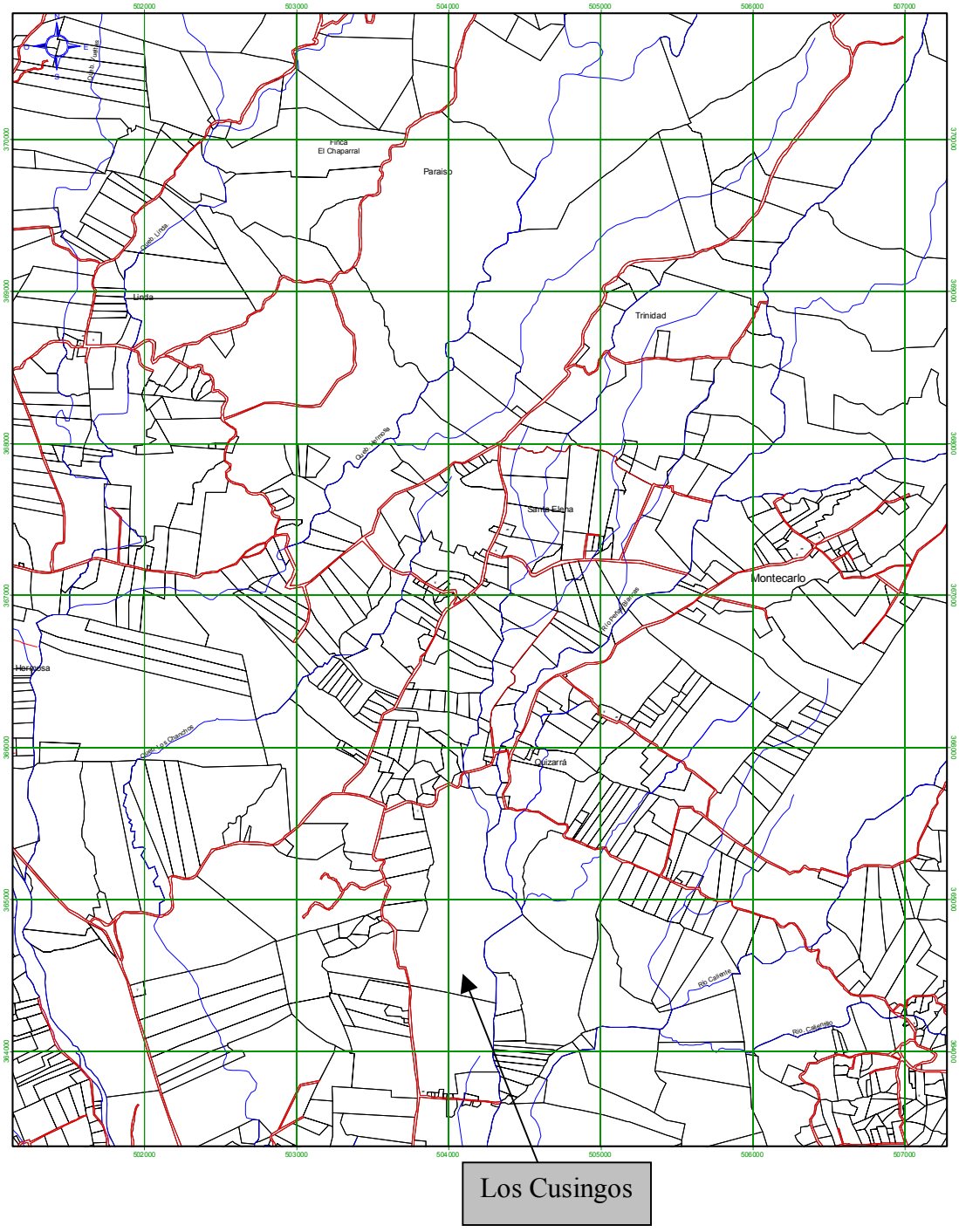


Figure 7.3:

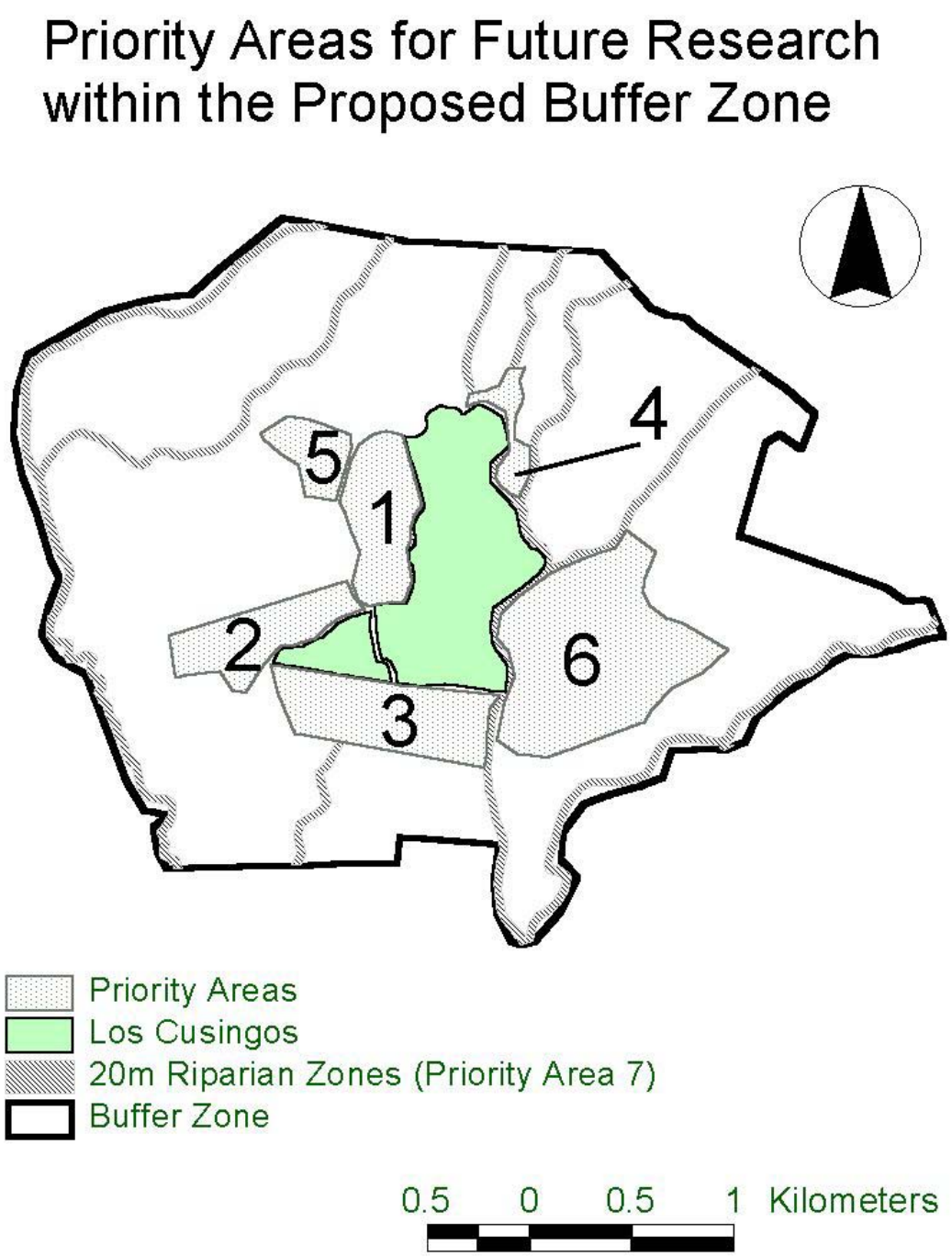

Priority Areas for Future Research within the Proposed Buffer Zone
1
2
3
4
5
6
Priority Areas
Los Cusingos
20m Riparian Zones (Priority Area 7)
Buffer Zone
0.5 0 0.5 1 Kilometers

Figure 7.4:

Tentative design of Las Nubes-Los Cusingos Biological Corridor (Young 2001)

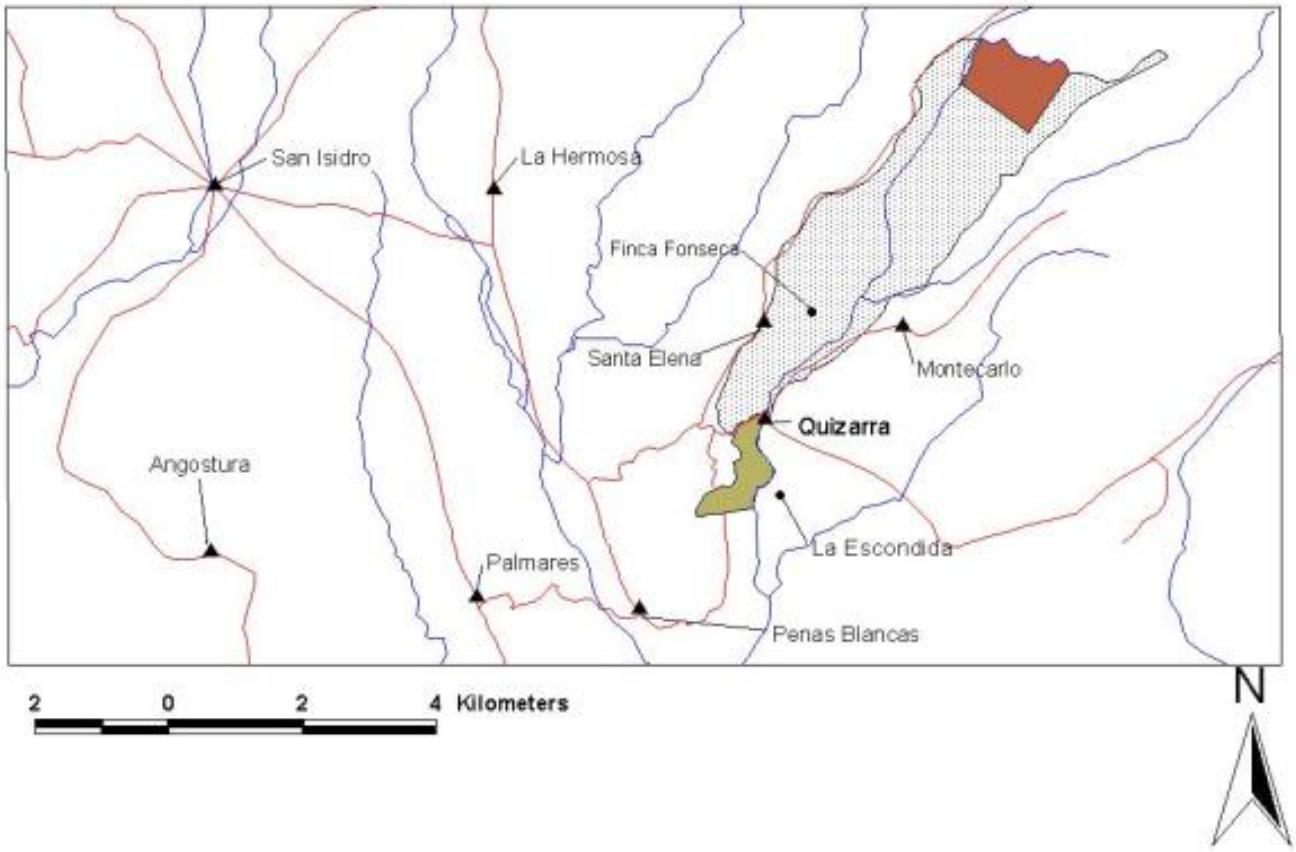
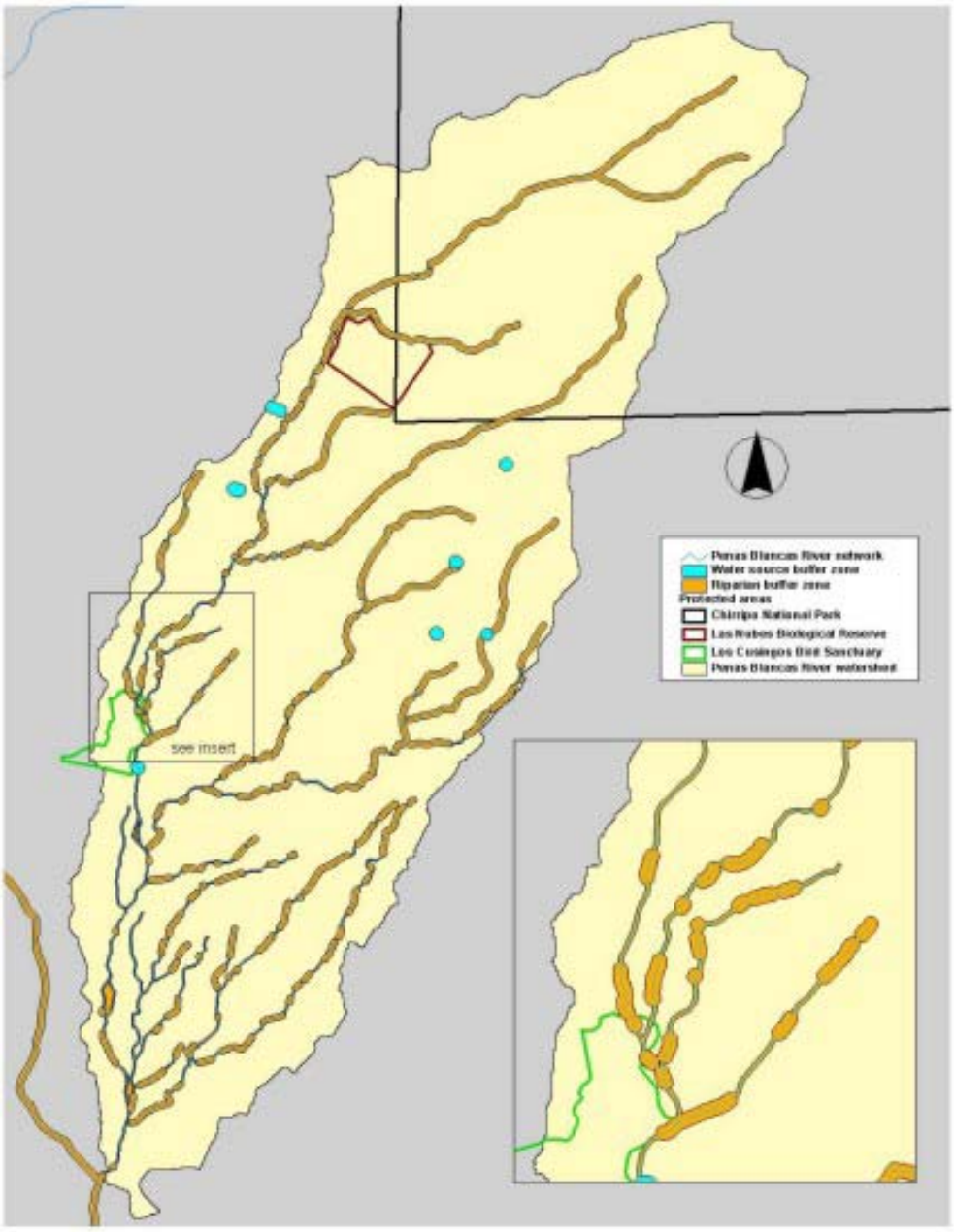


Figure 7.5: Riparian Zones within the Peñas Blancas River Watershed (Young 2001)



Protected Water Source and Riparian Buffer Zones on the Penas Blancas River watershed

Increasing forest cover in this area is going to be a challenge since most of the area is cultivated for sugarcane. In my opinion, it will be more difficult to promote organic shade-grown coffee to farmers that already grow coffee than to those that grow sugar cane. Four big lots cover the area (Figure 7.2) and according to Eden Chinchilla most of the owners are part of the same family. It is my suggestion that future researchers should identify the owners of these fields and make every effort to have them attend the community meetings. In addition, the farmers should be interviewed in order to identify the value they put on sugarcane production and to be able to offer/design alternatives.

Area 2: This is an area at the north side of Los Cusingos's western tip. The eastern part of that area includes four farmhouses, one of which is abandoned. The area around the farmhouses is mainly cultivated for coffee. Some fields use poró for shade, while some fields use a variety of woody trees including mango trees. There are also some areas with fruit trees and small vegetable gardens around the houses. All three inhabited households seem to be at the lower financial range of the region. According to Figure 7.2, the area is divided in at least 8 property plots. Increasing tree cover in this area will help connect the western tip of Los Cusingos to the big forest fragment at its northwest. Promoting organic shade grown coffee in this area may be easier than for Area 1.

Area 3: This covers most of the fields immediately south of Los Cusingos. The western end of this area consists of 6 property lots and seems to be cultivated mainly for sugarcane according to the 1997 aerial photograph (Figure 7.1). The eastern part of this area is likely cultivated for coffee and is all included within one property lot. Increasing tree coverage in this area would allow for better buffering of Los Cusingos against edge

effects. I recommend that Las Nubes researchers approach first the owner of the big coffee field on the eastern edge of the area and discuss with him/her the possibilities of organic shade-grown coffee. The problem is that most organic coffee certification programs work with small landowners. If indeed the eastern side of Area 3 is owned by one farmer only, the land may not qualify for inclusion to the organic certification program.

Area 4: This is a relatively small area northeast and adjacent to Los Cusingos. Most of it forms the floodplain of the river and seems to be uncultivated. Based on observations made along the road on the eastern side of this area (the Quizarrá-San Francisco road), the area is covered mainly by thick grass vegetation and some trees along the river edge. According to the property plot map (Figure 7.2) it is included within one property plot. Overall, it seems to be isolated because it is the meeting of three branches of Rio Penas Blancas and a sharp ridge rises on the eastern edge of this area. I recommend that the owner of this plot is identified and invited to the community meetings. Even though the area seems to be left to naturally regenerate, it could be beneficial to plant some additional trees along the riparian zone. It also seems that this area is of great value to wildlife because of the abundance of water and its isolation. It may be beneficial to conduct some studies in the vegetations and fauna of this area.

Area 5: This area consists of one property plot and is almost entirely cultivated by coffee that is uniformly shaded by poró trees distanced approximately 15 meters apart. I believe that it is effort-efficient to attempt to persuade this farmer to plant more shade trees in the fields. Future researchers should schedule interviews with the owner in order to better understand his/her view on alternative agricultural practices and conservation

awareness. The area is bordered on the west-southwest by small forest fragments that are in part connected to the big forest fragment on the western end of the proposed buffer zone. The field is also on a slope and streams run along the southern edge of the plot. Increasing tree coverage on the slopes will help reduce soil erosion. Reducing chemical use on the fields almost certainly will help improve water quality in the streams.

Area 6: This area consists of a few large plots at the southeastern side of Los Cusingos, across the Rio Penas Blancas. The farm of Luis Angel Rojas – a farmer that is a big supporter of conservation initiatives in the area – is located in Area 6. The area does not have many farmhouses in it and it is dotted with small forest fragments and coffee fields. Promoting organic shade grown coffee in this area could contribute to better connectivity within these fragments and with Los Cusingos.

Area 7: This is not one priority area but rather consists of the riparian zones of the streams and rivers that are included within the proposed buffer zone. According to Dean Young's field data (Figure 7.5), the majority of the riparian zones around Los Cusingos have some level of forest cover. Increasing the extent and density of trees within these riparian zones would contribute towards the biological corridor to Las Nubes and improve water quality. The appropriate width of a riparian zone is a much-debated topic and depends on the use of the riparian zone. I believe that a minimum of 20 meters would be needed for the riparian zone to be valuable as a corridor. Definitely, coffee or pastures that reach to the riverbank should be priority of any reforestation efforts.

Management plan

At the given stage of the buffer zone design it is premature to make specific recommendations on the content of the buffer zone management plan. There are however

some general characteristics that in my opinion the management plan should incorporate. They are:

- The plan should be easy to comprehend, without complicated technical terms. Its implementation should not be reliant on costly, technologically demanding alternatives to current land-use practices.
- The management plan and the buffer zone have to be widely recognized and accepted within the region. In order to achieve that, it is critical that the community is actively involved in their design.
- The plan should promote more than one alternative to current land-use practices. Recommendations for coffee, sugarcane, and pasture should be included in the plan. Although there is likely going to be an emphasis on organic shade-grown coffee, the local communities should not come to view the plan as a coffee improvement project. It should be of universal value.
- It is essential that the plan has provisions for monitoring and evaluation mechanisms. ICDP literature identifies the lack of such mechanisms as one of the major drawbacks of ICDPs until now. Projects that involve local communities have to be flexible. Without the feedback from monitoring and evaluation protocols there can be no informed adaptations to the plan along the way.
- In addition to guidelines for sustainable land-use practices, the management plan should call for environmental education activities within the communities. Environmental awareness leads to increased appreciation of natural resources.

7.3 Recommendations for participatory projects in the region

Several community activities will have to be organized before the buffer zone management plan is completed. Each activity, no doubt, requires it own individual planning according to the given circumstances of the moment. Yet, I strongly believe that there are certain considerations that all Las Nubes project community activities should take into account. This section presents these universal issues that were developed based on the fieldwork experience of this major paper research.

- Timing: Community activities that require broad participation should not be scheduled too close to each other. It is possible to "burn out" the participants. Organizers should also be respectful of the time investment required on part of the participants to attend the meetings. I would recommend a spacing minimum 3 weeks for large community meetings. Meetings with smaller groups may be appropriate to have them more frequently. It is important to cooperate with other Las Nubes project researchers in order to avoid organizing activities too close in terms of timing.
- In order to increase attendance rates for community meetings, the invitation should include a "hook" – an activity that will attract participation. It is important to deliver the activity during the meeting as described otherwise it would be unethical. There is no need to be secretive about the "hook." For instance, participants could be informed that a certain activity is included as a reward for 2-3 hours of group discussion.
- The researchers should typically expect to do half as much work as expected in big group meetings. This is can be due to unexpected field difficulties, the use

Spanish, and the relatively short-attention span of big, diverse groups. The community meetings should be quite lengthy in order to include group work, workshops, and breaks. In case time is running out, I do not recommend stressing or pressing the participants. It is better to delay an activity until the next meeting.

- Make the participatory activities pleasant. Take breaks, be informal (if appropriate), include workshops, provide food etc. It is important that the participants enjoy themselves, because they may not attend future meetings. Avoid confrontation with participants. The researchers should be diplomatic and remember that the impression they leave in the community precedes all future researchers.
- Make the participatory activities memorable. It is important that in addition to a pleasant experience, the participants remember the activities for a long time. This assists with project ownership and recognition. High project ownership is directly related to project success. In order to make the activity remembered, it may be appropriate to give the participants something material to take home. That could be a diagram from the meeting, the agenda, a map, the product of a workshop, notes etc. At the end of the meeting, include a short section that wraps up the accomplishments of the day. Thank them for attending. In that way they participants go home with that image on their mind.
- Include capacity building and environmental education activities. These activities are likely going to be the "hooks" and most pleasant for many participants. At the same time, they contribute to the capacity building and education of the region.

- Identify early on community members that can assist you with the design of the community meetings. Do not abuse their kindness. Local members can provide diverse assistance such as give ideas on the form of the meeting, promote the event, give presentations or a workshop, and moderate the meeting.

7.4 Future research and data needed in the study area

This major paper research set the first step on the design of the buffer zone for Los Cusingos. There is though much information that needs to be collected before the buffer zone can become fully functional. Probably the most important step is to develop a set of sustainable land-use practices that can be offered to the farmers as a solution to the existing land use practices. It is vital that alternatives for the production other than coffee are developed. Realistically, the whole region should not be growing coffee. Dependence on one crop only is risky. The current pasture and sugarcane practices have to be improved. Future researches could examine the viability of cattle production in stables for the purpose of reducing the sizes of pastures at the northern end of the study region. In addition, approaches to increase tree cover in existing pastures can be explored.

In order to establish monitoring and evaluation mechanisms for the buffer zone component of the Las Nubes project, a detailed land-use map of the area around Los Cusingos has to be developed. Moreover, water samples should be taken along the Rio Penas Blancas in order to monitor changes in water quality over time. The sampling and analysis of these samples can be done with the aid of local primary schools. Benthic microinvertebrates can be used as an indicator of water quality. With the aid of teachers and FES-TSC researchers, older children can implement these protocols. Such activities can provide important base data and contribute to environmental education and capacity

building in the region. In addition to land-use and water quality, fauna and flora base data are needed for Los Cusingos and Las Nubes. Priority should be given to bird studies since Los Cusingos is classified as a bird-sanctuary and the biological corridor will likely be used mostly by altitudinal-migratory birds. The establishment of a several mist-netting lines could increase our understanding of local avifauna and the role of forest fragments such as Los Cusingos on bird migration.

The TSC-FES partnership should design projects that directly address the needs of youth and especially women. Initiatives like the Santa Elena young women's group should be supported. Promoting economic development in coordination with appropriate environmental education can set the stage for long-term success of the Las Nubes project's efforts.

One way to promote regional economic development is through ecotourism. In my opinion, a network of trails has to be developed connecting Los Cusingos and the nearby forest fragments. Currently, Los Cusingos is too small on its own to be attractive for many eco-tourists. The trails should provide several hours of hiking. The local hieroglyphics can act as an attraction, especially in a country such as Costa Rica where archeological monuments are scarce. The Las Nubes project could cooperate with an appropriate institution in order to better study the hieroglyphics. Apparently, a German scientist has examined them once but the locals never received any information about his study. Los Cusingos has a big stone with hieroglyphics – referred to as the Piedra.

The opportunities for research in the region are literally countless. It is important that the past and present researchers associated with the Las Nubes project get together to set a list of priority projects. Once the list is developed, a recruiting process for these projects

should be initiated. In FES, recruiting could take place even at the pre-admission stage. The website can assist in that process by advertising the research opportunities to potential skilled candidates.

7.5 Conclusions

Conservation researchers agree for the most part that effective biological conservation cannot be satisfied within the existing protected areas network. Buffer zones are seen as a way of improving the services provided by the protected areas and promoting some level of biodiversity conservation in the rural areas. Buffer zones were often established in partially undeveloped areas, with unclear land ownership, and under pressure from traditional practices of local communities. By establishing resource use limitations on local communities when there were none before, buffer zones have often met local disapproval. This major paper research examined the feasibility, value, and challenges of establishing a buffer zone in areas that are privately owned and developed. Unlike most buffer zones, the Los Cusingos buffer zone is not attempting to "secure" relatively intact areas from being developed. Instead, it examines the way of restoring degraded lands, increasing wildlife habitat, and promoting local rural sustainable development. The Las Nubes researchers have no jurisdiction on the private land. The implementation of the buffer zone depends completely on the willingness of local communities to participate. Although only the first step towards establishing the buffer zone and designing the management plan has been made, several conclusions can be drawn about the project.

- It is feasible to develop the buffer zone because there is local interest in exploring low-risk alternatives to existing land-use practices.

- The buffer zone has to be designed with the participation of local communities. The community-based design is time and cost consuming, but it secures local support and adapts the design to local needs.
- Environmental education has to be an integral component of the buffer zone management plan, because people protect what they value, and they value what they understand.
- Complex conservation and development projects such as the buffer zone for Los Cusingos have to consist of small realistic steps. Stretching the resources of a project too thin will likely result in failure. This is why a list of seven priority areas has been developed. Individual projects can address these areas first one by one.
- The common vision was the first step towards the development of the buffer zone management plan. It set the stage for developing the management plan. Maintaining a continuity of action is important. Otherwise, without seeing progress and results local support will disappear.

The Los Cusingos buffer zone project qualifies as a community-based ICDP. Examining its implementation process, it is possible to make inferences about the effect of community participation ICDPs' success. Of course, these conclusions have to be conditioned for the socio-economic and ecological conditions of the specific study region. The following points directly contribute to the existing ICDP knowledge and help to better design and implement future ICDPs.

- The success of the participatory ICDP design and implementation depends on the inclusion of local communities since the early stages of the project. Otherwise, a

feeling of suspicion and tension may develop between the local communities and the project, inhibiting effective participation at the later stages.

- Project managers must have the flexibility to adapt the participatory methodologies to address the special conditions of the project. Different levels of participation may be appropriate according to the setting. A cookie-cutter approach to the design of community-based ICDPs is likely to fail. Top-down pressures from donors and funding agencies will likely lead to rushed decisions jeopardizing project success.
- Project managers should have at least an initiating or moderating role at the first steps of participatory ICDPs. There are no known cases where local communities have put conservation objectives over their development needs. In order for an ICDP to maintain its conservation scope, project managers may have to tactfully maintain a conservation component in the agenda. Ultimately, ICDPs are an approach to conservation development. Project managers must not fall in the trap of seeing community participation as a means, even though it is failing in its goal of promoting conservation. There are limitations in community participation that have to be recognized.
- Community participation ICDPs – and all ICDPs – have to be long lasting projects. It is unrealistic to expect deep changes in local community behavior in 3-5 years.

Overall, this major paper research had the double objective of contributing to the Las Nubes project of the FES-TSC partnership and addressing important research questions within my area of concentration. In the process of conducting my fieldwork and writing

the major paper, I gained valuable practical experience and theoretical understanding on project design and implementation, community participation, buffer zones and ICDPs – all components in my plan of study. Moreover, the major paper has provided me with meaningful insight in both of the major paper's central questions discussed above - the value and challenges of establishing buffer zones on privately owned land and the effect of community participation on ICDPs' success.

Appendix A

Name of people I had informal interviews with:

1. Luis Angel Rojas – Finca Escondida in Quizarrá
2. Romolo Fonseca – in Santa Elena
3. Marvin ? – in Santa Elena
4. ? Doctor from San José who owns farm in Quizarrá
5. Elizabeth and Warren Jirik – Canadian's who live part of the year in Quizarrá
6. Umberto Portugal – in Santa Elena
7. Eden Chinchilla – regarding the farm where I was staying in Quizarrá

Appendix B

Invitation for Community meeting #1 – June 16, 2002

Una cordial invitación a los vecinos de Quizarrá, Santa Elena y Montecarlo
a un foro sobre:

"Nuevas Tecnologías y Visión de la Zona"

Se desarrollarán los siguientes temas:

- Desarollo de una visión comunal
- Elaboración y uso de imagines de satelite, Sistemas de Información Geograficas, aerofotografías, y internet.
- Información y discusión sobre alternativas para el desarollo económico de la comunidad.
- Presentación sobre la certificación de café organico – un projecto de AMISCONDE que va a commencar en Septiembre 2002.

Impartido por Christos Astaras, estudiante de Maestría de Estudios Ambientales de la Universidad de York, Canada

Fecha: **domingo, 16 de junio**

Hora: **1.00 pm**

Lugar: La Finca Los Cusingos

Refrigerio

"Impulsemos el Desarollo Comunitario"

Invitation for Community meeting #2 – July 28, 2002 (Originally in one page)

Una cordial invitación a los vecinos de Quizarrá, Santa Elena y Montecarlo
a un taller/reunión comunal sobre:

" D e s a r o l l o I n t e g r a l y u n a I n i c i a t i v a d e T u r i s m o "

Fecha: Domingo, 28 de Julio

Hora: 8 am-4 pm
(favor de llegar 10 min. antes)

Lugar: Finca Los Cusingos

Se desarrollarán los siguientes temas:

- ***Presentacion de resultados del reunión anterior – Evaluación de la Visión***
- ***Desarollo de plan de manejo regional participativo***
- ***Realidades del Turismo en Costa Rica y el mundo***
- ***Turismo Rural en la zona de Cusingos, una opcion real?***
- ***Proyeccion de videos y entrevistas sobre el desarollo integral de la region:***
  - ***INA: Cursos y opciones***
  - ***Proyecto AMISCONDE – Certificación de Café Organico***
  - ***Effectos de manejo basurero corriente***

Se impartiran talleres de:

Los talleres seran impartidos simultaneamente, por eso unicamente se podra participar en uno solo por persona. Estos talleres son gratuitos, unicamente los participantes deben traer el material mentionado... y mucha creatividad.

- ***Arreglos Florales (****Sr. Sergio Montero****)***
  Material de portar: *Tijerilla podadoza, navaja, una canasta o galletica de madera, 10-15 flores naturales, helecho, follaje, etc.*
- ***Trabajo con madera (****Sr. German Venegas****)***
  Material de portar: *Cinta de medir, martillo, sequeta*
- ***Reutilizacion artistica de basura (****Sr. Roger Piedra****)***
  Material de portar: *Botellas de plastico o vidrio, latas (preferiblemente de sardinas), alambres, pedazos de plastico de colores, hilo, etc.*

A l m u e r z o / R e f r i g e r i o

Appendix C

Common Vision

Visión

Reconociendo el hecho de que los conceptos relacionados al desarrollo y conservacion ambiental, no se definen con fronteras artificiales como aquellas creadas por las comunidades, se ha encontrado que para un efectivo desarrollo integral es necesaria la cooperacion intracomunitaria.

Bajo este contexto, las comunidades de Quizarra, Santa Elena y Montecarlo han desarrollado una vision comun que fue desarrollada a partir de las ideas planteadas durante el taller del 16 de Junio 2002.

Esta vision representa los suenos y el futuro deseable de la comunidad, y ayudara a:

- Contribuir al logro de los objetivos, metas y prioridades que sean establecidos por la Comunidad misma.
- Promover el desarrollo integral a traves de cooperacion vecinal
- Desarrollar un Plan de Manejo Regional
- Fortalecer el proceso de integración de la region

El reto esta claro, sabemos lo que debemos hacer, y a pesar de que no sera fácil, se deben poner en práctica los principios de cooperación, participación, solidaridad y ayuda mutua entre la region.

A continuacion se presenta la vision elaborada por el grupo, esta se encuentra subdividida en categorias tematicas:

SALUD:

- ***Medico:*** Promover acceso permanente, conveniente y economico a un buen servicio medico de calidad para todos.
- ***Basura:*** Establecer un manejo adecuado de basura que sea compatible con las tres R's (Reciclar, Reducir, Reutilizar), con el fin de prevenir enfermedades ademas de apoyar la proteccion del medio ambiente.
- ***Educacion:*** Organizar grupos especificos con el fin de recibir capacitacion sobre temas de interes de acuerdo a las realidades de salud la region.
-

TRANSPORTE:

- ***Caminos:*** Coordinar acciones viables con el fin de mejorar y mantener en buen estado las vias de acceso de la region con la finalidad de apoyar el sano desarrollo de la economia local.
- ***Bus:*** Obtener un servicio economico, seguro y suficiente para el mejoramiento de las vias de comunicacion en la region.

FUENTES DE TRABAJO:

- Crear fuentes de trabajo que aseguren que la poblacion local, especialmente la juventud, no sienta la necesidad de emigrar para obtener una calidad de vida deseable.
- Promover la igualdad de oportunidades entre hombres y mujeres.
- Fomentar una fuerza de trabajo competitiva acorde a las exigencias tecnologicas actuales.

COMUNICACIÓN

- Telefono: Acceso economico y confiable de lineas telefonicas privadas.
- Accesibilidad a las nuevas tecnologias que faciliten la comunicacion a nivel regional, nacional e internacional (Por ejemplo, internet)
-

SEGURIDAD PUBLICA

- Iluminacion de la vias publicas con el objetivo de proteger a los miembros de la region.
- Organizacion de rondas voluntarias que aseguren la tranquilidad y seguridad de los habitantes en especial los grupos de mujeres y jovenes.
- Presencia de cuerpos de seguridad publica
- Distrito con seguridad integral, sin drogadicción, violencia ni alcoholismo.

DIMENSION SOCIAL

- Con programas especiales para la gente de la tercera edad.
- Programas de capacitación para problemas sociales.
- Con una juventud sana, superada, con trabajo y participando en el desarrollo de su region.
- Con familias que practican el buen trato y la comunicación integral.
- Con programas deportivos y recreativos

EDUCACION

Alcanzar una educación integral y participativa, que incluya una ensenanza especializada ademas de capacitacion tecnica acorde a las necesidades de la region.

- Obtener infraestructura y equipamiento adecuado
- Ofrecer una educacion de calidad que promueva la vision integral de desarrollo sustentable de la region.

MEDIO AMBIENTE

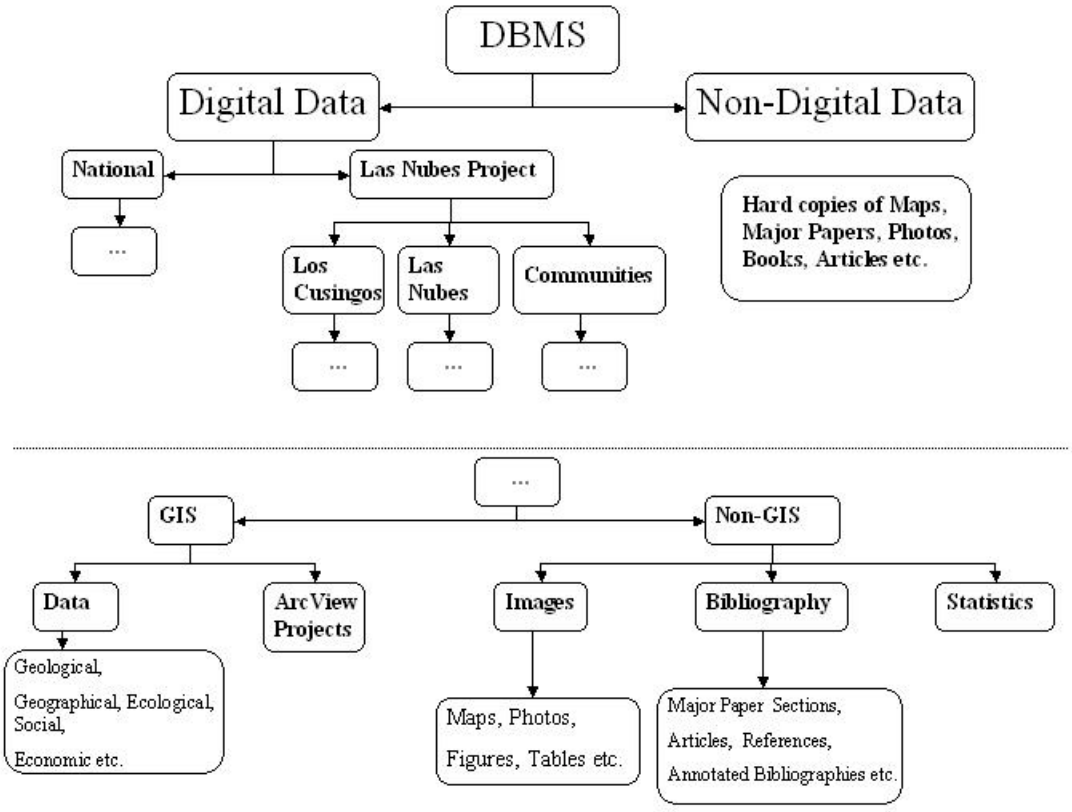
- Contar con un programa funcional de desecho de basura
- Utilizacion sostenible de los recursos naturales para el uso y disfrute de futuras generaciones.
- Asegurar la calidad y cantidad de los recursos hidricos regionales que son el sustento de la vida humana.
- Eliminar las actividades ilegales de pesca, caza y tala en la region.

El compromiso de la comunidad para alcanzar la vision desarrollada anteriormente, es fundamental para lograr el cambio favorable y desarrollo integral de la region.

FIN

Appendix C

Tentative Structure of the DBMS designed for the existing Las Nubes Conservation Program Data.



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