



3 1293 01774 3901

LIBRARY
Michigan State
University

This is to certify that the
thesis entitled

UNDERSTANDING THE FAILURE OF PHILIPPINES REFORESTATION:
A CASE STUDY IN DIVERGENT LAND USE PRACTICES
AND ENVIRONMENTAL PERCEPTIONS

presented by

Jay H. Samek

has been accepted towards fulfillment
of the requirements for

M.A. degree in Geography

Edward A. Whitel

Major professor

Date August 13, 1998

PLACE IN RETURN BOX to remove this checkout from your record.
 TO AVOID FINES return on or before date due.
 MAY BE RECALLED with earlier due date if requested.

DATE DUE	DATE DUE	DATE DUE
04 07 07 OCT 01 2002		
JUL 02 2003 05 09 05		

**UNDERSTANDING THE FAILURE OF PHILIPPINE
REFORESTATION: A CASE STUDY IN DIVERGENT
LAND USE PRACTICES AND
ENVIRONMENTAL PERCEPTIONS**

By

Jay H. Samek

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF ARTS

Department of Geography

1998

esta

perc

uns

prac

of F

two

sou

site

80.

and

of

ma

do

En

imp

ABSTRACT

UNDERSTANDING THE FAILURE OF PHILIPPINE REFORESTATION: A CASE STUDY IN DIVERGENT LAND USE PRACTICES AND ENVIRONMENTAL PERCEPTIONS

By

Jay H. Samek

Philippine reforestation efforts have achieved limited success in establishing tree cover. Current explanations do not include environmental perceptions as factors in understanding why reforestation projects have been unsuccessful. This study explores the potential of divergent land use practices and environmental perceptions between the Philippine Department of Environment and Natural Resources (DENR) and a group of local people.

Both quantitative and qualitative data were used. Interview data from twenty-one households, data from government documents and archival sources were used to analyze land cover and land cover change in the study site and to analyze the land use practices and environmental perceptions.

My findings show that Carranglan is dominated by grassland, while 80.03 % is officially classified as Forest land. Divergent land use practices and environmental perceptions exist between the DENR and the local people of Calo. Differences in the ways these two groups perceive the environment may impact the social forestry efforts in Carranglan. These alone, however, do not explain the marginal success of tree planting activities in Carranglan. Environmental, political, economic and other social/cultural constraints also impact these tree-planting efforts.

guide

adv

pur

Dr.

for

con

I th

for

Phi

to t

the

My

con

per

ACKNOWLEDGMENTS

A manuscript such as this is not possible without the support and guidance of many individuals. I thank Dr. Edward Whitesell, my faculty advisor, for his patience, understanding and critical commentary. His pursuit of clarity and quality has greatly influenced this thesis. I thank, too, Dr. Anne Ferguson for her expertise in ethnography and Dr. Jeff Reidinger for his vast knowledge of the Philippines.

My three months of research in the Philippines could not have been completed without the financial support from the Department of Geography. I thank Dr. Rene Hinojosa, Chair of the Department, for recommending me for a graduate office fellowship.

The generosity and hospitality of many families and individuals in the Philippines contributed greatly to this project. I will forever remain indebted to the Cornejo family, our gracious hosts in San Jose, Nueva Ecija. This thesis, however, is the story of the families of *sitio* Calo. It is their story! My relationship to them spans ten years, and I hope I have been able to contribute a fraction of the joy that I have gained from knowing them.

I thank, too, my wife, Manila, and daughter, Rachiny, for being the perfect traveling companions. They helped refine my research by

contin

suppor

contrib

instruc

Her in

not to

resear

people

She is

worki

continually asking questions and offering suggestions. Their patience and support are as much responsible for this thesis as any other single contribution.

Finally, I thank Adelwisa Weller, who began as my language instructor and quickly became my mentor and most respected collaborator. Her insights regarding Filipino culture, her assistance with my questionnaire, not to mention my Ilokano language skills and her genuine interest in my research were by far my greatest sources of motivation. Her concern for the people of the Philippines, for the environment, and for justice is unmatched. She is a true inspiration, and I feel most lucky to have had the experience of working with her.

LIST

LIST

GLO

CHA

CHA

CHA

TABLE OF CONTENTS

LIST OF TABLES	viii
LIST OF FIGURES	ix
GLOSSARY OF TERMS, ABBREVIATIONS AND ACRONYMS	x
CHAPTER ONE: INTRODUCTION	
Problem Statement	1
Review of Philippine Reforestation	3
Approach of the Study	12
Organization of the Study	15
Limitations of the Study	25
CHAPTER TWO: THE STUDY SITE	
The Community - <i>sitio</i> Calo, <i>Barangay</i> Bunga, Carranglan Nueva Ecija	31
Geographic Location and Infrastructure	31
Demographic and Socio-Cultural Context	37
Historical Context	48
Political Geography	51
The Pantabangan Watershed	59
Forest Management Programs in Carranglan and the Pantabangan Watershed	62
Assessment of Reforestation and Tree Planting Projects in Carranglan, Nueva Ecija	68
CHAPTER THREE: LITERATURE REVIEW	
Introduction	71
Political Ecology	72
Philippine Forests	76

CHA

CHA

CHA

CH

Social Forestry & Participatory Natural Resources Management	91
Environmental Perception & The Social Construction of Nature	104
 CHAPTER FOUR: OBJECTIVES AND METHODS OF DATA COLLECTION AND ANALYSES	
Objectives	121
Data Collection	123
Primary Data	123
Secondary Data	124
Data Analyses	127
 CHAPTER FIVE: FINDINGS: LAND COVER, LAND USE PRACTICES, AND ENVIRONMENTAL PERCEPTIONS	
Land Cover in Carranglan	132
DENR Land Use Concepts/Practices and Environmental Perceptions in Carranglan	151
Land Use Concepts/Practices and Environmental Perceptions of the People in Calo	165
 CHAPTER SIX: DISCUSSION OF FINDINGS	
Effects of Divergent Land Use Practices and Environmental Perceptions on Social Forestry	183
Constraints to Social Forestry in Carranglan	189
The Convergence of Political Ecology and Environmental Perception	201
 CHAPTER SEVEN: IMPLICATIONS FOR FUTURE PHILIPPINE FOREST MANAGEMENT PROGRAMS	
The Practice of Participation in Philippine Social Forestry	204
The Quest for Common Ground	210
Political Impediments to Social Forestry in Carranglan	212

APR

BIB

Conclusion	216
APPENDICES	218
BIBLIOGRAPHY	228

p. 40

p. 43

LIST OF TABLES

p. 40	Table 1 - Demographic Statistics of 21 Households in Calo
p. 43	Table 2 – Animals of 21 Households in Calo

p. 7

p. 32

p. 36

p. 45

p. 45

p. 45

p. 46

p. 49

p. 61

p. 134

p. 135

p. 136

p. 137

p. 149

p. 152

p. 154

LIST OF FIGURES

p. 7	Figure 1 - Four Points of the KITE (Campbell and Olson, 1993)
p. 32	Figure 2 – Political Geography of Study Site
p. 36	Figure 3 - Land Use Cover of Calo and Distribution of Structures
p. 45	Figure 4 - House: One Story, <i>Sawali</i> Walls & <i>Cogon</i> Roof
p. 45	Figure 5 - House: One Story, <i>Sawali</i> Walls & Corrugated Iron Roof
p. 45	Figure 6 - House: One Story, Cinder Block Walls, Cement Floor & Corrugated Iron Roof
p. 46	Figure 7 - Wealth-ranking by House Type
p. 49	Figure 8- Map of Carranglan Showing DENR Land Classifications
p. 61	Figure 9 - Hydrology of the Pantabangan Watershed
p. 134	Figure 10 - Land Cover Percentages in Carranglan
p. 135	Figure 11 - Map of Land Cover in Carranglan
p. 136	Figure 12 - Land Cover Percentages in Region Surrounding Carranglan (3.6 x)
p. 137	Figure 13 - Map of Land Cover in Region Surrounding Carranglan (3.6 x)
p. 149	Figure 14 - Photo of Slumping in the Hills of Karamramutan
p. 152	Figure 15 - Land Cover Percentages for Official Forest land in Carranglan
p. 154	Figure 16 - Land Cover Map of Official Forest land in Carranglan

GLOSSARY OF TERMS, ABBREVIATIONS AND ACRONYMS

A & D Land - Alienable and Disposable Land. One of two major subdivisions of public domain lands, the other being Forest Lands. Public domain lands and those not deemed necessary for forest purposes are classified as A & D Land. Distinguished from Forest Land, A & D Lands may be titled to citizens of the State. A & D lands comprise approximately 14.12 million hectares (47.05 %) of the county's total land area.

ADB - Asian Development Bank. An international donor institution operating primarily at the regional scale of Asia. ADB was a major lender in the five year Forestry Sector Loan Program (1988 - 92).

barangay - The smallest recognizable socio-political unit prior to Spanish conquest. The *barangay* remains a viable political sub-unit of municipalities. The *barangay* is similar to a village.

BFD - The Bureau of Forest Development. Prior to 1987, the BFD was known as a very powerful and corrupt bureau under the Department of Environment and Natural Resources (Vitug, 1993). In 1987, Fulgencio Factoran, appointed by President Aquino as director of the DENR, overhauled the DENR and downgraded the BFD to a staff-bureau, in the process renaming it the Forest Management Bureau (FMB).

CARP – Comprehensive Agrarian Reform Program, signed by President Corazon Aquino in 1989.

CBFM - Community-Based Forest Management. The most recent people-centered, social forestry program in the Philippines. CBFM is the current "primary strategy for achieving sustainable forestry and social justice in the uplands" (Borlagdan, 1997: 17). All previous people-centered forestry programs are being integrated under CBFM, as per Executive Order No. 263, issued by President Ramos in 1995.

CENRO - Community Environment and Natural Resources Office of the DENR. There are 147 DENR community offices throughout the

country, each headed by a CENRO officer "who is responsible for the implementation of all laws and regulations involving the environment and natural resources in his/her areas. He/She is also mandated to implement at the grass roots level all DENR programs and projects" (Gacoscosim 1995: 81).

CFP - Community Forestry Program. A DENR program, launched through DENR Administrative Order No 123, series of 1989, which allows organized rural communities to manage and develop tracts of forest land and utilize products harvested from these lands.

contract reforestation - The colloquial name for the Community Forestry Program or CFP, which focused primarily on reforestation and tree planting contracts.

CSC - Certificate of Stewardship Contract. The tenure instrument issued to forest occupants who participate in the Integrated Social Forestry program. The CSC gives 25-year tenure to farms in the forest lands and is renewable for another 25 years.

DENR - Department of Environment and Natural Resources. The DENR was created in a reorganization of the Ministry of Natural Resources in 1987 through Presidential Order No. 192. The DENR has six staff bureaus: 1) the Forest Management Bureau (FMB), 2) the Land Management Bureau (LMB), 3) the Mines and Geo-Sciences Bureau, 4) the Environmental Management Bureau (EMB), 5) the Ecosystems Research and Development Bureau (ERDB), and 6) the Protected Areas and Wildlife Bureau (PAWB).

environmental perception - The concept refers to people's culturally and socially constructed images of their surrounding environment. Images and understandings of any environment, are filtered through a "lens" through which people interpret, comprehend, understand, and relate to their surrounding environment. These filters may be influenced by many factors: education, culture, ethnicity, gender, age, experience, social status, economic status, employment, and so on. Inherent in this idea is the plurality of perceptions expressed by individuals, groups, communities, and institutions.

FLMA - Forest Land Management Agreement. The tenure instrument issued to organized residents of a community who have established a reforestation project (usually under the CFP or CBFM programs) and are residing near the project area. FLMA tenure is given for 25 years, renewable for another 25 years.

FMB - Forest Management Bureau. The FMB was created in the reorganization of the several ministries in 1987. It is comprised of the former Bureau of Forest Development (BFD) and the Wood Industry Development Authority (WIDA). The FMB is responsible for forest land use, forest management, reforestation and social forestry.

forest - An area with a minimum size of one hectare on which there is a stand of trees covering at least 10 percent of the area. These can include seedlings, saplings, wild palms and bamboo (USAID 1989: A-93).

Forest land - "Public domain land which has not been declared alienable and disposable and presumed needed for forest uses; in common usage the definition applies to all land within or above the so-called 18 percent slope line, the forest reserves, forest reservations, timber lands, grazing lands, and game refuges and bird sanctuaries" (USAID 1989: A-93).

grassland - "Land covered with indigenous species with less than 10 percent tree cover" (USAID 1989: A-93).

ha - hectare(s). Unit of measurement equal to 10,000 square meters or 2.471 acres

Ibaloi - One of the major ethnolinguistic groups found primarily in the Cordillera Region (the highlands) of Luzon.

Igorot - An indigenous Filipino (Tagalog) word meaning "mountaineer" or "hill people", used to describe the various peoples inhabiting the highlands of the Philippines. The term as generally used by lowlanders has derogatory connotations such as "unchristian" and "uncivilized," however, it receives a mixed approval among "highlanders" themselves (Scott 1993: 69-70).

Ilokano - A major ethnolinguistic group on Luzon whose inhabitants originated in the Ilokos region, but who have become widespread throughout the lowlands and highlands of Luzon.

ISF - Integrated Social Forestry Program. A national inter-agency program created by Letter of Instruction No. 1260, in July 1982. The ISF aims to promote the "socio-economic conditions of forest occupants and communities dependent on forest land for their livelihood, providing land tenure and, at the same time, protecting and improving the quality of the environment" (DENR, 1997: 8).

kaingin - Most define *kaingin* as slash-and-burn or swidden agriculture.

NGO - Non-governmental Organization.

PENRO - Provincial Environment and Natural Resources Office. DENR provincial offices headed by an appointed officer, "responsible for the implementation of DENR policies, regulations, programs, projects and activities in the province" (DENR, 1997: 8)

sitio - A Spanish term for a small cluster of houses or a hamlet. The term is still used today.

social forestry - An alternative to traditional western (US and European) forestry practices (characterized by a scientific, industrial, "expert" management bias), social forestry aims to incorporate local people in forest management activities and to integrate socio-economic goals with environmental goals.

SPOT - *System Pour l'Observation de la Terre*. A French government sponsored earth observation system providing satellite imagery of the earth.

CHAPTER ONE

Problem Statement

Reforestation and tree planting efforts in the Philippines, as a response to forest cover decline, have achieved limited success at best, and, at worse, been complete failures. Why these programs have not been more successful is not completely understood. Current theory regarding Philippine forest management programs cite multiple factors adversely affecting reforestation and tree planting efforts. Largely overlooked, however, is the possibility that divergent land use practices or environmental perceptions could help explain why tree planting efforts have not been more successful. Land use practices refer to the ways people use specific areas in the natural environment for specific functions, such as paddy rice fields, plantation forestry, grazing lands, and irrigation canals. Environmental perceptions refer to people's culturally and socially constructed images of their surrounding environment. In other words, how people relate to, understand, and conceptualize the environment around them and their place within that environment.

Divergent land use practices and environmental perceptions may actually underpin many of the factors cited in the literature. Slash and burn

1
agriculture. kno

pasture grasses

destruction of

particular land

environmental

behavioral ch

or raise local

forests throu

consciousne

effective du

perception

that are, by

This

significant

perception

Resources

and a villa

(2) to wha

perception

helps fill a

agriculture, known as *kaingin* farming in the Philippines, and the burning of pasture grasses, resulting in wildfires, are cited as being responsible for the destruction of newly planted seedlings. Rather than understanding this as a particular land use activity practiced by people with a particular environmental perception, program strategies have tended to focus on behavioral change and participation methods. These are intended to educate or raise local peoples' consciousness and increase their vested interest in forests through project participation. Unfortunately, environmental consciousness-raising and participatory approaches may not be any more effective due to fundamental land/resource use and environmental perception differences between local people and the government institutions that are, by law, responsible for managing the country's forests.

This thesis uses a case study approach to assess (1) whether or not significant differences exist in land use practices and environmental perceptions between the Philippine Department of Environment and Natural Resources (DENR), which is responsible for forest management programs, and a village of local people who are considered to be forest occupants; and, (2) to what extent divergent land use practices and environmental perceptions might explain the failures of tree planting programs. This study helps fill a void in the current literature regarding our understanding of

factors affecting reforestation programs in the Philippines. It also adds greater depth to our understanding of constraints already identified through previous work.

Review of Philippine Reforestation

Forest cover decline in the Philippines is a well-documented phenomenon (Anderson 1987; Boado 1988; Boyce 1993; FAO 1993a; FAO 1993b; Hurst 1990; Kummer 1991; LRC-KSK/FOE - Philippines 1992; Porter and Ganapin 1988; Rainforest Action Network 1993; Repetto 1988; Thapa and Weber 1990; Vitug 1993; World Bank 1989). The Philippine forests today cover approximately 23 to 26 % of the total land area, a drastic decline from some researchers' estimates of between 65 and 80 % of the country's total area in 1900. With exploitable forest nearly gone, recent literature and government policy are now concerned with conservation and rehabilitation of degraded lands (Peluso, et al. 1995). Recently, the primary response to deforestation by the Philippine government, NGOs, and international donor agencies has been the implementation of new forest management programs, many of which target local residents as partners or stakeholders. These include the Forest Occupancy Management Program (FOM), the Communal Tree Farming Program (CTF), the Family Approach

to Reforestation (FAR), the Agro-Forestry Contract Program (AFC), the Integrated Social Forestry Program (ISF), the Community Forestry Program (CFP), and most recently the Community-Based Forest Management Program (CBFM). In theory, the Philippine social forestry programs attempt to integrate rural economic development with conservation, and incorporate local people as users and producers in reforestation and forest management practices (Aguilar, Jr. 1982; Braganza 1996; FAO 1993b; Gacoscocsim 1995; Ganguli 1995; Gaspar, et al. 1994; Gibbs, Payuan, and del Castillo 1990; Korten 1994; World Bank 1989). Social forestry programs, in general, are intended to “slow down deforestation and to intensify tree planting inside and outside forests” (Cernea 1991: 302).

Unfortunately, the Philippine forest management programs aimed at planting trees and establishing forest cover have achieved little. According to a 1989 World Bank report, “Reforestation ... in the past has been at rates too low to match the rate of degradation, much less make a dent in the ... over five million hectares of deforested areas which have deteriorated into fire-prone grasslands, of which some 1.3 million hectares lie in ‘critical watersheds’” (pp. 20-21). According to Korten (1994: 974): “Government records showed [reforestation] projects from 1916, when the US colonial administration introduced the concept of reforestation. From that time until

1987, the Bureau of Forest Development had undertaken 184 reforestation projects targeting about one million hectares. Of that target, the Bureau had actually planted trees in an area covering 272,000 hectares. A 1988 German-sponsored study sampled the area planted, finding that 26 %, or 70,000 hectares of the total area planted, could be considered actually reforested at the time of their surveys (Philippine German Forest Resource Inventory Project, 1988).” Korten refers to this as “the dismal history of reforestation in the country,” (1994: 974). Citing a slightly more optimistic figure, the June 30, 1988 *Philippine Daily Inquirer* remarked, “the government cannot claim any credit of success ... only a minimal 33.2 % of the total reforestation objective of the government has been obtained,” (in Gaspar, et al. 1994: v). These figures reflect the efforts of what are referred to as ‘regular reforestation’ projects. These are characterized by top-down, centrally designed programs which targeted specific areas for tree planting activities and included local people as hired laborers.

Reforestation activities became more people-centered in the late 1980s with the implementation of the Community Forestry Program (CFP), also known as Contract Reforestation. This program, too, met with little success. While initial results seemed promising, with reports of 80 % survival rates within the first three months of planting, survival rates three

months to one

Mindanao, a

planting, saw

1994: 976).

Laking (199

community

1994: v). 7

survival ra

Ove

as longer

planted a

year or l

1990, P

Ataneo

40 % fo

literatu

1993;

Bank

perspe

months to one year after planting declined to 50 - 76 %. On the island of Mindanao, a project which boasted 83 % survival rate one year after planting, saw only 42 % at the end of three years (UNAC 1992, in Korten 1994: 976). In a project located in Davao Oriental Province on Mindanao, Laking (1994: 4), notes that “of the 19,679 [hectares] covered by forestry community projects ..., not one hectare is successful” (in Gaspar, et al. 1994: v). The goal of the DENR in these tree planting attempts is an 80 % survival rate three years after seedlings have been out-planted.

Overestimates of survival rates have been common in these contracts, as longer-term tenure rights to project areas depend on 80 % survival of trees planted after three years. These high rates, particularly ones sighted one year or less after planting, have blurred official forest cover statistics. In 1990, Peter Walpole, director of the Environmental Research Division of Ateneo de Manila University, estimated an accomplishment rate of less than 40 % for all CFP areas (Korten 1994: 976).

Why have these tree planting programs been so unsuccessful? The literature suggests multiple factors adversely affecting these programs (FAO 1993; Galvez 1984; Gaspar, et al. 1994; IPC 1982; Korten 1994; World Bank 1989). Accompanying the various explanations are multiple perspectives. Foresters cite infrastructural and environmental constraints

(Galvez 1984). The politically active cite government corruption (Gaspar, et al. 1994). Though each piece of literature may not cite the same specific constraints, most imply a complex set of factors that impact the outcome of the tree planting programs.

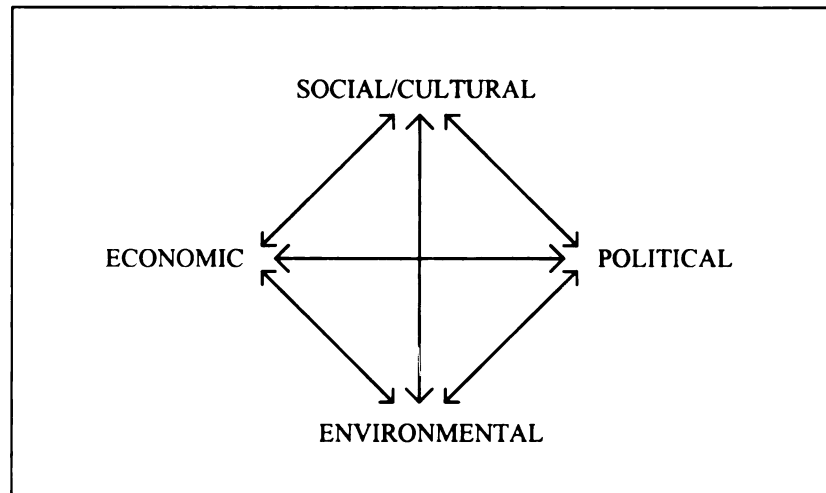


Figure 1 - Four Points of the KITE (Campbell and Olson, 1993)

A heuristic diagram borrowed and slightly modified from the environment-development framework known as the KITE (Campbell and Olson 1993: 14-15) provides a schemata to categorize the cited constraints to tree planting. The framework includes four points referred to as “categorical variables.” Three of the points are the “societal elements of economic, political and social/cultural factors,” the fourth is the physical environment (Campbell and Olson 1993: 15). These represent four discrete systems -

social/cultural, ecological, political and economic - open to analysis in and of themselves, which are nevertheless interrelated (figure 1).

The following is a list of factors affecting tree planting and social forestry activities found in the literature. The list is generated from nine articles all regarding the Philippines; five deal with specific projects, four with general country-wide programs. Their range in publication dates reflect, to some extent, the recent historical changes in forest policies and programs. The list is organized using the four categories borrowed from the KITE model, and includes citations.

Social/Cultural:

Fires (Galvez 1984; Gaspar, et al. 1994)

Uncontrolled exploitation of watershed resources (Galvez 1994; Korten 1994)

Poor relations (i.e., skepticism, distrust, resentment) between local people and government personnel (Cernea, et al. 1991; FAO 1993)

Inadequate assessment of land capability (Korten 1994)

Poor adaptation to local social, economic, and silvicultural conditions (Gaspar, et al. 1994; Korten 1994)

Poor monitoring and evaluation (Dizon 1986; Gaspar, et al. 1994; Korten 1994)

Poor implementation of projects by government employees (Dizon 1986; Gaspar, et al. 1994; Korten 1994)

Lack of, or poorly implemented, education component/consciousness raising (AGNOC 1991b; Cernea, et al. 1991; Gaspar, et al. 1994)

Participation not maximized (AGNOC 1991b; Gaspar, et al. 1994)

Lack of competent government leadership (Dizon 1986)

Poor incorporation of a community's perceived needs (AGNOC 1991b; Aguilar 1982; Cernea, et al. 1991; Dizon 1986)

Political:

- Graft and corruption (Gaspar, et al. 1994)
- No or insufficient participation by local people in planning and decision-making processes (AGNOC 1991b; Dizon 1986; Gaspar, et al. 1994; World Bank 1989)
- Insufficient privatization of reforestation projects (FAO 1993; Korten 1994)
- Insecure tree and land tenure (AGNOC 1991b; Aguilar 1982; Cernea, et al. 1991; World Bank 1989)

Ecological:

- Fires attributed to lengthy dry season and land cover dominated by grasslands (AGNOC 1991b; Reyes and Mendoza 1983; Gaspar, et al. 1994)
- Droughts and typhoons (AGNOC 1991b; Cernea, et al. 1991)
- Poor soil conditions (AGNOC 1991b; Cernea, et al. 1991)
- Poor tree species selection (Galvez 1984; Gaspar, et al. 1994)
- Weeds, pests and disease infestation (Galvez 1984)

Economic:

- Poor access to roads and poor transport facilities (Galvez 1984)
- Insufficient fire prevention and protection (Galvez 1984)
- Slow and/or expensive procurement of seeds and propagation of planting materials (AGNOC 1991b; Galvez 1984)
- Tardy budgetary releases (Cernea, et al. 1991; World Bank 1989)
- Inadequate budgets (Korten 1994)

The list may not be exhaustive, but it does point to the complexity of tree planting programs in the Philippines. Besides the overall complexity, some factors are simply difficult to place in the general KITE categories. I have separated them according to the emphases placed on them by their respective authors, as I have interpreted them. “Fires” falls within two

categories. Some see the problem as an ecological one associated with lengthy dry seasons and an abundance of grassland providing tinder for fires. Others argue that fires are a destructive act caused by farmers or careless workers. A more complete understanding, even of this one factor, lies in the consideration of its multiple aspects. The KITE framework, applied as a heuristic device, portrays the complexity of each particular factor as it is linked to one or more of the three “systems” in the framework. The KITE also calls our attention to the multiple factors as a whole and their multiple linkages to one another. This is a move away from simple cause and effect analysis to a more holistic interpretation of the underlying processes.

Attention should be paid to the historical context of the literature as it pertains to the changes in forest policies, as well as to the particular worldview(s) of the author(s). Participation is cited, using a variety of terminology, as a factor affecting tree planting programs. The programs in the late 1970s and early 1980s incorporated local people as hired laborers, but as social forestry or people-centered ideas became more dominant, particularly after 1986, writers expressed the need for local participation beyond their use as laborers. The need for full and equal participation by local people, from project design and implementation through monitoring and evaluation, was identified as a key component of successful forestry

programs. Tree and land tenure were also noted as important issues. As new programs were created (ISF and CFP), they began to include these ideas. Failures associated with these programs led to the identification of other problems (the rhetoric of participation in project profiles was not being practiced in reality; local people were not being educated as to the economic and environmental benefits; there wasn't enough emphasis on consciousness raising or community organizing activities).

The latest initiative, the Community-Based Forest Management Program or CBFM, is an outgrowth of the failures associated with CFP. Along with community participation and tenure agreements, a third component has been added. The dispersal of funds includes monies earmarked for community development. A third party, usually a local NGO, is contracted to spend anywhere from a few weeks to a few months conducting community organizing and environmental "awareness" workshops. The program is too new at this point to find any published literature regarding how successful CBFM has been in establishing permanent forest cover.

In summary, forestry management programs have become more participatory and centered on tree planting activities since the mid 1980's. Unfortunately, they have achieved little with respect to survival rates of trees

planted. Current literature cites multiple factors including economic, political, socio/cultural and environmental factors affecting tree planting programs. A more detailed discussion of forestry management programs for the country, specific tree planting programs and an assessment of their successes are given in chapter three. Overlooked in the literature, however, is the existence of divergent land use practices and environmental perceptions. These may underpin other factors already cited and also be a factor in and of themselves affecting the success of tree planting programs.

Approach of the Study

This thesis uses a case study approach to investigate the possible existence of divergent land use practices and environmental perceptions, and the implications of such a divergence. The study focuses on a small community of “forest occupants” who have been participants in the ISF program since 1988, and who live in an area where reforestation and tree planting projects have been on-going since 1938. The study compares the land use practices and environmental perceptions of the people in this community with those of the Department of Environment and Natural Resources (DENR) and one of its staff-bureaus, the Forest Management Bureau (FMB), whose jurisdiction includes Philippine Forest Lands.

The study uses a combination of empirical, anecdotal, and qualitative information derived from interviews, survey questionnaires, government documents, maps and archival sources. The data is used to answer four research questions. The overarching question in this study is whether or not divergent land use practices and environmental perceptions exist between the people of one community on one hand and the DENR/FMB on the other, and the implications of such divergence on tree planting programs in the area.

The study draws on a social constructionist perspective (Cosgrove 1984; Davis 1993; Evernden 1981; Greider and Garkovich 1994; Hannigan 1995; Nabhan 1995) closely linked with the pluralist and dialectical approach to human and environment interactions as put forth by political ecology (Blaikie 1994, 1995; Campbell and Olson 1993).

A number of fundamental concepts underpin this research. Human activities, at many scales and over time, can and do shape biophysical environments. The results range from the creation of largely human-made environments, as we see in urban areas, to virtually unnoticeable impacts, as in the braids of now-overgrown paths once used by native Americans in the Southeastern United States. Human impacts are not independent from other biophysical forces, but instead may work to complement or contradict them.

Underlying environment-sculpting human activities are peoples' environmental perceptions shaped by a multitude of possible factors: culture, socio-economic status, historical and political antecedents and contexts, education, gender, age, experiences, and so on. The result of these multiple factors which affect peoples' environmental perceptions is a filter or lens through which humans perceive, understand, and interact with the surrounding physical environment.

A physical environment may be a product of purely non-anthropogenic forces, though with global processes such as acid rain, greenhouse gases and the growing mobility of humankind, these are becoming less and less common. Scale, which once could obscure much of the human imprint on the landscape, is also becoming less and less a factor. Where once we could see few human-created patterns on the earth's surface, now we can distinguish many patterns, day or night. A composite of satellite images of the Amazon Basin reveals a pattern of forest fragmentation, that is human induced. When darkness casts its shadow over North America, the eastern seaboard twinkles with a megalopolis of light. At the local scale, an inquisitive mind can often perceive a past "imprint" still visible, in a place that, to an unsuspecting observer, appears to be "pristine wilderness."

Where multiple human activities occur directly and immediately on the physical environment, so too exists the potential for multiple environmental perceptions. This may occur at local, regional or global scales, and even across scales. This study centers on two groups, a local community and the DENR/FMB, that impact and try to shape a particular local environment. The DENR/FMB has attempted, and continues to attempt, to transform a grassland-dominated environment into one with forest cover. Their most recent approaches to transforming this environment include participatory and social forestry practices. To date, their attempts have mostly been unsuccessful. Explanations for their failure have ignored the potential divergent land use practices and environmental perceptions between the DENR/FMB, as an institution, and the local people.

Organization of the Study

My thesis is organized into seven chapters, including this introductory chapter.

The Study Site

Chapter two is a comprehensive site description. The community I focused on is *sitio* Calo, a relatively young settlement in Carranglan, Nueva

Ecija located on Luzon Island. The necessary contextual information regarding Calo is the focus of this chapter. These contexts include the geographic, environmental, demographic, socio-cultural, historical, and political realms. Descriptions of these contexts allow a more holistic understanding for the comparison of land use practices and environmental perceptions. These contexts anchor the study to the unique place- and time-specific features of the research site at the time field work was accomplished.

The Pantabangan watershed, where Calo is located, is also the location of the Pantabangan Multi-Purpose Dam. Chapter two includes a brief account of the Pantabangan Dam project, a history of reforestation and tree planting projects in Carranglan and the Pantabangan watershed, and conclusions regarding the success of these programs to establish forest cover.

Literature Review

Chapter three is a literature review. It provides a general understanding of the state of Philippine forests, the concept of social forestry, and the theoretical foundation for the research. The chapter is divided into four sections: (1) Political Ecology, (2) Philippine Forests, (3)

Social Forestry and Participatory Natural Resource Management, and (4) Environmental Perception and the Social Construction of Nature. The political ecology section is a brief account of the origins of political ecology and its contribution as a method to understanding human-environment interactions. It offers a holistic approach to the nexus of factors regarding any specific study centered on human-environment interactions. As a heuristic device it models multiple factors and linkages across scales and over time.

Section two of this chapter is a review of Philippine forests and forest issues, including sub-sections on forest types, forest decline, and the causes of forest decline (as they are presented in the literature). The framework of political ecology is used in the sub-section regarding the causes of forest decline.

Section three is a review of social forestry and the concepts and practices of participation in natural resource management. Social forestry in developing countries arose as a response to traditional western (US and European) methods of forest management. It attempts to employ various forms of participation and collaboration with local people, who were once perceived simply as squatters on forest land and the enemies of forestry departments.

The final section of this chapter establishes the theoretical underpinnings for my research regarding environmental perception. The section describes the origins of the environmental perception literature and its associations with certain geographic perspectives. It also addresses some of the recent theoretical perspectives regarding environmental perception, and concludes with reviews of four specific pieces of literature that illustrate environmental perception as a research focus.

Objectives and Methods of Data Collection and Analysis

Chapter four concerns the methods and objectives of my research including a brief epistemology, and information specific to my data collection and analysis. The bulk of the data was collected over a period of three months, from May 15 to August 15, 1997. The research itself, however, builds on my previous experiences in the Philippines in 1987-89, 1992, and 1994. Data was collected in Calo using a survey questionnaire, key informant interviews, focus group sessions, and field observations. Other data was collected at the district DENR office in Munoz, Nueva Ecija, the national DENR office in Quezon City, and archival sources acquired at various universities and research centers in the Philippines.

Analysis of the data combines qualitative and quantitative methods to depict: (1) land use and vegetative cover at the study site, (2) land use practices and environmental perceptions of the DENR/FMB, and (3) land use practices and environmental perceptions of the people of Calo.

The study focuses on several scales of analysis, from the local to the national levels. Though the people of Calo operate primarily at the local level, the DENR/FMB operates at local, district, regional, and national levels in their projects and their policies. The actions of the DENR/FMB, in turn, are influenced by policies enacted by the federal government, which, in turn, are influenced by lending institutions such as the World Bank and the Asian Development Bank (ADB) which operate at international scales.

Findings: Land Cover, Land Use Practices and Environmental Perceptions

Chapter five is a synthesis of my research findings. These are grouped around the first three objectives: (1) the assessment of land cover in Carranglan, (2) the assessment of the DENR/FMB's land use concepts/practices and environmental perceptions in Carranglan, Nueva Ecija, and (3) the assessment of the land use concepts/practices and environmental perceptions of the people of Calo. The fourth objective, an

examination of the impact of divergent environmental perceptions on social forestry efforts of the DENR/FMB in Carranglan, Nueva Ecija, is addressed in the sixth chapter.

The findings indicate that land cover in Carranglan is dominated by grass-covered areas, areas with a mix of grassland and cultivated land, and areas under cultivation. Land cover patterns show a relationship between land cover types and topography, and between land cover types and proximity to road networks and settlements. My findings regarding land cover change are conclusive. The literature indicates forest decline and implies land cover change, however, it lacks the support of empirical data at the municipal or watershed scale. According to the people in Calo, land cover surrounding the *sitio* has changed little in the past twenty-five years. Grasslands still dominate the rolling hills, and dense forested areas are only found along stream banks, in steep ravines and in more remote and rugged territory. However, areas have been transformed through the farming practices of these local people. Low-lying grassy areas are now irrigated rice fields. In the hills, old and new *kaingin* can be found. The attempts by the DENR to transform a major portion of the landscape into forest cover of plantation species have had little impact, though.

DENR/FMB land use classifications delineate 80.03 % the area of Carranglan as Forest Land, even though only 18.15 % of the area is actually forested. Of lands classified as forest land, 43.01 % have undergone tree planting activities. Species choices for these programs emphasize wood industry species over existing, indigenous species presently in the region. The environmental perception of the DENR/FMB is characterized by its view of grassland as a “denuded” land cover type and its emphasis on the “rehabilitation” of the environment through the establishment of forest cover, primarily the growing of plantation species.

The land use practices of the people of Calo are dominated by paddy rice cultivation. They also engage in swidden farming and, to a limited extent, the grazing of cattle. These are also the traditional land use practices of the Ibaloi (76 % of my respondents are Ibaloi). Trees are used as a resource by the people in Calo, primarily for fuel and for construction. The perception of people living in Calo regarding the amount of trees in the environment is that of relative abundance. They perceive more trees in their surrounding environment, overall, than when the first settlers arrived, twenty-five years ago. People in Calo do not perceive the environment as a degraded one, in need of “rehabilitation.” They view it as a source of abundant resources. Some, however, expressed the view that while many of

1

these resources are presently abundant, they are not inexhaustable. Trees are only one type of resource, occupying only certain niches in the environment.

Discussion of Findings

Chapter six presents a discussion of my research findings. The chapter is divided into three sections: (1) the effects of divergent land use practices and environmental perceptions on social forestry in Carranglan, (2) environmental, political and social factors (beyond divergent land use practices and environmental perceptions) which impact social forestry outcomes, and (3) a brief discussion regarding the convergence of political ecology with environmental perception studies in the analysis of human-environment phenomena.

The first section explores the impact of divergent land use practices and environmental perceptions on social forestry by posing two questions: to what extent do the people of Calo share the same problem definitions as the DENR/FMB and to what extent do the people of Calo benefit from the tree planting activities of the social forestry projects? For the most part the people in Calo do not share the same problems or problem definitions with the DENR/FMB, and they benefit very little from the tree planting programs. Underlying these generalizations are divergent environmental perceptions.

Ch

perception

address the

participati

between g

impedime

The

managem

environm

pursued th

limited to

communit

mean they

the DENR

chapter se

forestry pr

Conclusions: Implications for Future Philippine
Forest Management Programs

Chapter seven explores the impact of divergent environmental perceptions and government corruption on Philippine social forestry. I address three specific topics: (1) the conceptualization and role of participation in Philippine social forestry, (2) the search for commonalities between government agencies and local people, and (3) the political impediments to social forestry beyond corruption.

The current conceptions of participation by the DENR in their forest management programs, do not consider divergent land use practices and environmental perceptions as important factors. The present emphasis, pursued through the Community-Based Forest Management Program, is limited to projects in officially organized communities. And, while communities do participate in these programs, this does not necessarily mean they do so for reasons presumed in the conceptions of participation by the DENR. The Piut Watershed Rehabilitation Project is discussed in chapter seven as an example of a community that may perceive social forestry projects as simply lucrative, short-term, money-making ventures,

and not as long

community's e

Governm

the objectives

of government

people. Unfor

become a lucr

Assumin

meets the idea

divergent envi

practices rema

and made expl

people and the

however, that

This divergen

divergence ma

be built. Dial

and understand

divergence ex

measures to e

and not as long-term environmental “improvements” needed for the community’s economic welfare.

Government corruption, greed, and favoritism significantly undermine the objectives of social forestry. As public servants, in a democratic system of government, DENR professionals are held responsible to the Filipino people. Unfortunately, many seek personal gains as reforestation has become a lucrative profession.

Assuming corruption is addressed, and the practice of participation meets the ideals proposed in the Philippine social forestry literature, divergent environmental perceptions, problem definitions, and land use practices remain problematic factors. Divergence must be acknowledged and made explicit. Where common ground is discovered between local people and the DENR, project plans can find a foundation. It is likely, however, that divergence will exist between local people and the DENR. This divergence should be acknowledged. Without understanding it, divergence may undermine the common ground upon which projects should be built. Dialogue and interaction provide a medium through which learning and understanding can take place. In places and projects where only divergence exists, the course of action is unclear. Options include draconian measures to ensure one side’s objectives are met (this is wholly in

opposition to P

search for com

lengthy period

Many question

and its impact o

Limitation

no exception. N

realized. These

am confident m

able to collect. I

further research

perceptions with

Four facto

months of fieldw

data. (2) an over

baloy, the native

insufficient fund

opposition to participatory, “bottom up” development) and the continued search for common ground through dialogue and interaction which, over a lengthy period of time, could incur great social and environmental costs. Many questions remain regarding the study of environmental perceptions and its impact on natural resources management.

Limitations of the Study

Limitations are an unavoidable part of all research, and this study is no exception. Not every goal established at the outset of my fieldwork was realized. These shortcomings, in turn, impact my research findings. While I am confident my findings and conclusions are supported by what data I was able to collect, I recognize that this study is merely a beginning, a hint of further research in the area of land use practices and environmental perceptions within the context of forest management practices.

Four factors adversely affected my data collection during the three months of fieldwork: (1) inadequate access to government documents and data, (2) an overly ambitious survey questionnaire, (3) cursory knowledge of Ibaloy, the native language of the majority of people living in Calo, and (4) insufficient funds. Each of these factors is addressed in turn.

The history of central control over natural resources in the Philippines, particularly the forest resource, is one stigmatized by political corruption and favoritism, which many would argue still exists today. Individuals and families, often politically or militarily connected, have benefited greatly from large forestry concessions (Caufield 1985; Kummer 1991; Multinational Monitor 1994; Porter 1994; Rainforest Action Network 1993; Vitug 1993.). Furthermore, those charged with the responsibility of protecting and managing the forest resources and the forest lands, through the Department of Environment and Natural Resources (DENR), have also been implicated in forestry scandals, kickbacks, illegal logging activity, cronyism and favoritism (Boado 1988; Boyce 1993; Multinational Monitor 1994; Porter and Ganapin 1988; Vitug 1993).

The nature of my fieldwork inquiries (specifically regarding DENR/FMB activities with the ISF participants at my study site, contract reforestation in Northern Nueva Ecija, survival of trees in planting projects, perceived beneficiaries, and perceived success of projects) were evidently sensitive subjects, not only at the local DENR office in Munoz, Nueva Ecija, but also at the national office in Quezon City. Empirical data regarding projects was almost non-existent in these offices. The local DENR office in Munoz did provide me with three maps of northern Nueva Ecija showing

land use classifications, soils, and flood areas. They were unable to prepare any other maps for me. They were also unable, or unwilling, to provide me with information regarding project support for the ISF participants in Calo or CFP information, beyond a simple list of projects in Northern Nueva Ecija. At the central DENR office in Quezon City, my inquiries made before the Social Forestry Bureau Chief, Ray Bayabas, regarding the ISF projects in the Pantabangan Watershed invoked a very curious response. According to Mr. Bayabas, there are no ISF project areas in the Carranglan-Pantabangan watershed, and no tenure has been allowed for people living within the watershed zone. He claimed only reforestation projects had been attempted in this region, projects under the directive of another DENR department. In truth, there are ISF participants within the watershed who have tenure rights. There have also been CFP contracts for lands within the watershed, as well as regular reforestation attempts.

I cannot give definitive explanations for my difficulty in obtaining data from the DENR offices. I can only speculate. Possibly being a foreigner asking questions was a factor. I had taken steps to minimize this, however, in obtaining research affiliations with the Local Government Center of Ateneo University, and the Institute of Philippine Culture at the University of the Philippines (see appendix). I also had working

relationships with

Neva Eclija, from

Volunteer assign

Bread from 19

difficulties I fac

The second

the nature of my

A section of the

on worldviews.

spectrum, whet

and caretakers o

themselves mor

the pinnacle of

whether they vi

environment. I

very nature of t

made it quite d

difficulty of ex

the questions d

administered in

relationships with some of the personnel at the local DENR office in Munoz, Nueva Ecija, from my previous experiences there as a Peace Corps Volunteer assigned to work with the ISF team of the Forest Management Bureau from 1987-89. Certainly there are many factors that may explain the difficulties I faced with regard to data collection at the DENR offices.

The second and third major impediments to my research concerned the nature of my survey questionnaire and my own limitations with Ibaloi. A section of the questionnaire regarding environmental perceptions focused on worldviews. I had hoped to have been able to identify on a qualitative spectrum, whether or not individuals regarded themselves more as stewards and caretakers of the land, equal with other natural beings, or if they viewed themselves more as masters and controllers over their surroundings, and at the pinnacle of a hierarchy of natural beings. Also, I had hoped to discover whether they viewed themselves as part of or apart from nature and the environment. I faced two problems in administering these questions. The very nature of these highly abstract concepts embedded in the questions made it quite difficult to explain them to participants. In addition to the difficulty of explaining these questions, each participant seemed to interpret the questions differently. I felt that, among those questionnaires I administered in the pre-test, no common interpretation was established.

Therefore, I drop

compounded by t

a sort of *lingua*

native language of

focused on four a

historical informa

participation in go

Insufficient

retrospect, it is eas

positive impact on

to and from the D

secured my own v

Philippine nation

offices, as well as

questionnaire), w

Finally, a c

village in the Phi

similarities betwe

Philippines, and e

world. There are

Therefore, I dropped them from the survey. These difficulties were compounded by the fact that the questionnaire was administered in Ilokano (a sort of *lingua franca* in the highland areas of Luzon) not in Ibaloi, the native language of the majority of people in Calo. In the end, the survey focused on four areas of concern to my research: (1) demographic and historical information, (2) land use practices, (3) resource use, and (4) participation in government sponsored forestry programs.

Insufficient funding also became a factor in my fieldwork. In retrospect, it is easy to identify how additional funds could have had a positive impact on my data collection. Time spent on public transportation to and from the DENR offices could have been better managed if I had secured my own vehicle. Money allocated to hiring university students (Philippine nationals who could have assisted in collecting data at the DENR offices, as well as a native Ibaloi speaker to help administer my questionnaire), would have also proved beneficial.

Finally, a case study is inherently limited. I have focused on one village in the Philippines, one among thousands. There most certainly are similarities between Calo and other villages in the upland areas of the Philippines, and even between Calo and other rural villages throughout the world. There are also unique characteristics of this village and the people

ling there. The

ultural, economic

a universal Truth

better an environm

place in the Philip

apply to other uni

living there. These unique characteristics span environmental, socio-cultural, economic, political, and historical realms. This study does not seek a universal Truth regarding human behavior, it simply seeks to understand better an environmental issue, which is also a social issue, in a particular place in the Philippines. The conclusions made in this study may or may not apply to other unique areas, unique situations, or unique issues.

The study is
surrounding geoph
to consists of geoph
use and land cover
geophysical environ
Pantabangan water
its municipality. C

The Comm

The commun
northeast of Manila
Cabalillo Mountain
Cabalillo Sur. The
is the main axis of t
from the Lingayan

CHAPTER TWO

The Study Site

The study area for this thesis is a small community and its surrounding geophysical environment. The geophysical environment I refer to consists of geographical features: topography, hydrology, climate, land use and land cover. Two bounded regions define the surrounding geophysical environment in this study. The first region is defined by the Pantabangan watershed in which the community is located, and the second is its municipality, Carranglan.

The Community: *Sitio Calo, Barangay Bunga, Carranglan, Nueva Ecija*

Geographic Location and Infrastructure

The community, Calo, is approximately 190 kilometers north-northeast of Manila on Luzon island. Calo is located in the foothills of the Caraballo Mountains, sometimes referred to in the older literature as the Caraballo Sur. The southwest-facing escarpment of the Caraballo Mountains is the main axis of the Philippine Fault Zone and stretches over 700 miles from the Lingayan

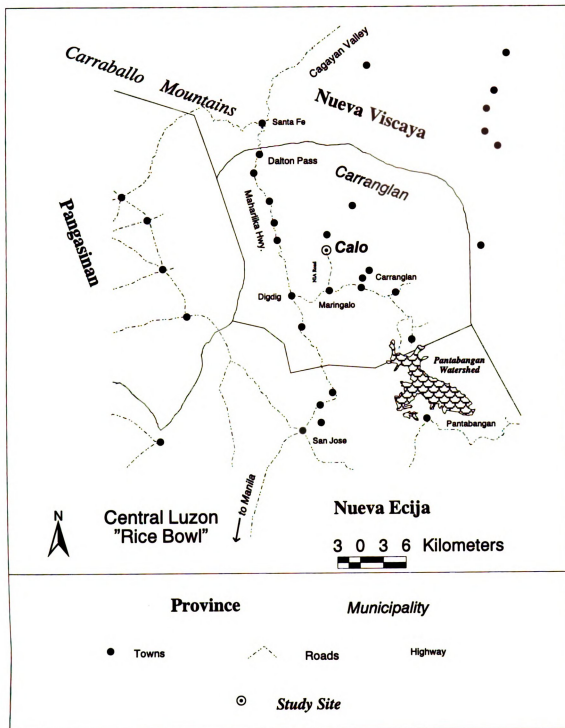


Figure 2 - Political Geography of Study Site

Gulf to Dingalan

between the Cord

theast. The C

to the south (offe

neth. According

Mountains are no

Highlands, thoug

the Cordillera C

Calo also

River. The head

system of centr

Pampanga River

before empty in

watersheds has

since the 1974

Panabangan.

call a hamlet.

The barang
prior to Span
cluster or han

Gulf to Dingalan Bay. This transverse range acts as a “topographic link” between the Cordillera Central to the northwest and the Sierra Madre to the northeast. The Caraballo Mountains also cut off the central plains of Luzon to the south (often called the “rice bowl”) from the Cagayan Valley to the north. According to Wernstedt and Spencer (1967), the Caraballo Mountains are not technically considered part of the Northern Luzon Highlands, though the northwest end lies adjacent to the southern sections of the Cordillera Central.

Calo also lies within the water-catchment area of the Upper Pampanga River. The headwaters of the Pampanga River, the dominant hydrographic system of central Luzon, originate in the Caraballo Mountains. The Pampanga River is joined by the Chico Pampanga, Lubao, and Angat rivers before emptying into Manila Bay. The Upper Pampanga and Canili-Diayo watersheds have been collectively known as the Pantabangan watershed since the 1974 completion of a World Bank-financed, multi-purpose dam in Pantabangan, Nueva Ecija (see figure 9). Calo is a *sitio*, what we might call a hamlet. Calo is part of *Barangay*¹ Bunga located in the municipality

¹ The *barangay*, or village, is the smallest recognizable socio-political unit prior to Spanish conquest. *Sitio* is the Spanish term used for a housing cluster or hamlet. Though *sitios* and *barangays* "remain variable in size and

of Carranglan

northernmost

Neva Viscay

2. The east

sited, is p

The western p

watershed. C

west longitud

The lan

grasslands, an

ing stream

land.

A dirt r

NA) in the e

partially-pave

Maharlika Hi

amorphous in

Calo is with E

social, civil, a

Esploracione

A contiguous

of Carranglan, in the province of Nueva Ecija. Carranglan is the northernmost municipality in Nueva Ecija, and borders the provinces of Nueva Viscaya to the north and east, and Pangasinan to the west (see figure 2). The eastern portion of the Carranglan municipality, where Calo is situated, is part of the watershed which feeds the Pantabangan Reservoir. The western portion of the Carranglan municipality is part of the Talavera watershed. Calo's approximate location is 16° 00' north latitude, 121° 00' west longitude.

The landscape surrounding Calo is dominated by rolling hills, grasslands, and rain-fed, irrigated rice fields. In the steeper ravines and along stream banks, pockets and ribbons of dense dipterocarp forests can be found.

A dirt road constructed by the National Irrigation Administration (NIA) in the early 1970s provides motor vehicle access to Calo from a partially-paved road which connects the town of Carranglan with the Maharlika Highway. The Maharlika Highway is the major route linking

amorphous in shape," sitios are often a political sub-unit of *barangays*, as Calo is with Bunga. Spanish settlements which became centers of religious, social, civil, and military administration for a regional territory were known as *poblaciones*, while the political administrative areas were the *municipios*. A contiguous collection of *municipios* became the *provincia* (Wernstedt and

Viola, the nation

crosses the "rice

Mountains at Dalt

Calo is accep

approximately six

trails which lead fr

Calo do not enjoy

though they live w

Calo does boast a

springs, one holdin

approximately 100

hand pumps dona

church administer

ement area that v

basketball court. c

Manila, the nation's capital, to northeastern Luzon. This central artery traverses the "rice bowl" of central Luzon, climbs over the Caraballo Mountains at Dalton Pass, and descends into the Cagayan Valley (figure 2).

Calo is accessed by motor vehicle using the NIA road (passable approximately six to seven months of the year) or by foot using a number of trails which lead from routes offering public transportation. The residents of Calo do not enjoy electricity or any improved irrigation for their fields, even though they live within one days walk from the Pantabangan Reservoir. Calo does boast a cement-floored meeting shed, two cement-enclosed springs, one holding tank receiving spring water from a source approximately 100 feet from the center of the cluster of houses, three water hand pumps donated by a group of Catholic Sisters in San Jose City, a small church administered by Ibaloi Baptist missionaries, and a newly constructed cement area that will serve the dual purpose of a rice drying area and a basketball court, donated by the Carranglan municipal council (see figure 3).

Spencer 1967:122). Hence *sitio* Calo, *barangay* Bunga, in the municipality of Carranglan, Nueva Ecija province.

Grassland

Grassland

Grassland

Grassland

to Karamran

Grassland

playa

Grassland

Grassland

Rice

Legend

- Hou
- Wate
- Sprin
- = Wate
- Chu
- Mee

Figure

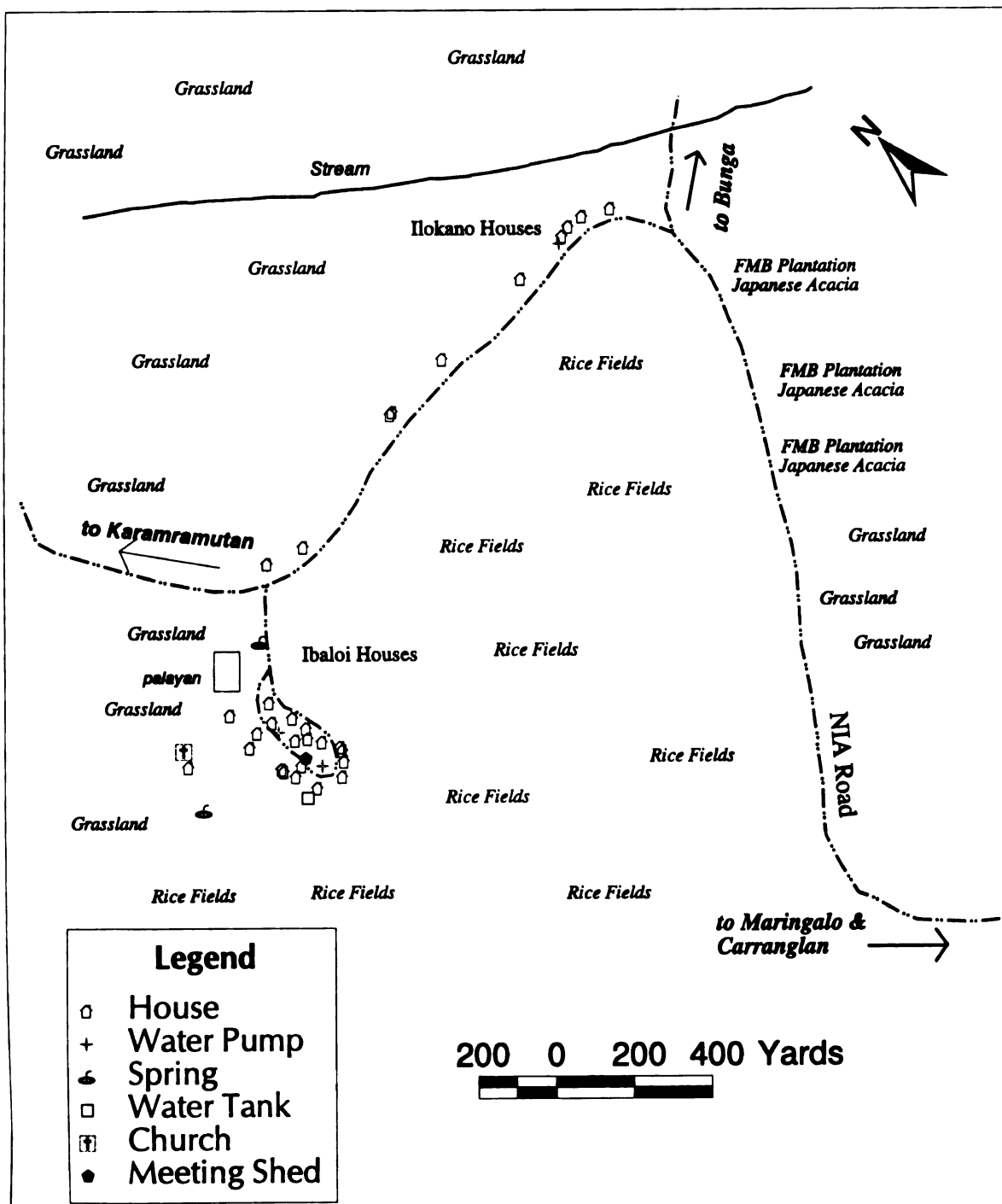


Figure 3 - Land Use Cover of Calo & Distribution of Structures

Calo is com
single-family unit
children. Infants
older, often res
however, are comp
forced. The hou
not all of the peop
families of these ho
settlers arrived twe
five years ago. Th
migrants, rather tha
Ibaloi, and six (21

There are two othe
the house where 2 o
another house used
field staff at certain
included in the 28 m
Ibaloi people are n
region of Luzon, a n
the Ibaloi are consi
Central. However, v
extends to the highe

Demographic and Socio-Cultural Context

Calo is comprised of twenty-eight households². Each household is a single-family unit. The families consist primarily of married couples with children. Infants and toddlers remain in Calo, while children, of school-age or older, often reside with relatives in other provinces. Some households, however, are comprised of unmarried individuals - single, widowed or divorced. The households do not shelter extended families, though most, if not all of the people in Calo, are related by blood or through marriage. The families of these households are recent migrants to the area. The first few settlers arrived twenty-five years ago, but families have come as recently as three years ago. The residents of Calo would best be described as pioneer migrants, rather than refugees. Twenty-two (79 %) of the households are Ibaloi³, and six (21 %) are Ilokano⁴. While there are approximately 150

² There are two other structures in Calo where people live. These include the house where 2 or 3 Baptist missionaries live from time to time, and another house used for the workers of one family wealthy enough to hire field staff at certain times of the year. These two "households" are not included in the 28 mentioned in the main body of the text.

³ Ibaloi people are indigenous to the southern Benguet/northern Pangasinan region of Luzon, a region approximately 75 kilometers northwest of Calo. The Ibaloi are considered upland peoples inhabiting the southern Cordillera Central. However, Wernstedt and Spencer (1967) state that the Ibaloi region extends to the higher northwest sections of the Caraballo Mountains, which

official resid

the school-a

provinces. A

the household

seasonal resi

The populati

approximate

Figure

well as the o

shows the app

households a

households a

mightly coincide
Spanish refer
meaning "mor
distinguished
territorial dist
Berquet, and E
aboriginal peoples
Kariakani, and

* Tokanos are
the island region
The area lies b

official residents of Calo, this census figure is misleading, because most of the school-age children live with relatives and attend schools in other provinces. Also, some residents are seasonal occupants. Twenty (71 %) of the households are comprised of permanent residents, and eight (29 %) have seasonal residents, who spend between two to six months in Calo each year. The population of Calo, not including the non-resident children is approximately 100 people.

Figure 3 shows the spatial distribution of the households in Calo, as well as the other structures mentioned above. The distribution of households shows the apparent ethnic clustering of the houses. All six Ilokano households are clustered to the east of where the majority of Ibaloi households are located. There appears to be no link between this pattern and

roughly coincides with Northern Nueva Ecija/Southern Nueva Viscaya. The Spanish referred to all upland indigenous groups as Igorot, a Tagalog word meaning "mountain-dwelling" or "mountaineer," though they also distinguished different upland groups by their languages, customs, and territorial distribution. The Ibaloi are also referred to as Inibaloi, Inabaloi, Benjuet, and Benguet Igorot. The language they speak is Nabaloi. Other Igorot peoples include the Isneg, Kalinga, Bontoc, Tinguian, Ifugao, Kankanai, and Ilongot.

⁴ Ilokans are indigenous to the Ilokos region of Northern Luzon. A lowland region north of Pangasinan and west of Benguet and Provinces. The area lies between the Lingayan Gulf and the Sierra Madre.

the time at which

covers only a port

I conducted

twenty-eight hous

households whose

of the seven reside

locations besides C

and relatives. Si

the (24%) are Ho

residents: three (1

made the ethnic m

all of my qualita

representative of

the that follow a

households.

Calo and t

Philippine Gove

classification, re

lands they occur

these lands. u

the time at which each family settled in the area. The area shown in figure 3 covers only a portion of Calo's extent, but does show all of the households.

I conducted in-depth interviews with twenty-one (75 %) of the twenty-eight households. The seven households not interviewed were households whose residents were away during my field research period. Six of the seven reside in Calo only part time. They also own houses in other locations besides Calo. One of the seven was simply in another province with relatives. Sixteen of these households interviewed (76 %) are Ibaloi; five (24 %) are Ilokano. Eighteen (86 %) of the households are permanent residents; three (14 %) are seasonal. These twenty-one households closely mimic the ethnic make-up of the community as a whole. They provided the bulk of my qualitative and quantitative information, and are considered to be representative of the community as a whole. The demographic and social data that follow are findings based upon the twenty-one respondent households.

Calo and the people who live there occupy lands classified by the Philippine Government as public Forest Land. As a result of this classification, residents are unable to possess legal title of ownership for the lands they occupy and cultivate. They do, however, possess usufruct rights to these lands, under the ISF program. As ISF participants, individuals are

per twenty-five

cultivate in rice.

CSCs for the peo

idents posses C

more parcels of la

at possess CSCs

Table 1

o
per
Max.
Min.
Mean
Total

* Indicates

Table 1 s

dependents. C

heads-of-house

to families occ

of the children

re children of

permanently c

given twenty-five-year stewardship certificates (CSCs) to the fields they cultivate in rice, which are renewable for another twenty-five years. All CSCs for the people in Calo were awarded in 1988. However, not all residents possess CSCs. Fifteen (71 %) respondents hold CSCs for one or more parcels of land. Six (19 %) do not. Five of the six respondents who do not possess CSCs are Ilokano.

Table 1 – Demographic Statistics of 21 Households in Calo

	# of Children per Household	*Age: Male	*Age: Female	*Yrs. of School: Male	*Yrs. of School: Female
Max.	11	75	65	12	10
Min.	2	26	20	1	0
Mean	5	46	42	4	4
Total	106	NA	NA	NA	NA

* Indicates statistics for male and female heads-of-households only

Table 1 shows a few basic demographic statistics for the twenty-one respondents. Children are defined as the offspring of the male and female heads-of-households, not simply by an age range. There are 106 children in the families occupying the twenty-one respondent households, though not all of the children live in Calo. Most of the school-age children and adults who are children of older respondents reside in other provinces, either permanently or for most of the year. The average number of children per

household is five. The average ages for male and female heads-of-households are 46 and 42 respectively. Both male and female heads-of-households have an average of four years of formal education.

Nearly everyone in Calo is a farmer. Their main crop is rice, planted in rain-fed, irrigated paddies. Even some households who do not hold CSCs for tilled lands plant areas to paddy rice. Eighteen respondents (86 %) till paddy rice to areas ranging in size from less than one hectare to seven hectares. Only three (14 %) claim not to plant paddy rice. Depending on a field's location and precipitation during the wet season, some farmers enjoy two or even three harvests per year. The amount of harvested rice per year depends on many factors (number of harvests, rice varieties, size of fields, and so on). Harvests are measured in cavans, a measurement approximately equivalent to fifty kilograms. Households in Calo harvest an average of 146 cavans (~7300 kg.) per year. Household harvests per year range, however, from 30 to 500 cavans (1500 – 25,000 kg.).

People in Calo do not rely solely on paddy rice for their livelihood. They also cultivate *kaingin* farms. These are gardens planted to a variety of crops for consumption and sale. Vegetables are the most common plants in *kaingins*. Green pepper, casava, upland rice, peas, taro, cucumber, corn, and beans were commonly cited by respondents. Trees are also planted in

larger. Res

survop. sant

specific type

larger farm

be main clus

lands held un

larger farms

farms at the t

being had or

House

drops in th

sale. A great

house garden

house gard

java. banan

house gard

pepper, sugar

numerous ho

additional pla

considered to

kaingins. Respondents mentioned planting mango, banana, coconut, soursop, santol, and jackfruit trees. Two respondents also cited planting a specific type of sweet grass, which is harvested and made into brooms.

Kaingin farms are located in the rolling hills and steeper regions away from the main cluster of houses and the paddy fields. *Kaingin* farms are also not lands held under CSC tenure contracts. Seventeen respondents (81 %) have *kaingin* farms. Only four respondents (19 %) claimed not to have *kaingin* farms at the time they were interviewed, though one respondent admitted having had one in the past.

House gardens are also common in Calo. Households plant a variety of crops in these gardens, similar to the *kaingin* farms, though on a smaller scale. A greater number of trees, both in quantity and variety, are planted in house gardens as opposed to *kaingins*. Twenty-two species were identified in house gardens. The most common species include: mango, papaya, guava, banana, coffee, jackfruit, and soursop. Vegetables are also common in house gardens. Bitter melon, *upo* (a type of squash), green pepper, chili pepper, sugar cane, taro, and *malungay* (a leafy shrub) were seen in numerous house gardens. People also maintain ornamental, spice and medicinal plants around their houses. As lands with house structures are considered to be part of ISF lands, house gardens enjoy a legal aspect

large firms

by three (1-4)

80

80

80

80

To

80

80

80

or

80

or

Animal

File 2). T

priming t

With Ameri

assumption

big return c

families a

iterations

number of d

kaingin farms do not. Eighteen respondents (86 %) maintain house gardens.

Only three (14 %) do not, all of whom are seasonal residents in Calo.

Table 2 - Animals of 21 Households in Calo

	Carabao	Pig	Chicken	Goat	Dog	Cattle
# of Households w/4	1	0	0	0	0	0
# of Households w/3	1	0	0	0	0	1
# of Households w/2	7	0	0	0	0	1
# of Households w/1	4	8	16	6	13	0
Total	25	8	16	6	13	5
# of Households w/0	8	13	5	15	8	19
% of Households w/0	38%	62%	24%	71%	38%	90%
# of Households w/1 or more	13	8	16	6	13	2
% of Households w/1 or more	62%	38%	76%	29%	62%	10%

Animals, too, are an important part of the livelihood practices in Calo (Table 2). The carabao, or water buffalo, is the Philippine beast-of-burden, performing tasks similar to those provided by oxen for early settlers of the North American Great Plains. Pigs, chickens and goats are raised for consumption and sale. Dogs provide security and also meat. Cattle offer a high return on investment for those wealthy enough to own them. A number of families also own cats, presumably as predators to fight rodent infestations of rice storage facilities in their houses. One family also owns a number of ducks. It should be noted that animal ownership, both the type

and the num

ume. The d

kinds and re

The p

They are no

ention of

Caranglan.

possess ma

machinery

sets (batter

own water

No c

visit. I ha

type. Hou

construct

levis Blar

concrete

corrugat

impermea

and the number of animals, fluctuates greatly over relatively short periods of time. The data presented below provide simply a snapshot in time as to the kinds and relative numbers of animals raised by the people in Calo.

The people in Calo are also integrated into the local market economy. They are not merely subsistence agriculturalists. They plant crops with the intention of making a profit. Excess produce is sold in the markets of Carranglan, San Jose and Baguio City, Benguet. The people aspire to possess material items, bought with hard currency. This is evident in the machinery already owned by some families: two families own television sets (battery operated!), two own threshers, two own sewing machines, two own water pumps, and seven own hand tractors.

No quantitative socio-economic data was collected during my field visit. I have, however, attempted a crude wealth ranking based upon house type. Houses in Calo are made with a variety of materials. House walls are constructed using *sawali* (a matte-like material of woven bamboo [*Bambusa levis Blanco.*]), wood (slabs, not log-cabin style), corrugated iron sheets and concrete blocks (see figures 4, 5 and 6). Roofing materials include corrugated iron sheets and grass roofs made from the ubiquitous *cogan* grass (*Imperata cylindrica*). The structures in Calo include: single and two-

Figure -

Figure 5 - 11

Figure 6 - 1



Figure 4 - House: One Story, *Sawali* Walls & *Cogon* Roof



Figure 5 - House: One Story, *Sawali* Walls & Corrugated Iron Roof



Figure 6 - House: One Story, Cinder Block Walls, Cement Floor & Corrugated Iron Roof

story houses: 11

ground level m

houses with a s

10
F 8
r 6
e 4
q 2
0

Houses

and whether on

z score, based

varied from a l

egan grass ro

with concrete b

for the number

his ranking. T

story houses; floors above ground made of wood or bamboo and floors at ground level made of cement; houses with a kitchen inside or attached and houses with a separate cooking building.

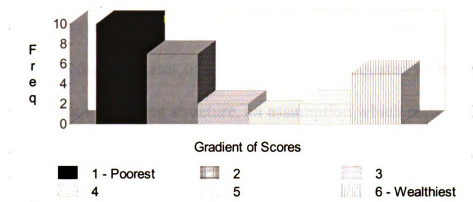


Figure 7 - Wealth-ranking by House Type

Houses were ranked based upon the materials used for roofs and walls and whether or not the structure had one or two stories. Each house received a score, based upon the expense of these features. The range of scores varied from a low of four for a single story house with *sawali* walls and a *cogan* grass roof, to a high of nine for a two-story structure made primarily with concrete blocks and having a corrugated iron roof. Counts were made for the number of structures having each score. Figure 7 shows the results of this ranking. The majority of houses are made from the less-expensive

materials. H

making, then

indicating a

Wealth

each househ

wealth of th

for the soci

material use

that familie

At the very

types and th

what many

Though I ca

of its owner

greatest sco

households

the form of

advantage o

harvesting a

includes an

materials. However, seven houses scored either an five or a six. From this ranking, there appears to be concentrations at both ends of this spectrum, indicating a rather small “middle class.”

Wealth-ranking by house type does not provide empirical evidence for each household’s wealth . However, it serves as a guide to the relative wealth of the community as a whole. This type of wealth-ranking assumes that the socio-economic status of a household can be equated with the material used for its housing structure, an assumption which rests in the idea that families will invest in their houses relative to their disposable income. At the very least, the reader gains an appreciation for the diversity of house-types and the complexity of a community whose people live side by side in what many Westerners would describe as “grass huts” and “modern” houses. Though I cannot corroborate each house with the relative economic ranking of its owner, based upon qualitative information, the house-types with the greatest scores are owned by the wealthiest families. Three of these households have relatives who work overseas and send remittances back in the form of stronger foreign currencies. One household was able to take advantage of high market prices when they planted green peppers, harvesting at a time of high demand and low supply. Another household includes an individual who married into a wealthy family. The family owns

shipping tanker

former President

owners. Finally

army from his

of US dollars.

This brief

interviews with

history goes back

1946). In the 1

hacienda, or ran

somehow link

Philippines ga

friend of the A

of Luzon. Mr.

known as Cal

In 1972,

hacienda, amo

shipping tankers, and I was told the tankers have shipped molasses for former President Corazon Aquino's family, who are sugar plantation owners. Finally, in one household, the husband is a pensioner of the US army from his involvement in W.W.II, and receives a regular pension salary of US dollars.

Historical Context

This brief history of Calo is based upon formal and informal interviews with community residents of Calo. My knowledge of Calo's history goes back only as far as the period of American occupation (1898 - 1946). In the 1920s, the area now known as Calo was part of a 1000 hectare hacienda, or ranch, owned by an American. People in Calo believe he was somehow linked with the American government at the time. When the Philippines gained its independence, the hacienda was given to a Filipino friend of the American, Mr. Ernesto Bueno, who hails from the Ilokos region of Luzon. Mr. Bueno owned the hacienda, which included the area now known as Calo, from 1946 until 1972.

In 1972, then President Ferdinand Marcos targeted Mr. Bueno's hacienda, among others, as one for land reform. Mr. Bueno's 1000 hectare

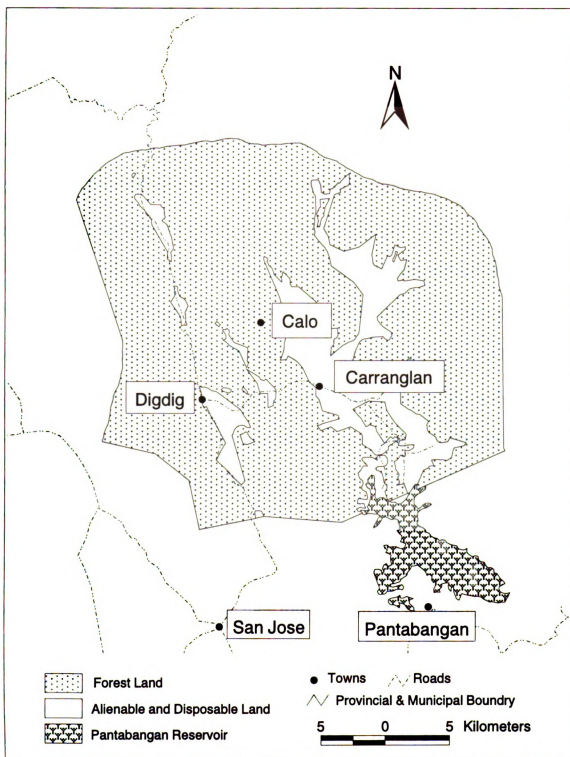


Figure 8 - Map of Carranglan Showing DENR Land Classifications

hacienda was d

peasant masses

were residing in

Highway. They

year saw the est

Calo. Other fan

original three fa

well. Though t

these lands we

Figure 8). Th

At the t

was grassland

forest cover a

was pasture l

twenty-five y

around Calo

established c

farming farm

irrigation di

and planted

hacienda was dismantled. Its lands were opened to settlement by “the peasant masses”. In 1972 a few of the Ibaloi families now living in Calo were residing in the nearby town of Putlan, east of Calo, along the Maharlika Highway. They learned of the land reform and moved to Calo in 1973. That year saw the establishment of the first three households of the community of Calo. Other families followed, most of them related in some way to the original three families. However, a few Ilokano families settled in Calo, as well. Though the Bueno hacienda was opened up to settlement, a portion of these lands were classified by the Philippine government as forest land (figure 8). This classification restricted the tenure rights of the residents.

At the time the first people settled in the area, the vegetative cover was grassland sparsely dotted with indigenous trees and a few patches of forest cover along the stream banks and in the steeper-sloped ravines. This was pasture land under Mr. Bueno and the American owners. The last twenty-five years have seen the transformation of the landscape in and around Calo. The neighboring *sitios* of Saba, Butaling, and Manbeha were established during the same period as when Calo was established. Pioneer farming families carved up the flatlands into rice fields, constructed irrigation ditches, and began farming this land. They established gardens and planted trees around their houses. They farmed swidden plots and

United States

sworn in

asking the

administ

Bureau

Forestry

surveyed

Certified

of Colo.

twenty-f

I f

birds cla

known fo

philippin

military

imposed

most imp

hunted in the remote hills north of the *sitios*. When Corazon Aquino was sworn into office in 1987, the people in Calo wrote to her administration asking that the lands they occupied and used be titled to them. The administration responded by directing them to the Forest Management Bureau, who in turn included Calo and its people in the Integrated Social Forestry program. Under the ISF program, the people's rice fields were surveyed, mapped and parceled out to them with tenure rights using Certificates of Stewardship Contracts (CSCs). In January 1988, the people of Calo, Saba, Manbeha and Butaling received their CSCs, giving them twenty-five year stewardship rights, but not title of ownership to the land.

Political Geography

I identify Calo's political geography in reference to its location within lands classified as Forest Lands and its position on the edge of remote areas known for the presence of the New People's Army (the militant wing of the Philippine communist party) and subsequent surveillance by the Philippine military. These two realms are not mutually exclusive, but are, in fact, intricately related.

Forest land and alienable and disposable (A & D) land comprise the most important government classifications of public lands in the Philippines.

These two

their roots

control over

Spanish co

regime unde

Constitution

United Stat

first land

place since

the center

utilization

Part public

the explo

national

For

important

The Re
Royal de
1821
could be
simply
1816. P

These two land classifications are enshrined in the 1987 Constitution, but their roots lie in the long history of a nation dominated by colonialism. State control over forest resources began under the Regalian Doctrine⁵ during the Spanish colonial period, and continued at the turn of the century with the US regime under the concept of Public Domain (FAO 1993). The first Constitution of the Philippine Republic, established July 4, 1946, after the United States recognized Philippine independence, officially designated all forest land as state owned. State ownership of forest lands has remained in place since then. Forest management systems, therefore, “have evolved in the context of national government ownership of the resource, with utilization perceived as a ‘privilege’ granted by the state” (FAO 1993: 122). Past public land policies in the Philippines are “directed toward promoting the exploitation of natural resources for agricultural development to serve national economic goals” (Anderson 1987: 256).

Forest lands differ from A & D lands in the Philippines in one very important aspect. Only A & D lands may be legally transferred to private

⁵ The *Regalian Doctrine* dates to the period of Spanish colonialism. By royal decree all lands “discovered” by the Spanish (as the Philippines were in 1521 by Ferdinand Magellan) belonged to the Spanish Crown. Lands could only be privatized by a royal grant recognizing such a contract. It is from this legal theory that state control over national lands rests (Lynch 1986; Prill-Brett 1997).

ownership

can never

x citizens

term been

lands (FA

in the ear

Code" of

including

and place

classify in

approxim

classified

& A & D

Ca

classified

to titled

freedom

A Torre
by Sir Ro
instrument
led.

ownership with the acquisition of a Torrens Title⁶ (FAO 1993). Forest lands can never be privately owned, though the government may grant permission to citizens and entities to use forest lands, under short-term leases and long-term licenses. Forest lands, however, may also be reclassified as A & D lands (FAO 1993). The ratio of Forest Land to A & D Land was initially set in the early 1970s at 40:60. Presidential Decree 705, the “Revised Forestry Code” of 1975, “claimed all lands with a slope of 18 % [$\sim 10^\circ$] or more, including mountainous lands above 600 meters, as part of the public domain and placed it under Forest Management Bureau jurisdiction,” in effect classifying these areas as forest land (Gibbs, et al. 1990: 253). Today, approximately 15 million hectares (50.03 %) of the entire country are classified as forest land, and 14.12 million hectares (47.05 %) of the country as A & D land (DENR “1987 Forestry Statistics”, in Gacoscosim 1995).

Calo, with its predominantly hilly landscape, falls within lands classified as forest lands (see figure 12). Without the legal capacity granted to titled land holders, the people are inextricably linked to the DENR. The freedoms and security of titled land holders are not entirely available under

⁶ A Torrens Title is a certificate of ownership for real property. Established by Sir Robert Torrens, an Australian, the Torrens system acted as an instrument of real property ownership to protect against fraudulent claims on land.

the ISF CSC s

the right to per

holding, and t

obligations un

Certificate of

include the fo

"The C

environ

shall b

forest p

of Fore

hereto

cutting

balance

Develo

natura

least f

food f

non-tr

than c

acqui

be pro

by the

Prior to 19

Forest Deve

Ministry of

the newly cr

DENR) wh

and provide

1995 (S.O.).

the DENR.

the ISF/CSC system. Though the CSC indicates that the holder “shall have the right to peaceful possession, cultivation and enjoyment of his forest land holding, and the fruits thereof ... He shall also faithfully comply with all his obligations under the Stewardship Agreement” (Republic of the Philippines, Certificate of Stewardship, Sections K and D, Dec. 1987). These obligations include the following:

“The GRANTEE shall strictly observe and/or implement environmental and conservation measures. The GRANTEE shall be responsible for the protection and conservation of forest growth on the land and shall cooperate with the Bureau of Forest Development⁷ in the protection of areas adjacent hereto... The GRANTOR reserves the right to regulate the cutting or harvesting of the timber crops to insure normal balance of forest cover on the land. The Bureau of Forest Development shall regulate the cutting or gathering of trees naturally growing on the land. The GRANTEE shall plant at least five (5) edible fruit trees per hectare of the land to provide food for wildlife species ... This Stewardship Agreement is non-transferable. No GRANTEE shall be allowed to hold more than one Stewardship Agreement at any one time. The acquisition of additional areas other than that granted shall also be prohibited except for meritorious circumstances determined by the GRANTOR. The GRANTEE shall not use tenant labor

⁷ Prior to 1988 the Forest Management Bureau was known as the Bureau of Forest Development under the Ministry of Natural Resources. In 1988, the Ministry of Natural Resources was dissolved and its functions transferred to the newly created Department of Environment and Natural Resources (DENR) whose “jurisdiction, authority and responsibilities ... are defined and provided for in Presidential Executive Order No 192” (Gacoscocsim 1995: 80). The Forest Management Bureau is one of six staff bureaus under the DENR.

but mu
assista
the lan
Certifi

Of con

Agreement s

shall continue

[sic] renew

Republic of

1997).

The p

property th

generations

the land. P

by the Phil

Statement

test adm

and intere

with prod

economic

but must till the land himself without prejudice however to assistance from his family. The GRANTEE shall not sublease the land or any portion thereof” (Republic of the Philippines, Certificate of Stewardship, Sections K and D, Dec. 1987).

Of course the most limiting factor is the period of tenure. “The Agreement shall become effective upon execution by the two parties and shall continue for the period of TWENTY-FIVE (25) years to expire on [date] renewable for another period of TWENTY-FIVE (25) years” (Republic of the Philippines, Certificate of Stewardship, Section A, Dec. 1987).

The people’s sense of legal security, their power as full owners of property that can be sold, traded, purchased and handed down through generations beyond fifty years, is undermined by the legal classification of the land. People’s tenure is subject to the rules and regulations established by the Philippine ministry that is given jurisdiction over forest lands. The fundamental belief underpinning this jurisdiction is that the forest lands are best “administered by the government primarily to protect public welfare and interests, ... [that] when administered properly [by the state] and used with prudence and care, the forests can contribute immensely to the economic, social, and cultural development of the people, ... [and that] the

government

the benefits

The se

Philippine m

the Commun

Marxist ideol

NPA's guid

fighting sim

more basic c

equally th

and militan

regime to ju

favors from

developing

¹ Accordin

the Philipp

the doned

the Commu

very few c

subversive

[bombings]

emergency

Philippines

discipline."

government has to insure the continuous existence of [Philippine] forests for the benefits of the greatest number of people” (Gacoscosim 1995: 78).

The second position, politically, for Calo places it between the Philippine military and the New People’s Army (NPA), the militant wing of the Communist Party of the Philippines (CCP). Though founded in 1968 on Maoist ideology, with “Mao’s eight principles of guerrilla war” as the NPA’s guide, the average member of the NPA is most likely an individual fighting simply for a fairer life in which political corruption is replaced by a more basic civic integrity, and in which the nation’s wealth is shared more equitably throughout the population. Fear of a strong, peasant-based, radical and militant communist group, is thought to have been used by the Marcos regime to justify declaring Martial Law, and to gain political and economic favors from the United States, playing on its fears of communism in the developing countries⁸ (Bonner 1987).

⁸ According to Raymond Bonner (1987: 90) “[i]n the summer of 1972 ... the Philippines was a nation under siege ... a boat had been found on an abandoned shoal; the government said it had been loaded with weapons for the Communist New People's Army... Manila was racked by bombings every few days, in public and private buildings; the government blamed 'subversives' ... some thought Marcos might be responsible for [the bombings] in order to create the conditions that would justify some emergency measures. It did seem, at least on the surface, that the Philippines needed some strong governmental action to restore order and discipline." Bonner continues, "Marcos, as part of his justification for

Besides

military has been

implicated in

during the Ma

Ving 1993).

implemented

continuous pr

fire watch to

compound us

dispatched to

two checkpo

Iyabo, whi

designed to

and other pr

provinces in

will be foun

martial law.

Communist

supported b

members w

Besides “fighting the red scare” in the remote regions, the Philippine military has been connected in the past with logging concessionaires and implicated in illegal logging activities throughout the nation, particularly during the Marcos regime, but certainly not limited to this time period (Vitug 1993). In 1988, many forest-related activities were being implemented in Carranglan and Pantabangan, and the military maintained a continuous presence in the area. The military, at one time, manned a forest fire watch tower overlooking plantation areas during the dry season. The compound used by the FMB staff also housed the military regiments dispatched to the region. The military, together with the FMB, also manned two checkpoints along the Maharlika Highway (one in Dig Dig, the other in Tayabo, which were still in use as of 1997). These check points are designed to stop the illegal trafficking of logs coming from Isabella, Quirino and other provinces north of Nueva Ecija, some of the few remaining provinces in northern Luzon where large numbers of *dipterocarp* trees can still be found.

martial law, came up with all kinds of exaggerated numbers for the Communist strength. There were at least 8,000 NPA guerrillas, he claimed, supported by 10,000 active cadres and maybe 100,000 sympathizers. The numbers were hyperbole ... (1987: 118).

The mil

for stopping

persons of Ca

NPA activity.

visited Calo w

time, four NP

volunteer. T

larger group st

moved on. Th

being in Calo

sympathize w

understand th

apathism, a

aphrase on

In c

Calo, with

those fac

NPA mem

total of re

migration to

The military presence in Carranglan, however, was there for more than stopping fires and checking trucks for contraband. The northern portions of Carranglan, bordering Nueva Viscaya, were known to be sites of NPA activity. On two occasions that I am aware of, members of the NPA visited Calo while I was a Peace Corps volunteer (from 1987-89). The first time, four NPA members made a visit shortly after my arrival in the *sitio* as a volunteer. They came to inquire about my activities. The second time, a larger group stopped in the village, ate a meal with a few of the families, and moved on. Though I cannot say for sure, it is my belief that no individual living in Calo is a member of the NPA. The people living there do not sympathize with the NPA's communist ideology, though they certainly understand their struggles against a democracy steeped in corruption, nepotism, and greed. People in Calo feel "caught in the middle" (to borrow a phrase one individual used) physically and emotionally.

In carrying out its duties in December 1989, the military came to Calo, with a woman who was accused of being a member of the NPA, and whose face was masked. According to her, some people in Calo were also NPA members and they had hidden caches of arms. She implicated a handful of residents who were then interrogated by the military. The interrogation techniques included public harassment, striking a man in the

fire with fist

aments by

areas of their

galy to being

ained they

and liberties

government.

similar event

The pe

participants.

DENR, which

The military

People of Ca

APA territor

The P

Province of

Sancti

face with fists, pointing a loaded gun at a man's head, and searching for armaments by digging up the earthen mounds people build in the kitchen areas of their homes. No weapons were found. No person in Calo pleaded guilty to being a member of the NPA, as the alleged NPA captive had claimed they were. The military succeeded only in violating these people's civil liberties, and in strengthening the people's distrust of their own government, which was already firmly in place from their knowledge of similar events throughout the nation.

The people of Calo occupy unstable ground, politically. As ISF participants, their tilled and occupied lands are under the jurisdiction of the DENR, which maintains a strong partnership with the Philippine military. The military and the DENR share common goals. These goals implicate the people of Calo because they live on forest land and in an area which borders NPA territory.

The Pantabangan Watershed

The Pantabangan watershed is situated in the northern part of the province of Nueva Ecija, though its headwater areas are found primarily in the neighboring province of Nueva Viscaya located to the north and east of

Nueva Ecija

Ecija an eastern

Pantabangan

ed 16008' no

The im

Pantabangan

constructed in

to provide irr

control to are

early 1980s

tematic dec

A 198

the Pantaban

to siltation

by Reyes an

managemen

the dam and

Hispan, ha

the water

Nueva Ecija The bulk of the watershed spans two municipalities in Nueva Ecija: an eastern portion of Carranglan, and a northern portion of Pantabangan (figure 9). The watershed is situated between latitudes 15°53' and 16°08' north and longitudes 120°59' and 121°22' east.

The importance of this watershed to the study is its relationship to the Pantabangan dam and reservoir, financed by the World Bank and constructed in 1973. This watershed feeds the multi-purpose dam designed to provide irrigation, power-generation, domestic water supply and flood control to areas of central Luzon (Reyes and Mendoza 1983). Reports in the early 1980s on the siltation of the reservoir due to erosion suggested a dramatic decrease in the expected lifespan of the dam.

A 1989 World Bank report estimated that the operational lifespan of the Pantabangan Reservoir had been reduced from 100 years to 40 years due to “siltation beyond estimable rates” (1989: 28). Similar concern was voiced by Reyes and Mendoza as early as 1983 and by Galvez in 1984. Forest management practices in the Pantabangan watershed, prior to completion of the dam and subsequently because of the concern regarding its operational lifespan, have centered primarily on establishing and expanding forest cover in the watershed. The Philippine Forest Management Bureau

Pang

• To
Wa
N Pro
Ro
Pa

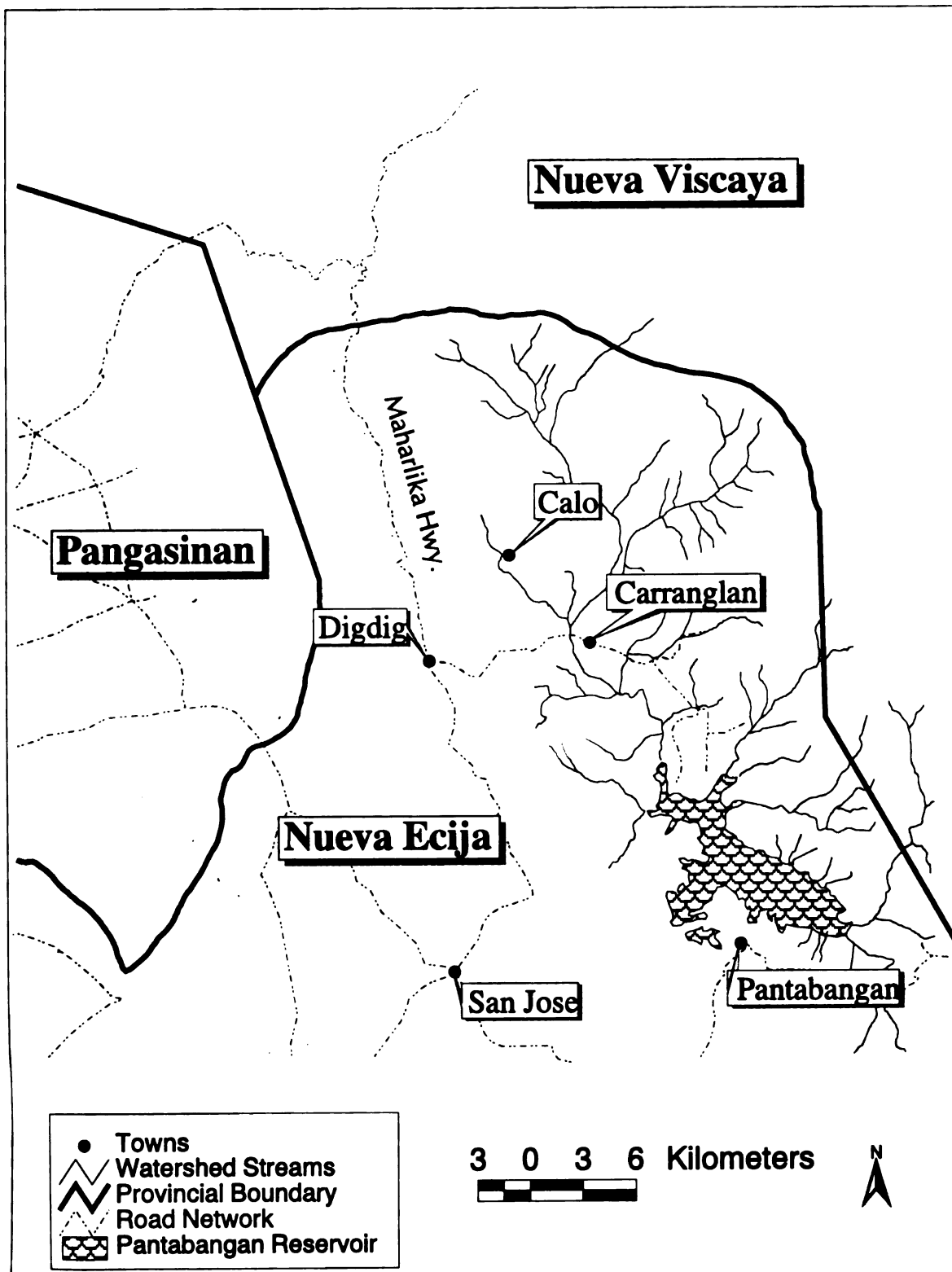


Figure 9 - Hydrology of the Pantabangan Watershed

FMB) under

DENR) has i

watershed for

practices can

aim to includ

These social

driven nation

concern surro

Tree p

municipaliti

Regular F

project cov

another one

an uncertai

municipaliti

watershed v

these projec

(FMB) under the Department of Environment and Natural Resources (DENR) has included local communities, to varying degrees, in its watershed forest management activities. A number of the DENR/FMB practices can be included under the rubric of “social forestry,” that is they aim to include local people in the management of their forest resources. These social forestry efforts regarding tree planting activities have been driven nationally by a declining forest resource base and locally by the concern surrounding the Pantabangan dam.

Forest Management Programs in Carranglan and the Pantabangan Watershed

Tree planting programs in the Carranglan and Pantabangan municipalities pre-date the construction of the dam. A DENR report, “Status of Regular Reforestation Projects as of December 1991” indicates that a project covering 54,090 hectares in Carranglan was established in 1938, and another one covering 6,250 hectares in Pantabangan was begun in 1978. I am uncertain about the exact location of these projects in their respective municipalities, but I assume that some, if not all of the region defined by the watershed which now empties into the Pantabangan Reservoir, is included in these project areas. Carranglan is approximately 78,364 hectares in area,

and classified

last in Cam

included the

The "Regul

and many o

after the pa

Tree

of years af

operation a

Erosion C

project co

the Canini

Project's

uses gear

regulation

regulated

formation

specialty

character

map plan

and classified forest land covers 49,492 hectares. It seems likely that, at least in Carranglan, the original project area established in 1938 would have included the portion of the watershed which falls within this municipality. The “Regular Reforestation Projects” operated until 1991, at which time it and many of the DENR/FMB functions were devolved to local governments after the passage of the *Local Government Code of 1991*.

Tree planting projects in the watershed gained momentum a number of years after the completion of the dam, when concern rose over its operational lifespan. In 1980 a five-year “Pantabangan Watershed and Erosion Control Project” began with funding from the World Bank. The project covered the water catchment area of the Upper Pampanga River and the Canili-Diayo watershed and included a total of 91,650 hectares. The project’s long-term objective was to “rehabilitate the watershed for multiple uses geared to, and harmonized with, water-production, conservation, and regulation” (Reyes and Mendoza 1983: 487). The immediate objectives stipulated by the World Bank were: (1) to establish 11,500 hectares of tree plantations for the production of short- and long- fiber pulpwood and specialty saw-timber; and (2) to develop 13,500 hectares for leafmeal, charcoal, mango, and cashew nuts, of which 8000 hectares would be interplanted with timber species that would eventually take over the area.

Winning on

Mendoza (

the project

agency of

Liberal he

the reserve

the reserve

The

the Nation

Developm

and the P

along with

project.

features

Remaini

the BFD

In

Program

provided

first de

Writing only eleven years after the completion of the dam, Reyes and Mendoza (1983: 494) claim, “Reforestation is the major forestry activity in the project area at the moment. This has become so because of the great urgency of reestablishing a protective forest cover over the vast (some 31,600 hectares) open lands that are most susceptible to erosion, closest to the reservoir and, therefore, have the greatest potential to inflict damage on the reservoir and dam facility.”

The project area was administered cooperatively by three agencies: the National Irrigation Administration (NIA), the Bureau of Forest Development (BFD, which later became the Forest Management Bureau), and the Philippine-Japan technical cooperation program (RP-Japan). Japan, along with the World Bank, was the other major outside donor for the project. NIA, working cooperatively with the BFD, administered 24,000 hectares of the project. The RP-Japan area covered 8,100 hectares . Remaining degraded lands were covered under the “reforestation districts of the BFD” (Reyes and Mendoza 1983: 552).

In addition to the more top-down approach to forest management programs, people-centered, or social forestry approaches, also became prevalent in the watershed area. A few communities located on classified forest lands entered into stewardship agreements under the country’s

Integrated

under form

people-ee

Tree Farm

the early

March 1964

In compo

areas con

data reg

municip

contract

Use Ma

Projects

C

Comm

CFP ca

approv

Went a

The

Bank

Integrated Social Forestry (ISF) program. The ISF program was initiated under former President Marcos in 1982 and was an extension of two earlier people-centered programs: Forest Occupancy Management and Community Tree Farm programs (World Bank 1989). Though the ISF program began in the early 1980s, the four ISF communities with which I am familiar (Calo, Manbeha, Saba and Butaling) did not receive their CSCs until January 1988. In comparison to the “regular reforestation” areas mentioned above, ISF areas constitute a rather small fraction of the watershed. I do not possess data regarding the total ISF area within the watershed, however, the municipality of Carranglan contains 1,388.97 hectares of area under ISF contract, mostly located outside of the Pantabangan watershed. (DENR Land Use Map for CENRO Munoz, Nueva Ecija, 1997; DENR Report “Status of Projects Within CENRO Munoz, Nueva Ecija,” 1997).

Other areas within the watershed were parceled out under the Community Forestry Program (CFP), also known as Contract Reforestation. CFP came to life in 1988 with the Asian Development Bank’s (ADB) approval of the Forestry Sector Program Loan, part of five forestry-related loans approved between 1988-92 which totaled \$731 million dollars⁹

⁹ The loans included: \$277 million from ADB, \$234 million from the World Bank, and a \$220 million supplement provided by the Japanese Government.

(Korten 1994)

realization th

local people

poor results

participated

maintaining

as to priva

in the form

incentives f

three types

Estim

Caranglan

DENR fiel

Nueva Eci

covering a

Calo, and

Munoz, N

areas with

CENRO
Resources

(Korten 1994). CFP grew out of the country's continued and growing realization that forest management, particularly tree planting, must involve local people as stakeholders. It was conceived as a way to counteract the poor results of "reforestation" undertaken by the BFD, in which local people participated merely as hired laborers managing nurseries, planting seedlings, maintaining planted areas and acting as fire guards. The concept of the CFP was to privatize "reforestation." Ownership of the benefits of reforestation, in the form of usufruct rights (though limited), would theoretically create incentives for sustainable forest management (Korten 1994, FAO 1993). Three types of contracts were available: family, community and corporate.

Estimates of the number of CFP contracts and their total extent in Carranglan vary depending on the source. A document from the local DENR field office in Munoz, "Status of Projects Within CENRO¹⁰ Munoz, Nueva Ecija," compiled in 1997, lists 129 contract areas for Carranglan covering a total of 5,972 hectares. Fourteen of these contracts are located in Calo, and cover 673 hectares. The DENR Land Use Map for CENRO Munoz, Nueva Ecija, 1997, from the same field office, shows 125 contract areas within the municipal boundary, covering 5,888 hectares.

¹⁰ CENRO is the acronym for the Community Environment and Natural Resources Office.

Two d

different figu

District 2. Ni

hectares. The

documents s

for Carrangl

contracts. T

community

report listin

of June 199

Only two o

The

Carranglan

CBFM is a

relates of

current "pr

in the upla

programs e

15. Issue

CBFM is t

Two documents from the DENR national office in Quezon City give different figures. The document “1990 Contract Reforestation, Region 03, District 2, Nueva Ecija,” lists 109 contracts in Carranglan, covering 2190 hectares. Thirteen of these are in Calo, and cover 481 hectares. This documents shows the types of contracts as well. Of the 109 contracts shown for Carranglan, 46 of these are community/NGO contracts, and 63 are family contracts. The family contracts are each for two hectares, while the community/NGO contracts cover as much as 100 hectares each. An updated report listing “On-Going Contract Reforestation Projects in Nueva Ecija as of June 1996,” indicates 107 contracts in Carranglan covering 2424 hectares. Only two of these are in Calo, and they cover a total of 90 hectares.

The most recent people-centered forestry program implemented in Carranglan, is the Community-Based Forest Management Program (CBFM). CBFM is an extension of the CFP, and builds upon the successes and failures of previous people-centered forestry programs. CBFM is also the current “primary strategy for achieving sustainable forestry and social justice in the uplands” (Borlagdan 1997: 17). All previous people-centered forestry programs are being integrated under CBFM, as per Executive Order No. 263, issued by President Ramos in 1995. The focus and expectation of CBFM is the establishment of people’s organizations, which when given

ature will t

1997). Unli

targets sole

their area s

and the con

The projec

watershed.

According

CBFM pro

In

Campani

anually

smooth h

was un

Post. I

Recent

Refugee

tenure will transform themselves into rural-based enterprises (Borlagdan 1997). Unlike CFP, which allowed individual and family contracts, CBFM targets solely communities. One such community in Carranglan has had their area surveyed and mapped, an appraisal report written and approved, and the community has participated in a community organizing component. The project falls within the Talavera watershed, and not the Pantabangan watershed. It is, however, only a few kilometers northeast of Calo. According to the national DENR office in Quezon City, there are no other CBFM projects in Carranglan or within the Pantabangan watershed.

Assessment of Reforestation and Tree Planting Projects in Carranglan, Nueva Ecija

In gauging the success of regular reforestation and CFP projects in Carranglan, I use two indicators: (1) the percentage of the target area actually planted, and (2) the percent survival of trees planted. I am somewhat restricted in that I do not possess percent survival statistics for areas under the FMB Reforestation Sector, (i.e. the regular reforestation areas). Furthermore, the only document regarding CFP areas which shows percent survival as well as net area planted, is the “1990 Contract Reforestation, Region 03, District 2, Nueva Ecija,” the oldest of the three

documents

the contra

planted. C

percent su

The

project an

planted.

planted.

DENR F

Units as

of the tre

12% of

T.

The fort

sensitive

1263.92

rate for

1032.52

target an

planted

documents I possess. In addition to the age of the document, only some of the contract areas listed contain data on percent survival and net area planted. Of the 109 areas listed for Carranglan, only forty-one (38 %) show percent survival statistics.

The regular reforestation efforts in Carranglan began in 1938. The project area covers 54,000 hectares. By 1986, 5,543 hectares had been planted. Between 1987 and 1991 an additional 1,107 hectares had been planted. In 1991, regular reforestation projects, along with many other DENR/FMB responsibilities were transferred to the Local Government Units as per the passage of the *Local Government Code of 1991*. At the time of the transfer, a total of 6,650 hectares had been planted in Carranglan, only 12 % of the original target area set in 1938.

The CFP projects in Carranglan reveal somewhat different results. The forty-one contract areas, in which net area planted and percent survival statistics were reported, covered 1,380 hectares. The net area planted was 1,263.92 hectares, an impressive 92 %. Unfortunately, the average survival rate for these forty-one contract areas was 50.03 % (with a range of 9.65 % to 83.52 %). Of the forty-one contracts, seven were located in Calo. The target area for these seven contracts covered 260 hectares. The net area planted was 244.53 hectares, or 94 % of the target area. The average

survival rate.

projects in C

of 4.61 % of

The r

while those

chapter one

reforestation

planted und

accomplish

vision and

survival rate, however, was even lower than that of the forty-one. The seven projects in Calo achieved only a 30.59 % average survival rate (with a range of 14.61 % to 41.76 %).

The results of reforestation and tree planting activities in Carranglan mimic those for the rest of the nation (as reported in the introduction to chapter one). With only 12 % of the target area planted under the regular reforestation program, and a 30 to 50 % average survival rate for trees planted under the CFP in Carranglan, it appears that little has been accomplished regarding the establishment of forest cover to arrest soil erosion and siltation of the Pantabangan and associated waterways.

CHAPTER THREE

Introduction

This chapter is a literature review of four topics relevant to my research: 1) political ecology, 2) Philippine forests, 3) social forestry and participatory natural resources management, and 4) environmental perception and the social construction of nature. Information regarding these four broad topics provides a theoretical and philosophical context for this study and establishes a historical perspective on the management of Philippine forests. The historical perspective is, of course, a central part of political ecology. Political ecology provides a particular view on human-environment interaction that in theory includes multiple environmental perceptions as factors in understanding human-environment issues. The approach I take in understanding the failures of social forestry in the Philippines uses political ecology's historical perspective, holism and framework of multiple scales of analysis in conjunction with land use and environmental perception.

P

autism

relation

complex

ecology

lies in

concern

ecology

Pickles

employ

interact

remarks

combination

ecology

to ecology

regional

disrupt

interact

political

Political Ecology

Political ecology, according to Greenberg and Park, "is a historical outgrowth of the central questions asked by the social sciences about the relations between human society, viewed in its bio-cultural-political complexity, and a significantly humanized nature" (1994: 1). Political ecology encompasses a broad disciplinary spectrum, though its formation lies in two foundations: a broadly defined political economy, with its concern for the distribution of power and productive activity, and cultural ecology (Blaikie 1994; Greenberg and Park 1994; Peluso, et al. 1995; Pickles and Watts 1992). The combination offers a dialectic approach that employs natural and social sciences in understanding human-environment interactions (Blaikie and Brookfield 1987, 1993; Blaikie 1994). Peluso remarks, "political ecology refers to the effort of more recent writers to combine [a] political economic approach with more ecological or human-ecological understandings of people-environment interactions. The attention to ecology and human ecology forces researchers to include locally and regionally grounded analyses of forest management practices. At its best, this approach uses multiple scales (micro to macro) of analysis to look at interacting cycles of social and ecological change" (1995: 207). Emphasis in political ecology rests in the plurality of human (political, social, economic)

and environ

which inter

national, gl

integral to

Poli

and explai

conceptua

materialist

economy)

(1970) and

population

however,

populatio

populatio

effectivel

anthropol

cultural e

highlight

peasants a

notes the

and environmental (climatic, biophysical, topographical, etc.) processes which interact with each other over time and across scales (local, regional, national, global). Contextual and historical understanding, therefore, are integral to political ecology studies.

Political ecology is not the only conceptualization for understanding and explaining environmental degradation. Methods range from linear conceptualizations (determinism, possibilism /probabilism and technological materialism) to systems conceptualizations (cultural ecology and, political economy) (Knight 1992). Neo-Malthusians, like Paul and Ann Erlich (1970) and Hardin (1968), have emphasized the explosive growth in human population as primary to environmental degradation. Boserup (1965), however, has argued that degradation is not necessarily a direct result of population density, and that environmental stress as a result of high population density can result in new technologies through innovation that effectively address degradation problems. Porter (1979) collaborated with anthropologists to research the food security risks in East Africa, and used a cultural ecology approach. Grossman's (1984) study on the peasant systems in highlands of Papua New Guinea and Bassett's (1988) work regarding peasants and herders in the Ivory Coast are examples of political economy studies that highlight a more complex system of environmental management

than those

interaction

Pe

from the

of enviro

environm

political

1987)

human

analysi

between

enphasi

first cl

enviro

speci

enphasi

inter-

Fig-

or de

than those offered by linear conceptualizations of human-environment interactions.

Political ecology emerged as a critique to less complex analyses and from the limitations of others. It offers an alternative approach to the study of environmental issues still within the broad position of human-environment interactions. Campbell and Olson (1993) conceptualize political ecology in the KITE model and rely on Blaikie and Brookfield's (1987) definition of the term. "Political ecology addresses the human/environment linkage as a 'dynamic relationship' to be understood by analysis of specific issues in defined regions within which the linkages between societal and environmental factors over time and space are explicitly examined" (Campbell and Olson 1993: 13-14). As noted in my first chapter, the four points to the KITE model (political, economic, environmental, and socio/cultural) represent key categories within which specific factors can be associated, and linkages (or interactions) can be made explicit across scales and over time.

Political ecology moves beyond the limits of environmental determinism, beyond Malthusian and Boserupian positions regarding human population impacts upon the natural environment, and beyond the deification or defiling of technology. Political ecology posits a "*diachronic* set of

interaction

and spatial

reflecting

constraint

over time

The

singular c

embrace a

identified

contextual

reflects a s

Pol

necessarily

environme

A converg

occurring

ities beg

ionalities

interactions in which existing conditions are placed in a broader historical and spatial framework ...[which] recognizes that within-region conditions reflect not only the local pattern of interaction but also the opportunities and constraints arising from beyond region", and these spatial interactions vary over time (Campbell and Olson 1993: 5).

This type of heuristic device allows researchers to move beyond singular causality and pose answers to human-environment questions that embrace a complex nexus of dynamic variables. Strategic variables are identified and modeled in order to understand multiple linkages, and contextual information. Political ecology perceived this way, however, reflects a structuralist position (Blaikie 1995).

Political ecology, as an evolving theoretical approach does not necessarily overlook the more interactionist position specific to studies in environmental perception and the social and cultural construction of nature. A convergence between the structuralist and interactionist positions is occurring in the political ecology literature (Rocheleau 199; Blaikie 1995) as studies begin to emphasize the plurality of perspectives, definitions and rationalities different land users and policy makers hold.

T
pine. m
n. m. b
part of
through
they an
d. inter
and P
count
man
Brig
four
for
fores
last
and
area
not

Philippine Forests

Forest Types

There are six major forest types found in the Philippines: molave, pine, mangrove, beach, mossy and dipterocarp. Molave forests (*Afzelia rhomboidea*, *Intsia bijuga*, *Pterocarpus indicus*, *Serialbizia acle*, *Vitex parviflora* and *Wallaceondendron celebicum*) were once widely distributed throughout the Philippines, but because of their utility as hard-wood species, they are no longer abundant. The remaining patches are often mixed with dipterocarps. The pine forests (of which only two species exist: *Pinus kesiya* and *Pinus merkusii*) are found at high elevations in only a few regions of the country, and are used in the mining industry and for construction. The mangrove forests (*Rhizophora mucronata*, *Rhizophora apiculata*, *Bruguiera gymnorhiza*, *Bruguiera parvaflora*, and *Ceriops tagal*) are found along the salty, coastline tidal flats and have multiple uses from sap for vinegar and wine to construction material. The pine and mangrove forests together cover approximately 370,000 hectares, 1.23 % of the total land area. Beech forests (characteristic species include *Terminilia catapa* and *Casuarina equisetifolia*) are found along sandy shores and in low-lying areas above the high tide line. They are used primarily for firewood, and are not very extensive. Mossy forests (*Querus* spp. and *Podocarpus* spp.) are

found in

and de

margin

margin

the tot

Plum

Diplo

the m

fores

Seco

11.3

or 3

255

the

in

of

P

the

s

found in mountainous regions occupying ridgelines. They are often stunted and deformed due to harsh climatic conditions, and are considered sub-marginal for timber production. Mossy forests, along with other sub-marginal forest areas cover approximately 1.68 million hectares, 5.6 % of the total land area (Gacoscosim 1995;, FAO 1989).

Dipterocarps make up by far the most extensive forest type in the Philippines. Dipterocarp species, such as *Dipterocarpus grandiflora*, *Dipterocarpus gracilis*, *Shorea negrosensis* and *Hopea philippinensis*, are the main timber species being logged. Two classifications of dipterocarp forests exist: old-growth, and secondary-growth (in logged-over areas). Secondary-growth dipterocarps cover approximately 3.41 million hectares, 11.37 % of the total land area: Old-growth approximately 980,000 hectares, or 3.27 % of the total land area (Gacoscosim 1995), although a USAID assessment on Philippine natural resources from 1989 states that “based on the comparison of imagery and estimates of the volume of illegal felling, informed specialists think it is possible that as little as 700,000 ha of old-growth forest remain” (1989: A-15). Concern over deforestation in the Philippines is primarily focussed on the highly valued dipterocarp species, though recently alarm has also been raised over the destruction of mangrove swamps, which are being converted to fish ponds and prawn farms.

For

regarding

large-scale

1. Boyce

sum of the

20 million

original e

Philippine

(1991) or

sources.

% in 198

22% of t

old-grow

in the mi

1959-10,

1995).

Forest Decline

Forest cover in the Philippines has declined drastically. Estimates regarding the extent of forest cover in the Philippines prior to the advent of large-scale, mechanized logging practices in the mid-1900s, range from 60 % (Boyce 1993; Sajise and Omegan 1990) to 70 % (Kummer 1991) at the turn of the century. Old-growth dipterocarp forests may have once covered 20 million hectares, two-thirds of the country's total land area. Whatever the original extent of forest cover may have been, deforestation in the Philippines has occurred on a large scale and at a rapid pace. Kummer's (1991) critical analyses of Philippine forest cover, derived from multiple sources, estimates forest cover at 50 % in 1950, and between 25.9 and 27.1 % in 1980. A more recent publication places forest cover at approximately 22 % of the total land area, or 6.5 million hectares (FAO 1993). Decline in old-growth dipterocarp forests is estimated as being from 10 million hectares in the mid-1950s to 2.8 million hectares by the early 1980s (World Bank 1989:10, Gacoscocsim 1995) down to 988,000 hectares in 1988 (Gacoscocsim 1995).

Ph...

sl...

reso

defe

used

pl...

draw

the P

topi

defe

there

(199)

though

legge

who a

of der

Causes of Deforestation in the Philippines

Debates rage on about the “driving forces” of deforestation in the **Philippines**. Neo-Malthusians decry population growth, while neo-Marxists **claim** inequitable distribution of power, access and control over natural **resources**. Most knowledgeable observers embrace a pluralistic view of **deforestation** which includes multiple explanations. Political ecology can be **used** as a tool for understanding the multiple variables associated with a **pluralistic** view. In the remainder of this section: I employ this approach, drawing on the literature, in order to explain the causes of deforestation in the **Philippines**.

David Kummer states that “a clear-cut summary of the causes of **tropical** deforestation is not possible. The major problem is that **deforestation** is the end result of a process which occurs at many levels and there are numerous connections between and within the various levels” (1991: 93). The identification of the actors in this process is possible, though. “The four main agents of forest destruction ... are agriculturists, loggers, ranchers, and fuelwood collectors. These four groups are the ones who actually cut down the trees. It is important to note that all four agents of deforestation require access to the forest and in almost all cases this is

pro

ne

acti

imp

Hist

inte

comm

of A

hist

car

Bl

the

are

to

de

19

are

the

of d

provided by road networks. In short, it appears logical to expect road networks to be part of the deforestation process” (Kummer 1991: 93).

The actions of forest destroyers do not occur in a vacuum. Their actions must be placed within historical and political contexts. These two important components of political ecology are addressed by Blaikie (1994). Historical context as an element in the study of human-environment interactions is one of eight central elements identified by Baikie. “The complex interactions between environment and society are put in the context of local history and locally specific ecologies. Therefore it is likely that long historical periods of time have to be considered,” (1994: 6). A second central component of political ecology, as identified by Blaikie, is the state. Blaikie explains, there is great variety in the ways in which states manage their local resources ... “where forests are demarcated, whether local users are excluded, where charcoal permits are issued to particular people and not to others” (1994: 9) ... and so on. Blaikie uses a “chain of explanation” as a device that links the many “levels, scales, and spaces in political ecology,” (1994: 11) when addressing the particular political, economic, social and ecological variables to a specific issue. In similar fashion, I address a number of political variables in a historical analysis to understand one aspect of deforestation in the Philippines.

US

Philippine

destruction

companies

1990s as

[US] colon

1946), ha

future tim

of US col

favorable

Philippin

resource

timber bo

concessio

not did th

1993). P

exploitati

Prapetto

the years

productio

US colonialism, its legacy, and the forest policies of the independent Philippines have played major roles in contributing to the country's forest destruction. Porter and Ganapin (1988) criticize American lumber companies in conjunction with the Philippine landowning elite in the early 1900s as the initial perpetrators of rapid forest decline. "Throughout the [US] colonial period and the early years of independence [beginning in 1946], hardwood forests were logged without any requirement for insuring future timber harvests" (Porter and Ganapin 1988: 25). "In the early years of US colonial rule, . . . logging concessions were dispensed on 'ruinously favorable terms'" (Boyce 1993: 235). Furthermore, "after independence, the Philippines' new government viewed exploitation of the country's forest resource as a good way to raise desperately needed revenues, but as the timber boom gained momentum, the government was unable to supervise concessions effectively or enforce logging regulations," (Repetto 1988: 59) nor did they seem interested in doing so (Robles 1993; Vitug 1993; Yabes 1993). Postwar demand in the US and later in Japan reinforced the exploitation-for-economic-growth position of the Philippine government (Repetto 1988; Porter and Ganapin 1988). Hurst (1990: 173) states that in the years after independence, "US corporate interests had tight control over production, and the landed class provided political leadership." US interest

in the

with the

Intern

linked

1988)

with p

short

The s

and d

most

and

will

prod

sem

198

rem

200

2 pe

since

in the Philippine timber industry can be seen up until the 1970s and 1980s with the major multinational corporations Georgia Pacific, Boise Cascade, International Paper, Weyerhaeuser, Findlay Miller and Andres & Soriano linked to local Philippine subsidiaries (Boyce 1993; Hurst 1990; Boado 1988).

“In the elite democracy before martial law [1972], logging was linked with political favoritism and corruption, and timber licenses were granted for short terms varying from one to ten years” (Porter and Ganapin 1988: 26). The short term lease, the foreign interest in exploiting the forest resource, and the lack of political concern for the resource allowed for “the norm of most forest operators to 'cut and get out'” (Boado 1988: 174). Between 1960 and 1971, the forest area under logging concessions nearly doubled from 5.5 million hectares to 10.6 million hectares (Repetto 1988). Likewise, log production in cubic meters increased from 6,596,485 to 8,416,099 for those same years, peaking in FY 1968-69 at 11,583,283 (Porter and Ganapin 1988). “By the late 1960s, there was a proliferation of timber companies, rampant over-cutting, excessive export of raw logs, [and] an underdeveloped wood-processing capability . . . At this time the rate of deforestation reached a peak of around 150,000 ha per year” (FAO 1993: 124). Official statistics since the mid-1970s show a steady decline in log production, but the pace of

forest

terms

1990s

Forest

when

Philipp

Philipp

import

their

Vinag

govern

goal

finished

govern

new

A

assume

After

involved

forest destruction, many argue, did not follow the same downward trend in terms of hectares cleared (Boyce 1993; Repetto 1988; Vitug 1993).

Philippine mahogany was introduced to American markets in the early 1900s by George Ahern, the first American director of the Bureau of Forestry in the Philippines. US markets dominated exports prior to 1920, when Asian economies began to boom and open up their markets to Philippine timber. Between 1920 and 1960 Asia was the largest importer of Philippine hardwoods. By the 1960s, Japan alone had become the largest importer of tropical forest products, including saw timber and round logs for their housing and furniture industry and pulp wood for paper products, (Vitug 1993). In the late 1970s through the 1980s the Philippine government pushed for more wood industries based in the Philippines. The goal was to stimulate local and national economies in order to export finished or semi-finished timber products rather than raw timber. While the government has passed log bans, cutting is still driven by illegal export of raw timber, and by the Philippine wood industry itself (Robles 1993).

Anderson (1987: 251) claims that deforestation in the Philippines "assumed a unique form and velocity with Marcos' martial law regime. . . After declaring martial law (in 1972), he accelerated direct and indirect involvement of the government in the economy to pursue resource

exploitation, consolidation of political power, and the restructuring of a long-entrenched oligarchy. . . Marcos opened the Philippine economy to rapid exploitation. The commercial orientation greatly accelerated the forest destruction apparent today.” The Marcos agricultural development policies included expansion and intensification into upland and coastal zone areas which were “expected to contribute their share to the GNP” (Anderson 1987: 251). This expansionist posture together with Marcos’ cronyism and corruption dealt a double blow to Philippine forests. Boyce (1993: 233) [citing Hurst (1990: 187) and Porter and Ganapin (1988: 27)] states, “The allocation of logging licenses in the Philippines has long been a vehicle for political patronage. During martial law, there were reportedly ‘two ways to obtain a timber concession: either by knowing the President or knowing someone in the Wood Industries Development Board.’ Lucrative concessions were ‘gobbled up by cronies of Marcos.’” The government began to officially acknowledge the decline of the forest resources in 1975. “Presidential Decree 428 brought in a ‘modified selective log export scheme’, which was to apply to ‘deserving and responsible’ loggers on a ‘selective and limited’ basis” (Hurst 1990: 175). The result was massive trafficking in illegal logging primarily, if not wholly, by Marcos’ cronies. “Ernesto Maceda, who became Minister of Natural Resources after the

February

million v

associat

co

1

9

c

h

c

l

e

h

a

s

From

Boys

fore

Th

of p

degr

February 1986 revolution, estimated that between 1974 and 1980, US \$960 million worth of timber was smuggled out of the country by friends and associates of President Marcos" (Crewdson 1986: 21 in Boyce 1993: 234).

"The concessionaires most favored by Marcos obtained control over the bulk of the forest area under concession. In 1977, one third of the 250 companies with leases made nearly 90 percent of the allowable cut. The average size of a concession was 30,000 ha in 1977 and 36,000 ha by 1982, but logging companies controlled by Minister of Defense Enrile obtained four and five leases, each with 80,000 to 90,000 ha. . . During the Marcos era, most mayors in municipalities with exploitable forests had financial interests in the concessions located there, through payoffs or royalties. They profited from allowing illegal loggers to operate and concessionaires to ignore the legal requirements for sustained yield logging and limits on allowable cut. The Philippine military also protected illegal logging in return for payoffs. Some officers had part ownership in concessions themselves and were believed to have participated in illegal logging and log smuggling" (Porter and Ganapin 1988: 27-8).

From this historical perspective we understand more fully the title of Boyce's (1993) paper, "Public Resources and Private Interests."

By the time the Aquino administration came to power, the country's forest cover was down to between 21 and 27 % of its total land area.

Though illegal logging practices remained, this period marks the emergence of policies directed at preserving the remaining stands and reclaiming degraded lands with a view toward future economic gains in a renewable

resource

new emp

finally a

help

aphit

(

1975

black

fract

2005

again

fract

Mar

We

me

Fr

de

Co

g

20

resource. Shallow rhetoric about sustainable exploitation was replaced by a new emphasis on preservation and reclamation. The Philippine government finally admitted that the once-abundant forest resource, which was supposed to help fuel the nation's economic development, was no longer available to exploit on a large scale.

Government policies, corruption and greed beginning in the early 1900s under US colonial supervision, legal and illegal logging practices, and a lack of policy enforcement all contributed to the declining Philippine forests. Agricultural practices, population growth, and migration into upland areas also have their place in explaining Philippine deforestation. Here again, government policies played an important role in the conversion of forests to other land uses by local people. Mentioned already were the Marcos policies emphasizing agricultural expansion and economic growth. We can go as far back as the Forestry Act of 1904, which “aimed to encourage rational exploitation of the forests by installation of an appropriate regulatory environment, to prescribe fees and taxes, and to define the parameters for conversion of forest land to agriculture ... Conversion of forest lands into farms accelerated rapidly in the 1950s as a growing population increased the demand for land to produce food and other agricultural crops ... The deliberate removal of forests was considered

2200

2200

2200

2200

2200

2200

2200

2200

2200

2200

essential to national development” (FAO 1993: 123). Repetto (1988: 65)

echoes this:

“Since the early 1900s, government policies that have distributed public forest land to the landless have accelerated deforestation. Through the 1960s, the government encouraged settlements in virgin forest to broaden the economy’s agricultural base. When population remained relatively small, no dramatic damages ensued, but as population growth increased after World War II, pressures on forest reserves became increasingly severe. The single most important such program has been the 'land for the landless' program established in the 1950s and 1960s. From 1959 to 1963, this policy alone caused the conversion of 100,000 hectares of forest per year for farming. The Manahan Act and the Homestead Act, which also allowed the conversion of occupied forests to agriculture, combined to convert as much as 200,000 hectares per year over those decades.”

So, though many correctly link local people and population growth with the conversion of forests to agriculture as a primary cause of deforestation, we must understand this in the context of government policies that advocated and promoted conversion under an expansionist, economic-oriented position.

This said, we must acknowledge the role played by local people in deforestation. Again, figures in the literature are widely reported, but can only be thought of as rough estimates. Repetto remarks that some 80,000 to 120,000 families have cleared an estimated 2.3 million hectares of forest

and bus

and po

cannot b

that "ele

nam gra

Beado

were us

over fo

Kamm

diffic

comm

1991

main

Gara

dest

land

amp

tech

che

land, but that the spread of shifting cultivation in the Philippine is a result of both population growth and a failing economy (1988). Upland farmers cannot be cast as the sole villains in deforestation, however. Boyce argues that "clearing for cultivation typically follows the logging of the land, and in turn grazing often follows cultivation" (1993: 238). This is echoed by Boado: "After sustaining great damage during logging, logged-over forests were usually left unmanaged ... Most *kaingins* were carried out in logged-over forests, destroying the already damaged trees" (1988: 170), and Kummer: "In areas where agriculture has followed commercial logging, it is difficult to identify a single cause of deforestation ... The process of commercial logging and expansion of agriculture appear to go hand in hand" (1991: 63).

Pioneer migrants, particularly the landless are often perceived as the main culprits of forest land to agricultural land conversions. Porter and Ganapin roughly estimate that twenty-five percent of the total forest destruction is a result of swidden agriculture practiced by former lowland landless migrants, "driven into uplands by landlessness and the dearth of employment opportunities ... [who] have not followed cultivation techniques suitable to upland conditions" (1988: 28-29). The World Bank cites this particular group of people, too, stating that, "They cannot afford to

by

by

1

the

the

the

the

the

the

the

the

the

the

the

the

the

the

the

the

the

deploy conservation technologies, nor can they envisage investments with pay-offs in the long-term future” (1989: 20).

The upland areas have been home for thousands of years to many different cultural groups who established lifestyles, modes of agricultural production, and control over specific areas long before the Spanish invaded the Philippines in 1521, long before Americans indoctrinated Filipinos to a particular form of democracy, and long before an entrenched legal system dictating land tenure and resource access was in place. Upland areas are now home to an estimated 18 million people or 30% of the national population (World Bank 1989). “An outside estimate, which takes only the population of the 69% of upland municipalities that lie entirely within mountainous areas, and further discounts for an estimated 25% of urban or other A & D land in these municipalities, concludes that forest land occupants in 1980 totaled 8.2 million (about 10.8 million [in 1989])” with an estimated annual growth rate of 2.6 % in the upland areas in 1975-80 (World Bank 1989: 22). Some 3.5 - 4.5 million people, however, are indigenous to the upland areas of the Philippines (Broad and Cavanaugh 1993). How many of these upland people are migrants is unknown. Benitez (1990) estimates that 29% of the total upland population is a result of migration from the lowlands.

Ac

provided

governm

Lack of

specula

Y

growth

define

social

emph

clear

absen

Pop

with

sys

and

pro

con

w

an

Access to upland forest lands for these land-hungry settlers was provided by logging roads. Arresting people's entry into these area by the government and the timber companies was nearly impossible (FAO 1993). Lack of manpower and finances could not prevent the mass of landless and speculator migrants into areas opened up by logging companies.

Many, under a myopic view, argue the primacy of either population growth or of mismanagement and government corruption in Philippine deforestation. However, these are simplistic views about a set of complex, social, political, economic and historical processes. Boyce (1993: 239) emphasizes that “the land hunger which drives impoverished cultivators to clear the forest is an outcome of the land ownership concentration ... and the absence of sufficient non-agricultural employment opportunities ...

‘Population pressures’ in the Philippine uplands can be understood only within this political and economic context.” Kummer’s concept of “synergism” is most appropriate. Population growth in the uplands, slash-and-burn agriculture, legal and illegal logging, and the conversion of forests promoted by government policies (all happening over time) result in a complex nexus of cause and effect. Political ecology offers a framework with which to make sense of the multiple variables and their linkages to one another in order to understand more completely the causes of deforestation.

As stated above, by the time of the Aquino administration and the 1987 Constitution: (1) forest resources had been severely depleted, (2) land degradation was clearly evident, (3) the ecological, economic, and social costs were accruing, and (4) population growth and migration into upland areas were rising. The government's response was a strengthening and increased emphasis on social forestry programs which began in the early 1970s.

Social Forestry and Participatory Natural Resources Management

Social Forestry

Social forestry, as practiced and promoted by foresters and natural resource specialists, has posed an alternative method to long-standing, traditional, western (US and European) forest management practices, with particular emphasis on people together with trees. Social forestry involves local, often rural, people in growing trees not only for their own use, but for other purposes as well (e. g. industrial and environmental). Trees are often planted along roads, field boundaries, near homes, and in small woodlots, as opposed to large scale industrial tree plantations (Gregersen, et al. 1989). Motivating large numbers of rural people to plant trees which provide wood fuel, timber and income is the goal of social forestry. Social forestry,

100

100

100

100

100

100

therefore, attempts to influence people's behavior toward trees; often an overlooked variable in conventional tree planting programs (Cernea 1991).

Two Filipino authors, Filomeno V. Aguilar, Jr. and Perla Q. Makil, writing in 1982, at the time the Philippine government initiated its Integrated Social Forestry Program, also describe social forestry.

Aguilar, Jr. (1982: 3-4) states:

“social forestry . . . posits that people are an integral part of the upland ecosystem. Forest dwellers are assumed to have a symbiotic relationship with the other elements of the environment. Simply put, it holds the view that people and trees can coexist in a way that one would be able to sustain the other, and vice-versa . . . it is the overall aim of social forestry to reduce the disequilibrating stresses on upland residents. The basic and immediate needs of the people are to be met, and through such socioeconomic upliftment it is hoped that uplanders would be predisposed to cooperate in preventing further destruction and in hastening the process of physical regeneration.”

Makil (1982: 1-3) remarks:

“Social forestry . . . departs from and modifies the “traditional” outlook concerning forestry, both as a discipline and an activity. . . Social forestry seeks to provide the missing dimension in [the] traditional orientation. It advocates that consideration be given not only to the forest per se, but also to forest users, such as the so-called cultural communities who live in the uplands and the landless farmers who depend on the agricultural advantage these lands offer for their livelihood and survival . . . It implies that forests and people should be concerns of equal importance in the formulation of forest plans and policies because they coexist for mutual survival and growth. It implies,

1

2

3

4

5

6

7

8

9

10

11

12

further, that in the creation and execution of these policies, their social consequences - - evaluated from the viewpoint of the people affected by them - - cannot be disregarded. It advocates sharing with the people the management of forest resources in a manner, at least, partly designed by them. It insists, further, that they share in the benefits derived from them. With these implications and concerns, social forestry promotes the nation's goals of 'development,' 'public welfare,' and the 'national interest.'"

The practice of social forestry has been in existence for centuries with rural farmers planting, managing, and using trees in combination with other livelihood practices (Gregersen, et al. 1989). The concept of social forestry as proposed by international foresters, however, dates at least back to 1973 in India, where social forestry was advocated in the "Interim Report of the National Commission on Agriculture and Social Forestry" (Cernea 1991)

It is arguable that the concept of social forestry in scholarly realms predates 1973. Jacob Westoby writing in 1968¹¹ claimed, "forestry is as much about people as it is about trees" (Westoby 1968). He goes on to say, "[Today's forester] will be much more concerned with what I have loosely

¹¹ Dr. Michael Gold, a Michigan State University professor in the Department of Forestry, claims that Westoby's May 1968 paper for the Centennial Year of the University of California, Professional Schools Programme was actually based on writing he published in 1962. From personal notes taken during Fall 1996 semester in Dr. Gold's course, "Forestry in International Development."

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

1962

termed social forestry, the management of the forests to provide an expanding flow of those physical benefits and social values which the forests are capable of generating for the community, and he must seek to do this at a minimum cost for the community” (Westoby 1968).

Though the concept of social forestry can be linked as far back as 1962 with Westoby’s writings, and its professional application to 1973 in India, it really only came into vogue with professional foresters worldwide after the 1978 World Forest Conference in Jakarta, Indonesia. At this conference, Jacob Westoby delivered a scathing and cynical reproach to what he saw as expansionist, exploitative forestry, driven by the developed countries, which was destroying the world’s tropical forests and leaving local communities in the developing countries in economic, environmental, and social disrepair.

There are a number of reasons for the advent of an alternative to industrial forest management, with its emphasis on commercially attractive trees and large-scale, forest-based enterprises, in which a forester’s role was protection of the resource against such enemies as “forest occupants.” Gregersen, Draper, and Elz (1989: 6-7) attribute the reorientation of forestry away from conventional forest management toward social forestry to (1) the rapid spread of deforestation in the tropics, (2) the publication of accounts of

22

23

24

25

26

27

28

29

30

31

32

33

34

35

the worldwide fuelwood crisis, and (3) the failure of conventional forestry to consider local, rural people's interests, needs and participation. Little (1994: 252) identifies the change as a response to forestry departments "perceived locally as sanctioning organizations that handed out fines and punishments to forest trespassers and offenders." As the scope of deforestation, land degradation, and the associated environmental, economic, and social consequences grew, it became evident that forestry departments in developing countries, operating under traditional western (US and European) forestry practices, lacked the capacity and the resources to carry out the large scale reforestation and tree planting necessary to reclaim deforested areas, and to supply the increasing demand for forest resources from expanding populations. The dilemma for national governments and forestry departments became one of conservation versus production or development, and how to integrate the two (Little 1994).

While industrial forestry was not completely abandoned, one response to this challenge was social forestry, which seeks to utilize local people and communities as producers and users of forest resources in reforestation activities to balance the lack of capacity and resources on the part of forestry departments in developing countries. Social forestry also attempts to integrate rural economic development with conservation programs. Cernea

(1991: 302) states that there are two tasks for forest policies: “to slow down deforestation and to intensify tree planting inside and outside forests.” He also argues the need for massive rural population participation to counter current rates of tree consumption and destruction and that “the profound behavioral changes to be elicited on a gigantic scale among farmers through social forestry are a shift from wood gathering behavior to tree cultivating behavior.” Social forestry attempts, then, to influence a key variable, people’s behavior toward trees. This, however, assumes local people have no prior management skills; that they are all simply consumers of forest resources. This is an erroneous assumption, and there is evidence from the Philippines and other countries which supports this. Olofson (1996) discusses the traditional conservation practices of the sacred groves of the Aborlan Tagbanuwan on Palawan. Anderson (1990) describes the “subtle forms of management,” used by the Amazonian ‘caboclos’ or ‘ribeirinhos,’ descendants of Amerindians.

Just as the consequences of deforestation are multiple, involving social, political, economic, and environmental dimensions, so the goals of social forestry are multiple, attempting to arrest deforestation, reclaim denuded areas through reforestation, and solve the multiple problems associated with deforestation. The goals include, though are not limited to,

meeting the needs of local people, uplifting rural peoples' economic well-being, reclaiming denuded watershed areas, conserving the biodiversity of natural forest environments, arresting downstream impacts of soil erosion (the siltation of reservoirs and flooding of lowland areas), providing fuelwood and fodder for local people, and maintaining agricultural productivity.

Participation

A central tenant of social forestry is the concept of participation. The term "participation" has been used quite loosely in the development and environment circles, to the point where it is often simply rhetoric and jargon. A number of authors, however, have struggled to define and develop concepts and practices of participation to benefit environment and development initiatives.

Participation, as it relates to development (and now development and environment) issues, can be traced back to the 1950s with field workers and social activists responding to the many failed development projects implemented from a "top-down" position. The alternative they envisioned to the traditional "top-down" form of development was a participatory approach, often referred to as "bottom-up" or "grassroots" (Rahnema 1992).

Oakley (1987 in Rocheleau 1991) identifies two basic forms of participation: those that advocate "mobilization" and those that advocate "empowerment". Anisur Rahman (1993) and Paulo Freire (1990) have popularized the "empowerment" perspective introducing the concept of "conscientization" as a means to social justice (Rahman regarding development; Freire regarding education). *The World Bank Participation Sourcebook* (1996) embodies the "mobilization" perspective.

Refinements to the concept of participation led to "popular participation" and "stakeholder participation" (Rahnema, 1992; The World Bank 1996). "Popular participation" focuses on the poor and the oppressed, while "stakeholder participation" includes donors, planners, and other groups along with the rural poor and oppressed. "Collaboration," in some circles began to replace or help define the term participation (The World Bank 1996; Axinn and Axinn 1996). Still others distinguish "promotional" approaches from "participatory" approaches arguing that some participatory approaches are actually only promotional ones which hold the belief that rural people need to be educated about the importance of the project, and that "extension and training programmes are needed to convince, teach and motivate rural people" (Carter and Granow 199?: 4).

The approach outlined in The World Bank Participation Sourcebook is a promotional approach. While the approach emphasizes collaboration between project sponsors, designers and "local social systems," it also promotes a "behavior change dimension" whose risk of failure can be reduced through "listening and consultation." This leads to "social learning," "social invention," and "commitment." In order to "build the capacity" of the poor to act, organizational and financial components are necessary. The end result of "participation" in The World Bank method is social change.

Hoskins (1994) offers a critique of the "promotional" or "social change" approach. Referring to participation in forest and tree management, he argues "consciousness-raising elements of projects on the importance of trees are often ineffective. The real reason for a lack of local participation is that outsiders misperceive local constraints to and attitudes towards participation. Planners and donors need to have more confidence in local people's ability to participate in all stages of activity, planning implementation and monitoring ... Only a feeling of ownership and a guarantee of benefits will encourage local communities to take on long-term forest and tree management." While I agree with Hoskins' sentiments, he identifies tenure and "confidence in local people's ability to participate" as

the c

ackn

envi

loca

mak

frag

the

ten

opp

op

to

en

Pr

Co

fr

P

a

s

the only two "local constraints to participation." This narrow view fails to acknowledge an additional constraint: the possibility of divergent environmental perceptions and land and resource use practices between the local people and the institutions promoting forest and tree management.

Rahnema (1992: 128) argues that "organized forms of participation or mobilization either serve illusory purposes, or lead to superficial and fragmented achievements of no lasting impact on people's lives. Even when these seem to be beneficial to a particular group or region, their effects remain inevitably limited, in time and space, sometimes even producing opposite effects in many unforeseen and unexpected areas."

"Popular participation," with its focus on the impoverished and the oppressed, as initially promoted by development practitioners, was intended to accomplish four functions: political, instrumental, social, and cognitive ends. The political objective was to "empower the voiceless and the powerless," (Rahnema 1992: 121). Rahman (1993) proposed "conscientization," a self-reflected awareness, as means to these ends. The instrumental function was the "re-empowerment" of development practitioners (e.g. World Bank development "experts" and government agency personnel such as DENR foresters) to devise new alternatives to the failures of conventional development strategies. The social purpose was to

infuse new life into the development discourse by providing a new construct around which all could rally to end poverty once and for all - - the original rallying cry of the World Bank under Robert McNamara (George and Sabelli 1994). Finally, in cognitive terms, and most relevant to my thesis:

"participation had to regenerate the development discourse and its practices, on the basis of a different mode of understanding of the realities to be addressed. It expressed the belief that the cognitive bases of conventional development not only belonged to an irrelevant *episteme*, representing an ethnocentric perception of reality specific to Northern industrialized countries, but were also no longer able to serve the objectives of a sound development. They had to be replaced by a different knowledge system, representing people's own cultural heritage, in particular the locally produced *techne*. Popular participation was to carve out a new meaning for, and a new image of, development, based on different forms of interaction and a common search for this new 'popular' knowledge" (Rahnema 1992: 121).

The aim is to embrace a plurality of "perceptions of reality," to replace the myopic traditional perspective with a new 'popular' knowledge system. Not only are their multiple knowledge systems (ways of knowing and understanding reflective of many factors: culture, life experiences, education, employment, social status, and so on) redefining development discourse, there are multiple "realities" through which people relate to and understand their environment, from local to global scales. Blaikie (1995) advocates this in the political ecology approach for developing countries.

Blaikie writes: "Landscapes and environments are perceived and interpreted from many different and contested points of view which reflect the particular experience, culture and values of the viewer ... Only by acknowledging multiple views, understanding the politics of how actors present their views and pursue their projects can current scientific and conservation thinking be literally brought down to earth" (1995: 209).

At the level of development discourse, it is argued there are multiple knowledge systems. From this has come the acceptance, by some, of indigenous knowledge (IK), and the demand for "third world voices" defining and developing strategies to deal with their own environment and development problems (Croll and Parkin 1992; Banuri and Marglin 1993; Bennagen and Lucas-Fernan 1996). Even the World Bank has acknowledge diverse voices in developing countries (World Bank 1995), though how much power the World Bank gives local people to define their own future is still debatable. Unfortunately, the discourse of multiple knowledge systems is often presented as a dichotomy. There are indigenous or third world voices and Western voices. The dichotomy parallels the North-South concept of developed and underdeveloped nations. This dichotomy masks the diversity of "voices" and knowledge systems among indigenous or third world people.

Social forestry programs are an improvement over conventional forest management systems insofar as they attempt, to varying degrees, to incorporate local people into forest management and reforestation projects. Nevertheless, social forestry is not exempt from problems. The practice of local participation, a key component in social forestry, is not uniform. It ranges from near full and equal participation of local people in all aspects of a project (e.g. Philippine communal irrigation projects in the 1980s - - see Gunasekara 1996) to merely the consultation of local people about a pre-determined project. This is not to say there is a dichotomy of participation in practice, but a continuum. Beyond the plasticity of the term, participation is a “time consuming process, [and] does not lend itself easily to the institutional environments of ministries, donor agencies or even some larger NGOs” (Little 1994: 353). “Lack of participation by intended beneficiaries has resulted in social forestry programs falling short of their goals. Effective participation of the rural poor and landless has been a goal of many, but has often not been achieved” (Gegersen, et al. 1989: 131). In addition, forest protection and management and reforestation “is difficult, if the local population does not perceive a crisis or threat” (Little 1994: 353). In other words, the success of a social forestry project is dependent, in many ways, upon local people: how they view the problem, how they perceive its

solutions, and how integrated they are in the design and implementation of the solutions.

Efforts have been made by the DENR/FMB, by research institutions doing outreach to local communities and by NGOs involved in Philippine development to incorporate effective participation measures with the goal of establishing successful projects. Even with the most effective participatory approaches we see projects fail. This thesis is premised on the hypothesis that a poorly understood reason for the relatively disappointing record of social forestry and participatory development is differences in environmental perception.

Environmental Perception & The Social Construction of Nature

Environmental perception, as a research focus, finds its roots in several traditions of academic inquiry. Nearly all literary reviews of environmental perception studies in geography trace the subject back to Carl Sauer and the Berkeley school of landscape studies in cultural geography (Ley 1981; Rowntree 1996). Environmental perception studies are associated with the humanistic movement of the 1960s, in general, and with behavioral and phenomenological orientations, specifically.

The Berkeley school of cultural geography is characterized by "an historical orientation, an emphasis on man's agency on the physical environment, a preoccupation with material artefact, a rural and preindustrial bias, a heavily empirical field tradition, and a tendency to non-cumulative unique studies," (Ley 1981: 250). Humanism developed as a reaction to the "determinism, economism, and abstraction of the early quantitative publications [which] seemed to abolish human intentionality, culture, and man himself," (Ley 1981: 250). Humanism, with its philosophical underpinnings in phenomenology, existentialism, and pragmatism, replaced the concept of culture "as superorganic, as a conceptual *a priori*," with one in which culture is seen as a construction of men and women, by "highlighting the distinctively human components of mind, consciousness, values, or more briefly perception . . ." (Ley 1981: 150). Ley (1981) presents environmental perception from these origins, not unlike Rowntree (1996), who also traces geographic interest in environmental perception beginning with Carl Sauer and the cultural landscape.

It was Sauer's Morphology of Landscape (1925) that moved geographic inquiry beyond environmental determinism to see humans as active agents in the human environment equation. Sauer eventually viewed landscape study as one of many "conceptual tools in a humanistic cultural

geography" (Rowntree 1996: 133). After World War II, another humanistic geography emerged characterized by historical and interpretive methods.

While landscape was central to these methods, it was used in two ways: (1) to emphasize the material and visual details of the landscape, and (2) to stress the "cultural perception and visual preferences - the sentimental and emotional, some would say - of our surroundings" (Rowntree 1996: 134).

From these postwar foundations emerged perception studies which sought to understand how people cognized and responded to their environment. John Kirkland Wright is credited with being the founder of landscape studies which emphasized how people and groups felt about and perceived their environments. Wright's concept of *geosophy* (1947), or "the study of colloquial knowledge from all or any points of view" (Cosgrove 1994), provided the foundation for environmental perception within geography.

From Wright, David Lowenthal continued to promote perception in landscape studies with a series of articles in the 1960s (Lowenthal 1961, 1968). Lowenthal interpreted landscapes as "texts" in order to show how landscapes provide insights into cultural and social values (Rowntree 1996).

Gold and Goodey (1983), in a somewhat overlapping argument, identify environmental perception with the broad theoretical perspective of behavioral geography. Gold and Goodey propose that "new lines of

behavioralist research in geography," were inspired by the "geosophy of Wright (1947), Lowenthal's (1961) explorations of the geographical imagination, Kirk's (1963) recognition of the decision-making significance of the 'behavioral environment', White's work (e.g. 1964) on natural hazards, and Gould's monograph (1966) on 'mental maps'." They also argue that these writings were "underpinned by subjective conceptions of the world in understanding human behavior" (1983: 579). They continue, "It was argued that a fuller understanding of environmental perception, and of the processes that informed decision making, could help modify the underlying behavioral assumptions of spatial theory and thereby improve its explanatory and predictive powers" (Gold and Goodey, 1983: 579).

While not mutually exclusive from one another, the views expressed by Ley, Rowntree and Gold and Goodey regarding environmental perception as an element in geography indicate, to some measure, the disparate voices in geography, and the multiple uses of environmental perception as a distinct and coherent topic of geographic inquiry. Perhaps Jody Emel (1994: 166) states it most succinctly:

"Perception studies in geography stem from several traditions. Work in psychology and decision sciences modifying neo-classical economic models through such notions as 'bounded rationality' and 'satisficing behavior' had a strong

influence on geographical studies of environmental hazards in the 1960s and 1970s. Apparently, irrational behavior such as the occupation of hazardous floodplains was understood as the response of the occupants to their perceived opportunities and constraints. Another stream of research developed independently in work in historical geography and the history of geographic thought; R. H. Brown, John K. Wright, David Lowenthal, and others emphasized the variety of perceptions of the human environment and the significance of geographical ideas in accounting for past behavior. Urban and economic geographers developed behavioral and perceptual studies, with strong ties to psychology, addressing such topics as urban travel behavior, neighborhood design and migration as related to images and mental maps of place preferences. A fourth stream of environmental perception research by geographers involves the study of indigenous environmental knowledge or folk sciences as a theme in cultural ecology."

Emel (1994: 166) quotes Brookfield (1969) in explaining the concepts underlying environmental perception: "Decision-makers operating in an environment base their decisions on the environment as they perceive it, not as it is. The action resulting from decision, on the other hand, is played out in a real environment." She continues, "The study of environmental perception in geography focuses on the ways in which the actors' understanding of their surroundings conditions their behavior within their surroundings." Yi-Fu Tuan, in his seminal work Topophilia: A Study of Environmental Perception, Attitudes and Values, (1974) defines perception as: "both the response of the senses to external stimuli and purposeful

activity in which certain phenomena are clearly registered while others recede in the shade or are blocked out. Much of what we perceive has value for us, for biological survival, and for providing certain satisfactions that are rooted in culture" (1974: 4). Lowenthal credits Tuan for showing, "how we alternate between being subjects and objects, between being enmeshed in culture and free determiners of our environmental apprehensions. Man is at one and the same time a social being, a sensuously aware being, and an environmental organizer and classifier" (1972: 253). Lowenthal and Riel add considerably to the notion of environmental perception: "For all people everywhere, the environment has a definitive structure, made up of discrete clusters of attributes. These attribute clusters correspond to categories of activity, judgment, feeling, and space, qualities which are often used to describe human behavior and response. The perceived structure varies with person and place, but it is always present and the environment is never seen or responded to simply as an amorphous, undifferentiated phenomenon. The shape and composition of these mental pictures depend also on the nature and context of environmental experience itself" (1972: 189).

Humans should be thought of as complex interpreters and actors who perceive their environments (rural or urban or other) through filters. While humans perceive and understand their environments through these filters,

their actions occur in real geophysical spaces. Therefore, to more fully understand human-environment interactions, one must understand people's environmental perceptions.

A focus on human actors' environmental perceptions leads to broader explanations of the relationship between culture and nature. An increasingly more common understanding of both culture and nature is that they are human constructs. Culture, while appearing natural to people within a specific cultural system, is a constructed meaning system. This meaning system is a product of and a part of economic, political and social systems (Duncan 1993). Nature, too, is a construct (Simmons 1993). It is both socially and culturally constructed. Simmons argues, "that what is beyond our own skin actually exists. But this 'environment' is largely what we make of it, with all the ambiguities inherent in the word 'make,'" (1993: 3). What I make of a particular environment may in fact differ quite noticeably from another's understanding of the same environment. A hypothetical, but appropriate example, is the city-dwellers anxiety when outdoors in the woods at night, or rural person's feeling of alienation in a big city.

Our ideas of nature differ across societies and across cultures, and even across time periods. Nature is a human ideal in the sense that what appears to be natural or in a natural state" may in fact be manufactured and

engineered to fit our concepts of what is natural. Social, cultural and historical contexts for any individual or group frame and filter the notion(s) of nature (Evernden 1992). The same can be said of the concepts of landscape and wilderness (Cosgrove 1984; Oelschlaeger 1991), terms we often use to describe our environment.

Discussion of social and cultural construction is certainly not limited to geographers. Anthropology and sociology, in particular, have contributed greatly (Rodman 1992; Grieder and Garkovich 1994; Hannigan 1995).

Rodman (1992) argues that an understanding of culture must include place and landscape as politicized social and cultural constructs. Grieder and Garkovich (1994) offer a theoretical framework to understand a cultural group's definition of and relationship with nature and the environment, defining "'landscape' as the symbolic environment created by a human act of conferring meaning on nature and the environment," and arguing that the "landscape reflects the self-definitions of the people within a particular cultural context" (1994). Hannigan (1995) has gone even further in writing on the social construction of environmental problems, deconstructing the underlying processes of how societies define environmental problems.

This thesis contributes to the genera of environmental perception literature. It is a case study on the management of Forest lands in the

Philippines and explores the potential impact differing environmental perceptions may have on this management. The study expands the traditional topics of environmental perception studies (mental maps, hazards research, urban landscapes, and so on) to include environment and development issues in the developing world. The study also contributes to the merging of political ecology studies with environmental perception to expand our understanding of environment and development problems, including forestry issues faced in the Philippines.

The literature regarding environmental perception is quite extensive and diverse (as alluded to above). Lowenthal (1961, 1968), Tuan (1974, 1977), Cosgrove (1984), Buttimer (1980), Mikesell (1991), Meinig (1979), and Ley (1987) are among the more notable names contributing to environmental perception in geography. Rather than attempt an exhaustive catalogue of the literature, however, I have tried to show: (1) the roots of environmental perception, (2) its associations with cultural, behavioral and humanistic geographies, (3) its relation to the perspective of social construction, (4) its effects on our understanding of culture and nature, (5) some recent theoretical critiques regarding environmental perception and (6) the relation this study has to the corpus of environmental perception

literature. As with humanism in general, environmental perception also has methodological implications, which are addressed in chapter four.

I have chosen four additional pieces of literature to review, as illustrations of case studies that include environmental perception as a significant element in human-environment research. First is Selby and Petajisto's (1995) investigation of "Attitudinal Aspects of the Resistance to Field Afforestation in Finland." Their study is an example of political motivation and environmental perception. Their research centers on farmers' "emotional objections" to field afforestation within the general context of "the efficacy of policy instruments addressing agricultural over-production" (1995: 70). The study identifies values and attitudes toward field afforestation among individual farmers, communal agricultural groups, and forestry advisers. These represent the perceptions of the people toward their environment, how they understand it, intend to use it and, in turn, create it. The paper assumes (1) that humans act in rational, sacrificing ways, (2) that humans socially construct their perceptions of the environment and this construction is continuously produced and reproduced, (3) that an individual's meaning is seldom hers alone and is more often a "shared and reinforced" meaning influenced by peer groups, (4) that people's worldviews, (i.e. their life philosophies and value systems) are significantly

determined by their culture, and (5) that "place" is an individual construction whereas "social space" is an institutional construction (1995: 78-79).

The study's findings show that a majority of farmers studied held emotional objections to field afforestation, which the authors argue "were found to overcome the economically rational land use solution presented by the financial preconditions for field afforestation" (1995: 87). In other words, their perception of how their environment should be used did not include the growing of trees. Advisory officers, too, held little interest in field afforestation as a policy whose aim was to restrict agricultural over-production. The authors state: "it is quite clear that local advisers' motives for not advancing certain policy means, such as field afforestation, are embedded not only in their wish to maintain the social space of their sector of the corporate state, but also to preserve the cultural landscape, *their* cultural landscape with its associations, which help to create and maintain their ties-to-place" (1995: 88).

Peluso's (1995) article is an example of a study which uses the framework of political ecology but includes aspects of environmental perception. Writing on the power of maps, she implicitly identifies the importance of environmental perceptions behind maps, which she refers to as the drawings of "strategic space." Using maps produced by state land

managers and local activists acting on behalf of villages whose territories are "traditionally managed", Peluso examines how maps represent formal and legitimate claims on forest territories in Kalimantan, Indonesia.

Because she is focused on the political power maps wield Peluso does not explicitly argue that there are fundamental differences in environmental perceptions underlying the map constructs of state land managers and traditional peoples. She comes closest when she states: "Dyaks have always made claims to territories, bounded by river systems, ridge lines, and other natural cues. However, such territoriality has had more to do with rights to use resources within a particular territory than with the extent of the territory and its exact boundary lines. Some land use categories might be structurally impossible to allocate as individual territory. For example, territorializing rights to mature fruit forests (*tembawang*) would undoubtedly lead to conflict. In these social forests, multiple descent groups claim ancestral rights to fruit, resin, and trees. Virtually every tree has a set of owners which differs from the set claiming the next tree" (1995: 401-402). She continues, "The main purpose of the maps described here is to document and establish boundaries between forest villagers and external claimants, from the local point of view, and to re-claim for local people some of the territory being appropriated by state and international forest mapping projects" (1995:

402-403). The investigation and legitimization of "local people's views" regarding territory and resource use significantly overlaps studies centered explicitly on environmental perception and socially (and culturally) constructed phenomena (i.e. nature, wilderness, resource, and so on).

Another article that uses a political ecology framework and also incorporates environmental perception is one by Rocheleau and Ross (1995). They use a case study of Zambrana-Chacuey, Dominican Republic to examine how trees operate as "objects, sites, symbols, and tools of material and ideological struggle between state agencies, NGO's, and a rural people's movement." They identify the diversity of actors from national to household levels who hold diverse views of trees, which act as "instruments of power and as tools of empowerment."

The study compares the "miracle tree," *Acacia mangium*, a fast-growing species often promoted in reforestation projects for its timber qualities, with the metaphor of a "green machete." The authors state: "The tree is wielded as a machete in both a practical sense and a political and metaphorical sense, to remove 'undesirable' or 'non-productive' vegetation, without the smoke, the charred fields and the risk of incriminating personal presence with cutting tools in hand. The resulting maintenance or expansion of 'forest' on regional maps might even draw approval from the authorities.

The *Acacia*, with the mantle of green goodness ascribed to trees, lends environmental legitimization to both the process and the result of deforestation . . . The green machete is an effective tool in struggles over land, as well as in struggles over trees as objects and commodities" (1995: 422). The authors conclude: "The interactions of the *Acacia mangium* tree with the diverse [Rural] Federation [of Zambrana_Chacuey] membership and the complex and richly textured landscape provide an example of the cultural and natural co-construction of the trees as a social actor and its transformation into a variety of tools within on-going struggles. The crucial question is not so much to do or not do social forestry or which tree to plant, as it is whose decision, among what options and under what terms, in a particular place and at a given point in history" (1995: 425).

Arizpe, Paz and Velazque (1996) write about the Lacandona rain forest in Mexico. They explore the cultural dimension of deforestation of the Lacandona rain forest (1996). The authors analyze "the different fundamental views that local Lacandona inhabitants have about nature" (1996: 4). They analyze data from seven communities, "with special attention paid to differences in perception of local environmental phenomena between meztizos and Indians, men and women, farmers and cattle ranchers, government officials and intentions of those outside rain forests, particularly

city environmentalists, federal government institutions, the World Bank, and the 'international community'" (1996: 4-5).

The authors, following Whyte's work, define perception as "'the direct experience of the environment ... and the indirect information received [by an individual] from other individuals, science, and the mass media'" (1996: 5). They offer a modification, however, in employing an anthropological viewpoint that asks what cultural and social aspects shape "what a person or group perceives or understands?" (1996: 5). They claim "the concept of *social perception* is used as the main instrument of analysis to explain how different groups are relating to environmental issues in the Lacandona rain forest" (1996: 5).

The authors submit that "social groups take up positions and strategies in a constantly shifting map of social perception," and one must understand this "because socially and politically sustainable solutions to environmental problems can only be successfully negotiated if the differences of perception and assessment of such problems between diverse social and gender groups are carefully understood" (1996: 6).

The study concludes: "The salient result of our analysis is that environmental change cannot be studied only as a direct relationship of an individual to the natural environment. Instead, individuals' choices and

behavior toward nature are shaped and channeled by preexisting conceptual frameworks and by the matrix of social relationships in which each individual's group is embedded" (1996: 93). They argue that deforestation is not perceived as a problem by many people in the Lacandona region but that the issue comes from the outside.

These four pieces of literature are examples of recent approaches to human-environment inquiry. Each supports the belief that there are multiple views regarding nature, landscapes, the environment, and even objects in the environment such as trees. These views are human constructs, which reflect social, cultural and historical contexts. Within a political ecology understanding, people's views and actions with respect to the environment are partially conditioned by the structures of present and historical political and economic contexts. An individual's or group's particular relationship, their position, with those who wield power (often the economic and political elite) over natural resources (through instruments of tenure, legislation or even forms of corruption such as cronyism) in part dictates their perceptions and actions regarding their environment.

Environmental problems, or perceptions of these problems, may not be perceived the same way by everyone. In such cases, divergence and contested points of views exists. Solutions to environmental problems that

are proposed by outsiders and which include local people ought to begin by exploring divergent perceptions regarding the environment and the perceived problem. It is not enough to assume that all humans interact and know their environments in the same way.

This thesis draws upon the theoretical insights of political ecology, environmental perception, and the social/cultural construction of nature. The result is a holistic case study of why reforestation practices have not been more successful in and around Calo, Carranglan, Nueva Ecija. In similar studies, the structural constraints highlighted by the political ecology approach are well documented. The addition of exploring divergent environmental perceptions, however, appears to be quite novel in Philippine social forestry studies.

CHAPTER FOUR

Objectives and Methods of Data Collection and Analysis

Fieldwork for my thesis was completed in the Philippines over a three-month period, from May to August, 1997. The idea for my research topic, and my relationship with the community selected for my research, however, date back to 1987 with my service as a Peace Corps volunteer in the community of Calo. I served, at that time, for two years as an agroforestry extensionist assigned to work with the Philippine Forest Management Bureau (FMB) and their Integrated Social Forestry program (ISF). Between the completion of my Peace Corps service and the start of my graduate research, I returned to the Philippines twice, specifically to visit my former Peace Corps site. My knowledge of Philippine forestry programs and forestry issues, of the community where I chose to conduct my research, and of the political, social, cultural, economic, and environmental contexts of the research area, go well beyond my three months of fieldwork in 1997.

Objectives

Using a combination of empirical, anecdotal, and qualitative information derived from interviews, survey questionnaires, government

documents, maps and archival sources, this thesis attempts to answer this primary question: have significantly divergent land use practices and environmental perceptions between the people of Calo and the DENR partially influenced the success rate of tree planting programs of the DENR?

The following operational definitions are used for three terms in my objectives.

- land use concepts: the values and definitions people express regarding specific niches in their surrounding environment.
- land use practices: the way or ways in which people use different areas of their surrounding environment, and where these particular niches are located.
- environmental perceptions: the ways in which people define their surrounding environment (its uses, its changes, its meaning in their lives), and the views people have for its future.

In order to answer this question, assessments were made of land cover in Carranglan, the DENR's land use concepts/practices and environmental perceptions, the land use concepts/practices and environmental perceptions of the people in Calo, and the impact of divergent environmental perception on the land use practices of the DENR.

Data Collection

Primary and secondary data were collected during three months of field work in 1997. These were collected in Calo, at the DENR field office in Munoz, Nueva Ecija, at the DENR national office in Quezon City, at the Cordillera Studies Center of the University of the Philippines in Baguio City, Benguet, and at the Cordillera Resource Center, also in Baguio City, Benguet.

Primary Data

Primary data were collected through various methods. Interviews were conducted with DENR personnel in Munoz and Quezon City and with the "JICA (Japan International Cooperation Agency) expert" assigned to the DENR Foreign Assisted and Special Project Office. The bulk of the primary data, however, was collected in Calo, and focused on land use practices and environmental perceptions. Both qualitative and quantitative data were collected in Calo, using a household survey, key informant and group interviews, site visits with local people, and participant observation. Interviews were administered by me in participant's homes using a mix of Ilokano and English. Responses to all interviews were first tape recorded, with the full knowledge and acceptance of participants, and then transcribed

into notes while in the field. Data collected from the household surveys included: demographic, occupational and historical information, land use practices, tenure, resource use, and environmental perceptions. Information gathered from site visits and participant observation was orally recorded with a micro-cassette, visually recorded with a 35 mm camera, and recorded in written form in the field. The majority of quantitative data was collected using the household survey. Qualitative, anecdotal information was gathered from formal, informal, key informant and group interviews.

Secondary Data

Secondary data were collected from five sources in the Philippines: the CENRO office in Munoz, Nueva Ecija; the national DENR office in Quezon City; the National Mapping and Resources Information Authority (NAMRIA) in Makati, Metro-Manila; the Cordillera Studies Center of the University of the Philippines in Baguio City, Benguet; and at the Cordillera Resource Center, also in Baguio City, Benguet. Secondary data were used in the analysis of land cover in Carranglan, in the assessment of DENR forestry practices and projects, in identifying scientific names for tree species in Carranglan and in archival support regarding traditional land and resource use practices of the Ibaloi.

NAMRIA provided three 1:250,000 land cover quadrants with partial coverage of Carranglan and the surrounding areas. The maps were produced using SPOT satellite imagery from March 1987 and ground-truthed in May/June 1987. I was also able to purchase 1:250,000 and 1:50,000 topographic quadrants from NAMRIA to use in the GIS analyses regarding land cover, and for creating the majority of maps used in this thesis. Unfortunately, the three 1:250,000 land cover maps only partially cover the municipality of Carranglan. The fourth map, covering the northwest portion of the municipality was unavailable at NAMRIA. Coverage exists for 78.91 % (61,837 hectares) of the municipality. Archival sources are used in the discussion regarding land cover change in Carranglan, as I was unable to obtain time series data regarding land cover for comparison with the 1987 SPOT generated land cover maps. These sources include writings by Galvez (1984) and Reyes and Mendoza (1983) specific to the Pantabangan watershed; writings by Sajise and Omegan (1990), Wernstedt and Spencer (1967), and Don G. Galvey (1829) regarding grasslands; and a World Bank (1989) source concerning erosion in the Magat watershed, a case similar to that of the Pantabangan watershed.

DENR publications and archival sources gathered in the Philippines were used for the assessment of DENR forestry practices and projects in

Carranglan. A number of sources provided information regarding national policies (DENR 1987, 1992a, 1992b, 1993, 1995a, 1995b; 1997; DENR and the Institute of Judicial Administration, University of the Philippines Law Center 1993; Gacoscosim 1995). A 1997 Land Use map provided by the CENRO in Munoz was used to analyze land use percentages, and land cover within land use boundaries. Three DENR data documents regarding Contract Reforestation statistics in Carranglan (DENR 1996, DENR nd.; DENR-CENRO nd.) provided data for the statistical analyses determining the success and failure of tree planting attempts under this program, as well as species information. These data were supported by information from Reyes and Mendoza (1983), Galvez (1984), and the DENR (1994).

Archival sources gathered in Baguio, Benguet, the cultural hearth of the Ibaloi people, provided information specific to traditional Ibaloi land and resource use practices. Four authors address this in their research: C. R. Moss (1920), Melanie Wiber (1984), B. P. Tapang, Jr. (1985) and June Prill-Brett (1992). Moss was a Berkeley ethnographer who compiled extensive information about the Ibaloi in the 1910s and 1920s. Wiber is a recent anthropologist, also studying and writing about the Ibaloi. Tapang, Jr. writes from an economist's perspective on the Ibaloi cattle industry. Prill-Brett has been writing on the Ibaloi and other Cordilleran peoples since the

mid 1970s. While their views sometimes clash regarding Ibaloi land and resource use, the four authors provide a thorough picture of traditional Ibaloi land use systems and this information is used in comparison to the land use systems of the people in Calo, a majority of whom are Ibaloi.

Data Analyses

Both quantitative and qualitative data were examined for this thesis, combining positivistic and humanistic methods.

Land cover and land cover change findings are based on spatial analysis using ArcInfo and Arcview GIS applications, along with qualitative interview data. Three 1:250,000 land cover quadrants, based on 1987 SPOT satellite imagery, were digitized and projected into an ArcInfo coverage. Five other coverages were produced from 1:250,000 and 1:50,000 topographic quadrants. These include coverages of towns, major roads, the Pantabangan reservoir, rivers, and the Carranglan municipal boundary.

The spatial relationships of land cover to topography, roads and towns were interpreted by overlaying a land cover GIS coverage with another GIS coverage showing roads and towns and by interpreting the locations these feature in relationship to the surrounding topography. The area for each land cover type was calculated. Summary statistics for each land cover area

represented by a polygons in the land cover GIS coverage were derived using Arcview tools once the information was digitized, and projected into a latitude and longitude coordinate system. This was accomplished for the area defined by the Carranglan municipal boundary and then compared to a region 3.6 times the size of, and surrounding, Carranglan, as a means of comparing the land cover within Carrnglan with land cover at a larger scale. The assessment of land cover change in Carranglan is weakened by not having remotely sensed data from previous time periods. My assessment, instead, uses interview data from residents in Calo, and archival sources specific to the area. I am confident the information from the people in Calo is accurate. However, this information is restricted in area to a much smaller scale than that of the whole municipality. I believe the people in Calo can accurately assess change in their surrounding environment up to approximately 2.3 to 3 kilometers from Calo's cluster of houses. It is within this range that the people have customarily spent their daily activities within: farming, hunting, gathering fuel wood and so on. I have no way of knowing the accuracy of the information regarding land cover change in the archival sources I use. The authors refer to a number of sources including the DENR and the BFD, who have been accused, in the past, of inaccurate data.

The assessment of DENR/FMB land use concepts/practices and environmental perceptions rests in archival sources and DENR documents (DENR 1997; DENR 1987; DENR 1992a; DENR 1992b; DENR 1993; DENR 1994; DENR 1995a; DENR 1995b; DENR 1996; FAO 1993a; Gacoscosim 1995; Galvez 1984; Kummer 1991; Reyes and Mendoza 1983)

The land use maps from the CENRO in Munoz, Nueva Ecija, were digitized, projected and analyzed using ArcInfo and Arcview GIS applications. DENR land use classifications were digitized into ArcInfo coverages from 1:250,000 land use classification maps. Land use areas were calculated using summary statistics on all polygons within the GIS coverage. The spatial relationships of DENR classified lands to topography, roads and towns were interpreted by overlaying the land use GIS coverage with another GIS coverage showing roads and towns and by interpreting the locations these feature in relationship to the surrounding topography. Maps and tables indicate the results. DENR documents and archival sources were also used to show how the DENR defines Forest land and non-Forest land, as well as what the intentions of the DENR are for these lands.

Results regarding the ratio of areas planted to extent of classified Forest land and percent survival statistics for areas under contract were used as indices measuring the success of tree planting attempts. This information

is supported with archival sources (Braganza 1996; Cerna et al 1991; FAO 1993a; Gibbs et al 1990; Porter and Ganapin 1988; Reyes and Mendoza 1983; UNAC 1992; Walpole 1990; Philippine Daily Inquirer 1988).

An examination of tree species and project objectives promoted by the DENR/FMB under their various tree-planting efforts in Carranglan was accomplished using species lists from the data documents on contract reforestation and from a CBFM project document (DENR nd; DENR 1994; DENR 1996; DENR-CENRO 1997). These data were tabulated into summary statistics. Interview data, archival sources and DENR documents, specific to policy and program objectives, were also used to show the particular objectives of the DENR with respect to Forest land (FMB-DENR 1988; DENR 1993; DENR 1997; FAO 1993; Gacoscosim 1995; Galvez 1984; Reyes and Mendoza 1983).

The examination of the DENR/FMB environmental perception is based on land classification concepts and the goals and objectives for social forestry activities in Carranglan. The information is interpreted and summarized. The findings are drawn from interview data, DENR documents, and DENR data sheets.

Interview data were collected from twenty-one respondent households, from a total population of twenty-eight households. Initial

intentions were to interview all adults in the community and young adults over the age of fourteen. Young adults tended to be absent (off to school) or too shy to be interviewed. Seven residents were absent from the community at the time of my fieldwork. In all cases where the household consisted of married couples, I interviewed both male and female heads-of households. Responses were tabulated by household.

Interview data were tabulated and summary statistics derived in order to assess demographic characteristics of the community, resource use, and land use practices. This data is presented along with qualitative information and archival information in the examination of land use practices and concepts and environmental perceptions of the people in Calo. Emphasis is placed on the Ibaloi, who constitute the majority (76% of respondents) of the community.

CHAPTER FIVE

Findings: Land Cover, Land Use Practices, and Environmental Perceptions

This chapter presents the findings of this study regarding land cover and land cover change in Carranglan and the land use concepts/practices and environmental perceptions of the DENR in Carranglan, and of the people in Calo. Chapter six discusses the effects of these findings on social forestry in the study area.

Land Cover in Carranglan

Using the land cover classification system, established by the DENR, on the 1:250,000 land cover maps, four general land cover classifications are present in the municipality of Carranglan:

- Forest - areas of trees and reproductive brush (secondary growth forest) with less than 10 % cultivated and other open areas (F),
- Extensive Land Use - populated areas in uplands and grasslands with between 10 % and 70 % cultivated areas overall (E),
- Intensive Land Use - crop lands, plantations and fishponds with greater than 70 % of the area cultivated (I), and
- Lake (a portion of the Pantabangan reservoir).

The first three classifications are divided into a number of sub-classifications. In Carranglan there are two sub-classifications of Forest

cover, two sub-classifications of Extensive Land Use cover, and one sub-classification of Intensive Land Use cover. Excluding the Lake classification, there are five land cover classifications present in Carranglan:

- closed canopy forest cover - mature trees covering greater than 50 % (Fdc),
- open canopy forest cover - mature trees covering less than 50 % (Fdo),
- cultivated areas mixed with brushland and grassland greater than 10 % but less than 70 % (Ec),
- grasslands - grass covering greater 70 % (Eg), and
- arable lands with greater than 70 % under cultivation, mainly cereals and sugar (Ic).

Grasslands comprise the bulk of land cover in Carranglan (47.15 % of the total area), followed by cultivated areas mixed with brushland and grassland (24.92 %), open canopy forest (16.54 %), arable lands (9.48 %), closed canopy forest (1.61 %), and finally the Pantabangan reservoir (0.31 %). Grouping the major land cover types in Carranglan, Forest cover contributes 18.15 % of the total land area, Extensive Land Use cover 72.07 %, and Intensive Land Use cover remains at 9.48 % (figures 12 and 13).

Land use at a scale 3.6 times that of Carranglan mimics the figures found at the municipal scale. This is important for two reasons: (1) to better understand land cover at one scale (Carranglan municipality) within the

context of land cover at a larger scale, and (2) to corroborate land cover findings in Carranglan in light of the missing land cover quadrant.

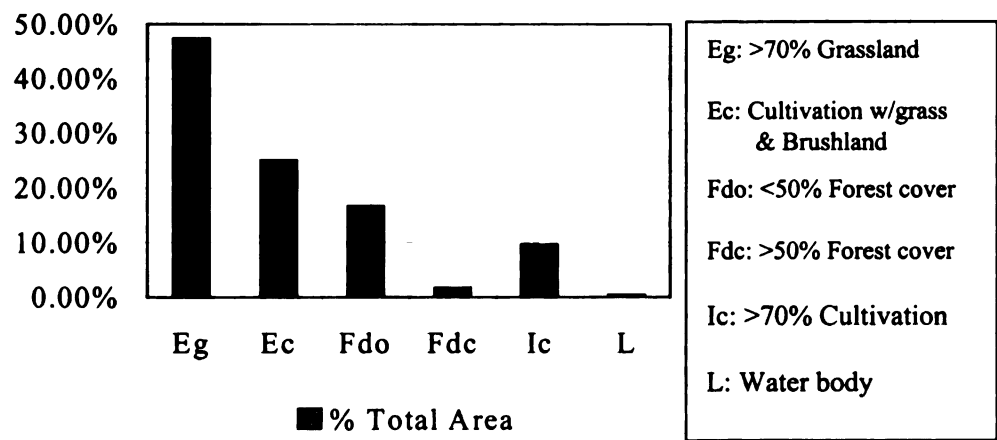


Figure 10 - Land Cover Percentages in Carranglan

While four more land cover sub-classifications are present at this larger scale (Crop Land mixed with Coconut Plantations [Imo] - 0.5 %, Built-up Areas [B] - 0.2 %, Mossy Forest [Fy] - 0.1 %, Riverbeds [Nr] - 0.1 %), they comprise less than 1.0 % of the total land area. The five land cover classifications, which are also present at the municipal scale, comprise the following area percentages: grasslands 28.70 %, cultivated areas mixed with brushland and grassland 29.75 %, open canopy forest 15.10 %, closed

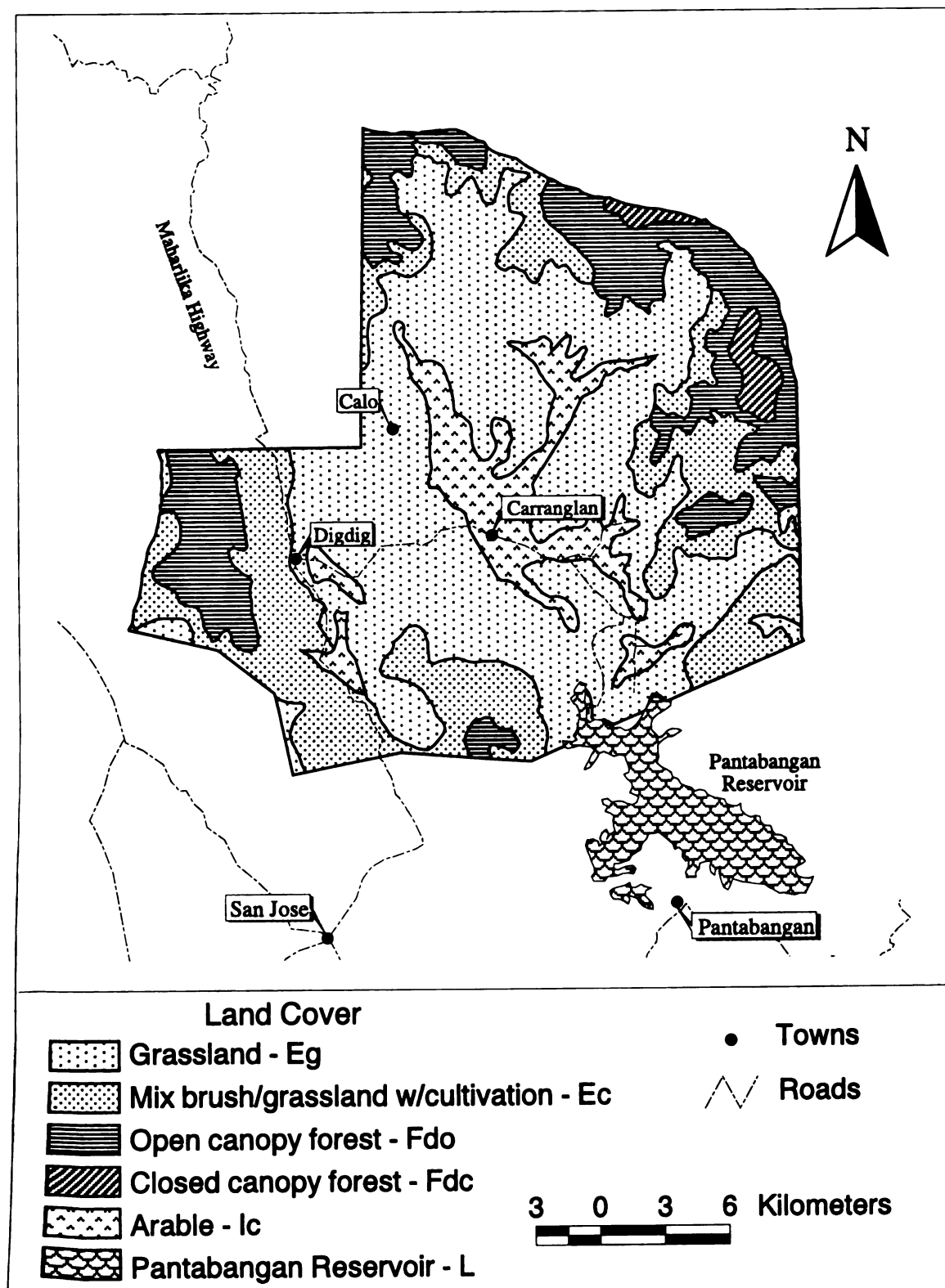


Figure 11 - Map of Land Cover in Carranglan

canopy forest 2.11 %, arable lands 22.70 %, and the Pantabangan reservoir 1.61 %.

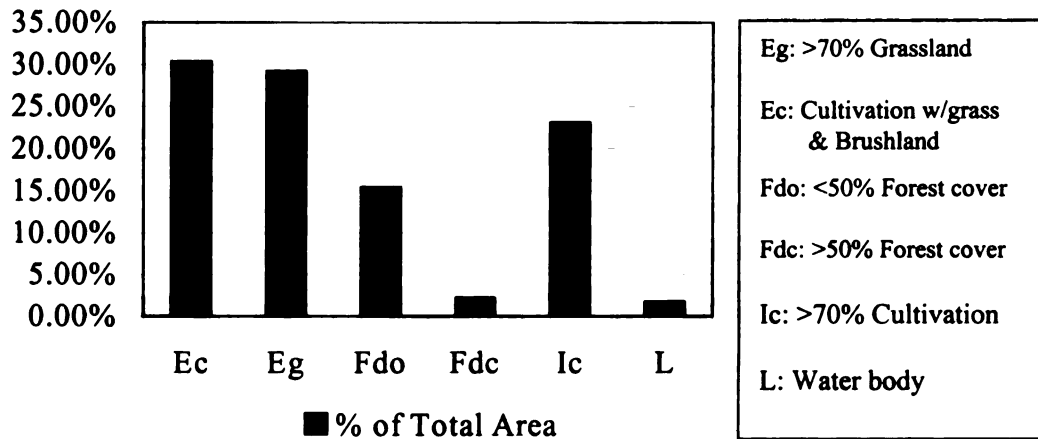


Figure 12 - Land Cover Percentages in Region Surrounding Carranglan (3.6 x)

Differences in land cover between the two scales at the sub-classification level include 17.4 % less grassland cover and 13.2 % more in arable land at the larger scale. More notable are the small differences in both types of forest cover: 1.44 % for open canopy forest cover, and 0.5% for closed canopy forest cover. Also, the ratio of forest cover to Extensive plus Intensive Land Use cover is similar at both scales: 1 to 4.49 at the municipal scale and 1 to 4.72 at the larger scale (figures 12 and 13).

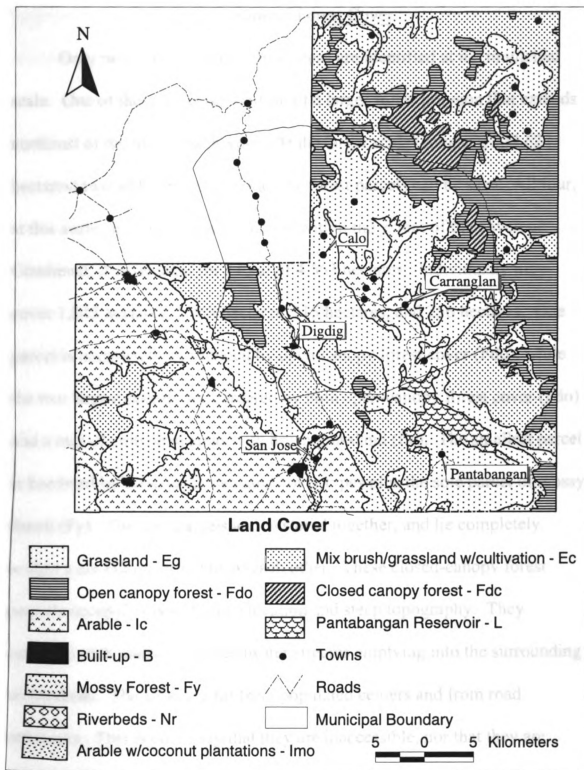


Figure 13 - Map of Land Cover in Region Surrounding Carranglan (3.6x)

Location of Forest Cover

Only two closed-canopy forest areas are identified at the municipal scale. One of these areas is a portion of a larger forest polygon that extends northeast of the municipal border. At the larger scale (covering 222,624 hectares) two additional closed-canopy forest parcels can be seen. All four, at this scale, are completely contained within the extent of the coverage. Combined, they account for a total of 4,663 hectares. Individually they cover 1,845 hectares, 1,848 hectares, 715 hectares, and 256 hectares. One parcel is completely surrounded by open-canopy forest cover (Fdo), while the two largest parcels are bordered by both open-canopy forest cover (Fdo) and a mix of cultivated areas with brush/grassland (Ec). The smallest parcel is bordered by these same two land cover types plus the sole parcel of mossy forest (Fy). The four parcels are clustered together, and lie completely within a six kilometer radius of each other. These closed-canopy forest parcels occupy niches of high elevation and steep topography. They coincide with many of the headwater streams emptying into the surrounding watersheds. The areas are far from populated centers and from road networks. This is not to say that they are inaccessible, nor that they are uninhabited. Small villages, or groups of dwellings as small as three

households, can be found in these remote areas, accessed by an elaborate network of trails.

The extent of the open-canopy forest cover is far greater than that of the closed-canopy forest cover (more than seven times greater at the larger scale). Eighteen parcels of closed canopy forest are identified in the coverage at the larger scale. Only seven lie completely within the coverage. Whether the remaining eleven are all individual parcels or are actually portions of contiguous parcels, identifiable at a larger scale, is uncertain. Of the open-canopy forest areas shown, the majority of it borders lands with mixed cultivation and brush/grassland. Large areas also border grassland. Similar to closed-canopy forest cover, open-canopy forest cover is found in relatively steep, high-elevation areas. And, though not as remote, they too are distant from large urban centers and from road systems.

Land Cover Patterns

A pattern of land cover is identifiable at the larger scale. This pattern is associated with the topography of the region. The large parcel of arable land (Ic) which surrounds the town of Carranglan occupies a relatively flat

Figure 13 - Map of Land Cover in Region Surrounding Carranglan (3.6 x)

expanse of land. This is surrounded by grasslands (Eg) where the landscape gradually changes from rolling hills to steep-sloped mountains. The landscape west-southwest of the town of Carranglan includes a southern extension of a spur from the Caraballo Mountains. This spur has open canopy forest cover. The remaining land cover changes from less to more cultivation as the topography descends the Caraballo foothills and the northeastern portion of the central Luzon "rice bowl" appears. North, northeast, and east of the town of Carranglan, the terrain becomes more mountainous. More numerous and larger are the parcels of open canopy forest cover. Here, too, are where the only four parcels of closed canopy forest cover lie.

Land Cover Change in Carranglan

My findings regarding land cover change in Carranglan are drawn from qualitative, anecdotal, and archival information. Without time series, remotely sensed data, or other land cover data, I am unable to empirically elaborate land cover change for this area.

More than half of the Pantabangan watershed (Galvez 1984 and Reyes and Mendoza 1983), lies within the Carranglan municipality. Deforestation

within the watershed is thought to have led to the expansion of grasslands, with this change in land cover, in turn, exacerbating the siltation of the Pantabangan Reservoir. Grasslands, therefore, have become the targets of tree planting activities as a solution to the erosion/siltation problem. This is problematic, however, because justifications for tree planting programs rest not on an analysis of land cover change in the watershed itself but, rather, on national rates of forest decline, on the number of hectares of grasslands, and on the reduced capacity of the Pantabangan hydro-electric power plant.

Galvez, as a preface to a document concerning the Pantabangan watershed, writes: "Philippine watersheds are generally confronted by major problems that contribute to their rapid degradation. Man-related activities such as uncontrolled logging followed by slash-and-burn cultivators, poorly managed pasture and the general indiscriminate cutting of trees for fuel wood by inhabitants within the watersheds are causes of accelerated soil erosion and conversion of forest areas to grassland areas ... It is reported that about 5.0 million hectares of Philippine lands are grasslands with about 1.4 million hectares located in critical watersheds which need immediate attention to prevent further degradation (1984: 1-2).

Certainly examples of degradation from deforestation can be found in the Philippines, once forested areas have been converted to grassland. This

is not in dispute. However, the general patterns that may exist at the national level may not necessarily hold true in a particular watershed. Galvez offers no empirical evidence that forest decline leading to grassland expansion has occurred in the Pantabangan watershed. In fact, the 5.0 million hectares of grasslands, to which he refers, only accounts for 16.67 % of the total land area in the Philippines. This seems like a rather small sum, assuming forest cover has declined some 35 - 45 % since 1900. It also seems likely that some of the 30 - 40 % of the non-forest cover lands in 1900, would have been grassland prior to forest cover decline. Questions remain as to what portion of the 5.0 million hectares referred to by Galvez was grassland prior to forest cover decline, and what portion is a result of forest cover decline.

Grasslands (also known as *cogonals* consisting mainly of *cogon* [*Imperata cylindrica*], *samsong* or *silibon* [*Themeda triandra*], and *talahib* [*Saccharum spontanium*]) were already expansive in the Philippines prior to the 1950s when large scale logging efforts began to decimate the dipterocarp forests of the Philippines. Estimates of grassland cover offer only an indication of its expanse, however, and not an understanding of how and why it exists where it does. The literature cites grassland statistics in the context of forest cover decline assuming a direct correlation, however, some

suggest grasslands are more a product of natural climatic and topographic processes than of human disturbances.

Sajise and Omegan (1990: 57-58) writing on the Luzon uplands remark: "references on vegetation cover in the Cordillera region indicate that the area was only partially forested prior to human settlement. In the Cagayan Valley, the abundant fossils of large grazing mammals predating the appearance of humans indicate the area possessed extensive grasslands." Citing Wernstedt and Spencer (1967: 742), they continue, "due to seasonal aridity, the plant cover of some of the western fringes of the Cordillera probably did not carry thick stands of trees."

Don G. Galvey and his expedition traveled from Agoo, La Union up into the Cordillera Mountains of Benguet province in 1829, more than a hundred years before massive exploitation of the Philippine forests began in earnest. Excerpts from his diary (Scheerer 1905: 173-77), corroborate the perceptions of Sajise and Omegan and Wernstedt and Spencer.

"This was the first expedition on which I penetrated into the interior. On my preceding ones I had not gone beyond the first mountain chain ... I had heard some Igorot¹¹ say that beyond

¹¹ An indigenous Filipino (Tagalog) word meaning "mountaineer" or "hill people", used to describe the various peoples inhabiting the highlands of the

the great mountain called 'Tonglo' ... there was a very large town situated in a broad and fertile valley the inhabitants of which were very rich and brave ... The first ascent is very tiresome, and as the first mountains are thickly grown over, being covered with dense undergrowth, we marched with great difficulty ... At 12 we pursued our march toward the north-northeast, wending our way uphill through a 'cogonal', where with the sun right overhead and reflected by the cogon grass, we suffered an indescribable heat. . . *Seventh day*. --- I started at daylight. After crossing a small valley we began descending through very dense cogon ... *Eighth day*. --- At 8 I came upon the first pine trees; the road became quite open - no cogon, no underbrush ... *Tenth day*. --- We were surrounded by pine trees. *Eleventh day*. --- We broke camp at dawn, descending a very steep and stony slope with deep precipices on both sides. At 11 we halted and in order to make camp had to cut the cogon and rattan with which we were surrounded."

While Galvey did not travel through Carranglan, his text demonstrates that grasslands were a part of the uplands, a region that may mistakenly be perceived as completely covered in forest, due its classification by the Philippine government as Forest land. Some of the areas where Galvey experienced *cogonals* share the same climate patterns of Carranglan. These regions generally have two pronounced seasons: a dry season from December to May or June and a wet season during the remaining five or six

Philippines. The term, as used by lowlanders, has derogatory connotations such as "unchristian" and "uncivilized," however, it receives a mixed approval among "highlanders" themselves (Scott 1993)

months. The fire prone conditions of the lengthy dry season are conducive to maintaining *cogonals*.

Reyes and Mendoza suffer from fallacious reasoning similar to that of Galvez's. Using phrases such as "rehabilitate" and "remaining natural forest," they imply that deforestation has occurred in the Pantabangan watershed. They claim natural forests cover about 40 % of the total watershed area (1983), and that the area decreases annually by about 5 % (1983). No reference is made regarding past forest cover statistics, from which to measure land cover change, specifically deforestation.

Erosion is a natural process. It occurs in places uninhabited by humans. Human activities can and do exacerbate erosion processes, and where this occurs, understanding the causes of erosion requires careful analysis. Galvez admits that though erosion is a serious problem in the watershed, "how much erosion is taking place and how sediment is being deposited in the reservoir is presently unknown" (1984: 5-6). Reyes and Mendoza claim the rate of sedimentation as being "well above 2,000 tons per km² per year" (1983: 506). However, they fail to document the causes of erosion, only claiming that "the reservoir of about 8,000 hectares, with a generating plant of 100-MW capacity, would in all probability be

jeopardized seriously, if nature is left alone" (1993: 506). If nature is left alone! It is unclear what Reyes and Mendoza mean by this statement.

The Magat watershed is another product of a multi-purpose dam, and is located approximately 40 kilometers north-northwest of the Pantabangan reservoir. The Magat's proximity to the Pantabangan watershed and its similar geographic characteristics make it an appropriate comparison to the Pantabangan area. A 1989 World Bank publication addresses the concern regarding erosion in the Magat Watershed.

"Is Magat an example of a rapidly degrading watershed, or one which has long been degraded, or is degradation even a serious problem? If it is, what should be done about it? These questions are not easily answered despite a variety of studies. For one thing, the rates of dam sedimentation now observed were predictable before the dam construction was complete: the increase over feasibility study estimates is attributable to changes in rainfall runoff patterns between 1949-64 and 1976-81. Whether the difference is attributable to 'normal hydrologic variations' or to watershed degradation is also uncertain. If the former, then the present higher rates of sedimentation may be a temporary phenomenon; if the latter, the degradation might be a long-standing and gradual phenomenon" (1989: 29).

In other words, the siltation of the reservoir is a result of erosion, but whether or not the erosion is more a product of natural erosion processes or more a product of human-induced land degradation is not certain. Erosion, and sedimentation of the reservoir, therefore, do not constitute clear

evidence of the conversion of forest cover to grassland or of land degradation.

Erosion does occur in Carranglan. Slumping and exposed patches of soil are found in areas close to Calo (figure 14). Whether or not these are products of anthropogenic forces is uncertain. Reyes and Mendoza observed many slide scars and slumps in the drainage area prior to the building of the dam, but explain that "about 80 % of the observable slides in the area northwest of [the] Pantabangan Dam have an easterly component and appear to be related to the formational dip" (1983: 497). Reyes and Mendoza admit that erosion is a result of "unfavorable physiographic conditions" of which topography and "the loose state" of the bedrock are paramount (1983: 498). The slumping areas around Calo, shown in figure 16, are not abandoned *kaingin* gardens, though this area has been the location for such practices by people living in Calo. The locations of these scars are too high on the slope and too far away from a source of water for them to be former *kaingins*. Certainly, the area is prone to burning during the lengthy dry season. The origins of these fires are many, and are both anthropogenic and natural. While fire destroys surface vegetation, it does not decimate the roots which hold the soil. Pilot studies southeast of Pantabangan, which measured runoff and erosion in three small sub-watersheds, revealed that runoff and peak

flood discharge were much greater from the watershed in which agriculture was being practiced than in the one covered in grass (Reyes and Mendoza 1983).

Grasslands cover nearly 50 % of the Carranglan municipality, while forests cover only 18.15 %. The question remains, what percent of grasslands in Carranglan are a result of conversion from forest cover. Those writing out of concern for erosion, siltation and the operational lifespan of the Pantabangan dam have not offered reliable answers to date. Others, writing more generally about the Cordillera Central, support the hypothesis that grasslands were extensive in the mountainous regions prior to human settlement. The Spanish account quoted earlier, which was written 169 years ago, supports this claim.

The earliest families who settled in Calo in 1973 claim that the land cover seen today is much the same as when they entered the region. Certainly the landscape has changed since their arrival, but the general land cover type, according to the people in Calo, has remained constant. The low-lying areas have been converted from grassland to rice fields primarily through the use of *carabao* (water buffalo) and manual labor. A complex network of canals has been constructed to irrigate the fields during the rainy



Figure 14 - Photo of slumping in the Hills of Karamramutan

season. The hills surrounding the lowlands, however, were primarily grasslands sparsely covered with a few trees when the first migrants settled Calo in 1973, and remain that way today. Also, small patches of forest cover could be found along the ravines and stream embankments then, as they can today. To find larger areas of forested land, people traveled north-northwest into the more remote hills of unpopulated areas known as Karamramutan and Tayabo. Higher elevations and steeper topography are found there. This is the location of the headwaters for the streams people in Calo use to irrigate their fields and gardens. Here, in the remote and steep hills of Karamramutan and Tayabo, are a few dense patches of dipterocarp forests. Even these small patches of forest, however, are located in ravines, surrounded by grass-covered slopes and hilltops (figure 14). According to the early settlers in Calo, this landscape has changed little in the past twenty-five years, beyond the creation of rice fields, and the establishment of a handful of trees by NIA during the road construction and by the FMB during their regular reforestation attempts. The grasslands surrounding the houses and rice fields of Calo were not converted from forest cover in the past twenty-five years.

The DENR Land Use Concepts/Practices and Environmental Perceptions in Carranglan

Land Classifications

In 1975, then-President Ferdinand Marcos passed Presidential Decree No. 705, more commonly known as the "Revised Forestry Code of the Philippines," which established the land classification system that still exists in the Philippines. As outlined in PD 705, Forest lands include public forests, permanent forests (also known as forest reserves), and forest reservations. Public forests include areas in the public domain which have not been subject to the classification system outlined in PD 705 and which are deemed "needed for forest purposes." In other words, these are public lands that have not been classified as alienable and disposable, and by default are considered Forest land by the Philippine government. Permanent forests are similar to public forests, except that these areas have already been subject to the classification system. Forest reservations are lands specifically reserved by the President for any number of reasons. Alienable and disposable (A & D) lands make up another major category of lands in the public domain and are defined simply by their not being classified as Forest land. As mentioned in Chapter two, Forest lands and A & D lands occupy 15 million hectares (50.03 % of the total land area in the Philippines)

and 14.12 million (47.05 % of the total land area of the Philippines) hectares respectively.

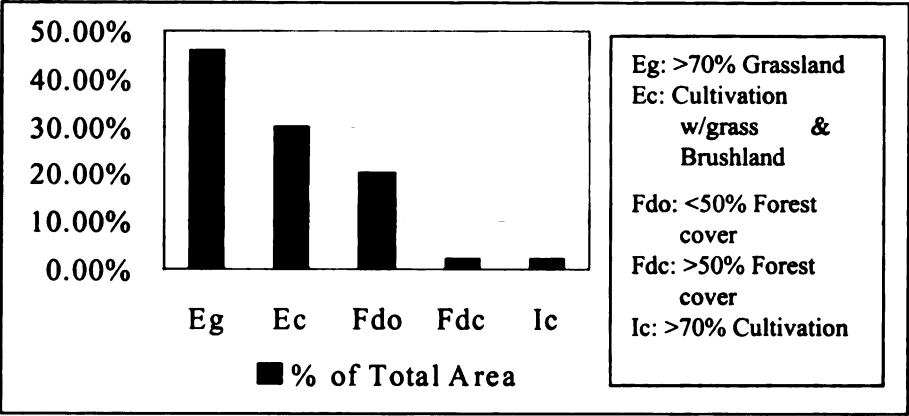


Figure 15 - Land Cover Percentages for Official Forest land in Carranglan

The classification of Forest land is based on topography, not on forest cover. Lands with 18 % slope or greater are all classified as Forest land, regardless of their previous classification. Furthermore, PD 705 states: "No land of the public domain eighteen per cent (18%) in slope or over shall be classified as alienable and disposable, nor any forest land fifty per cent (50%) in slope or over, as grazing land." Provisions are made in PD 705 whereby people who have been occupying lands for 30 years or more can qualify for a title, provided they follow certain guidelines. Even so, in some cases titles may be revoked if the government deems it necessary for the public good.

Lands classified as Forest land cover 80.03 % of the SPOT coverage for Carranglan (78.91 % of the municipality). Only 18.15 % the SPOT coverage actually has forest cover, and within the area classified as Forest land, only 22.33 % has forest cover (Fdo = 20.34 %; Fdc = 1.99 %). The bulk of official Forest land in Carranglan does not possess forest cover: 45.71 % is grassland (Eg), 29.88 % is a mix of cultivation with grass and brushland (Ec), and 2.04 % is arable land (Ic). The tendency in the literature is to assume that the expanse of grassland in areas classified as Forest land is a result of deforestation and forest conversion (figures 15 and 16).

Land Use: "Reforestation"

The government's land use concepts are outlined in PD 705. Rules and regulations for timber production constitute the first major section under chapter three, "Utilization and Management" of forest lands. The second section concerns incentives and rationalization of the wood-based industries associated with timber harvesting. Placing sections specific to timber production first in the chapter on utilization and management of Forest lands could be perceived as indicative of the government's primary aim to utilize forest resources for economic purposes. Third in the order is reforestation. Under this subsection, "suitable and sufficient trees" are to be planted on

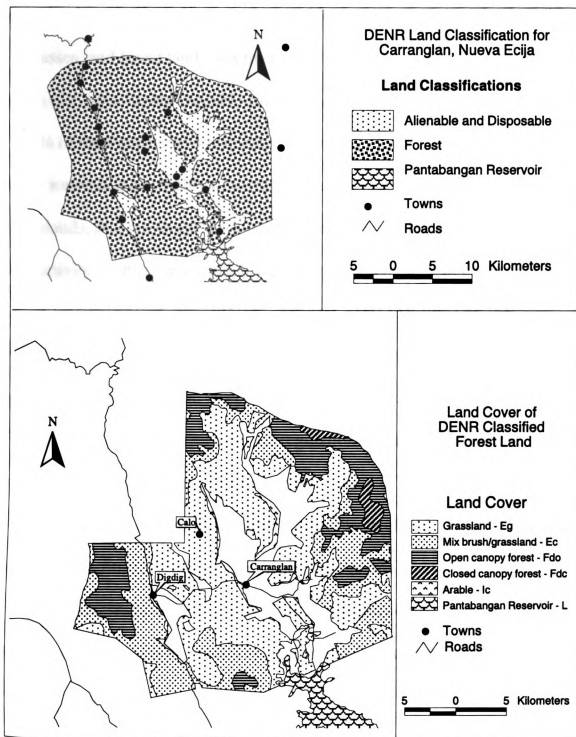


Figure 16 - Land Cover Map of Official Forest land in Carranglan

forest lands with 50 % slope or greater which are bare or covered primarily by grasses, and forest lands less than 50 % which are bare or grasslands, and which also have highly erodable soils. According to Reyes and Mendoza, 71.7 % of the Pantabangan watershed has slopes of 40 % or more, and 18 % of the watershed has highly or extremely erodable soils (1983: 495, 497). Brushlands, too, are targeted for tree planting in order to "increase their productivity." Other areas which are to be planted include open tracts of Forest land with steep slopes (50 % or more), areas identified by the President, forest concession areas that are inadequately stocked, pasture lease agreement areas with steep slopes, and along waterways.

PD 705 outlines some specific regulations regarding leases and licenses, particularly for timber harvesting. Many of these have undergone changes as the amount of harvestable timber has declined. Today, there is a ban on log exports. While governmental regulations regarding logging activities have changed over the past twenty-three years, the government's land classification system and its land use concepts have remained the same.

The Pantabangan Watershed is a "critical watershed" by the Government's definition. This watershed, and other areas of the Carranglan Municipality are classified as Forest land, however, the land cover indicates

most of it is grassland or a mix of brush and grassland with cultivation. Under the PD 705 guidelines, much of the Forest land in Carranglan is perceived by the Government as areas in need of reforestation. The term "reforestation" implies the lands were once forested, again indicating the predisposition of the government. Because some areas may not have had forest cover, even as far back as 1900, I have used the term "tree planting" in its place. The term is also appropriate in light of the DENR intentions to establish tree plantations and agroforests as opposed to re-establishing a forest ecosystem (inasmuch as forest ecosystems can be humanly constructed).

The objective of the DENR for much of the Forest lands in Carranglan (particularly since studies in the early 1980s identified the decreased lifespan of the Pantabangan hydro-electric power plant) has been to plant trees. The "1997 DENR Land Use Map of Northern Nueva Ecija" identifies six specific types of tree planting programs: (1) RP-Japan, (2) Regular Reforestation under the FMB, (3) planting under the National Irrigation Administration (NIA), (4) Contract Reforestation (CFP), (5) Mini-Forest, and (6) Community-Based Forest Management (CBFM). The RP-Japan (4,247.71 hectares), Regular Reforestation (537.30 hectares), and NIA (8,636.38) projects began in the early 1980s as the initial response to the

reports of the siltation of the Pantabangan Reservoir. By 1991, all three were essentially terminated¹². Contract Reforestation¹³ or CFP (7,588 hectares) began in the early 1990s, under Phase I of the 1988 Forestry Sector Loan. The single CBFM project covers 573 hectares. The DENR also maintains other land uses in Carranglan¹⁴.

From these figures, I have estimated that approximately 43.01 % (21,582.39 hectares) of the forest land in Carranglan has undergone (or is currently undergoing) tree planting activities. Of all the different uses the DENR specifies for Forest land in Carranglan, the emphasis is on tree

¹² The RP-Japan project now focuses on maintenance and protection, rather than tree planting, and is used as a DENR training site. Regular Reforestation has been inactive since the devolution of this activity to the Local Government Units (LGUs) as per the *Local Government Code of 1991*. The NIA projects were simply phased out.

¹³ Since the signing of Executive Order No 263 in 1995, CFP and all other on-going social forestry programs (ISF, FAR, ACF, CTF, and FOM) are being consolidated under the Community-Based Forest Management (CBFM) program.

¹⁴ DENR lands in Carranglan include: Recreational Parks/Sanctuary (665 ha), forest land with MOA (292 ha), Agro-Forestry (300 ha), Dipterocarp Forest (61 ha), Forest Reserve (135 ha), Open Land (1,948.39 ha), 1,388.97 ha of ISF land, a 1030 ha Pasture Lease Agreement with Central Luzon State University for their Carabao Research Station, and 16,252 ha recently awarded Certificate of Ancestral Domain Claim (CACD) lands. CACD lands do not exempt areas from tree planting programs. They are merely a sub-classification of forest land, and act as a tenurial instrument for Indigenous Cultural Communities.

planting. "Reforestation" has been dominant and primary in the DENR goals for Forest lands in Carranglan.

Land Use: "Reforestation" Species and Objectives

The justification for tree-planting programs in Carranglan rests primarily on concern over the siltation of the Pantabangan reservoir. However, project goals do not stop at the ecological benefits of establishing forest cover within the watershed. "Existing social forestry goals consider two major elements: (1) upliftment of the socio-economic well-being of the upland farmers and communities, and (2) renewal and development of forest resources where these upland farmers/communities are located" (DENR 1992: 183). Forest resources, particularly timber for export and for wood industries, in the past have contributed substantial financial gains, though their profits were unequally distributed among the nation's citizens. These same resources are perceived by the DENR as potential contributors to further economic gains. According to the DENR goals and objectives, these gains would be more equitably distributed among the population, and particularly benefitting local people.

The objectives of the Pantabangan Watershed Management and Erosion Control Project, as explained by Reyes and Mendoza (1983)

included:

1. Establish 11,500 hectares of tree plantations for the production of short- and long-fiber pulpwood and specialty saw timber; and
2. Develop 13,500 hectares for agroforestry for the production of leafmeal, charcoal, mango, and cashew nuts, of which 8,00 hectares will be interplanted with timber species that will take over the area eventually.

These were the immediate objectives underwritten by the World Bank when it partially financed the five-year project which began in 1980. While the initial justification was the "rehabilitation" of the watershed through the establishment of forest cover, the economic goal of timber extraction was a motive, even though the harvesting of timber within the watershed was outlawed in 1970 by a "presidential directive" and reinforced by PD 705 in 1975 (Reyes and Mendoza 1983). In their section of forestry economics, Reyes and Mendoza analyze the cost/benefit ratio of plantation operations, which include the planting, harvesting and processing of saw-timber and long and short-fiber pulpwood, consistent with the goals of the World Bank (1983).

Reyes and Mendoza (1983: 491) describe the dominant forest cover in the watershed as consisting of about 65 % evergreen orthophyll hardwood-forest dominated by *palosapis* (*Anisoptera thurifera* Blanco), *dalingdalingan* (*Hopea foxworthyii*), *baracbac* (*Syzygium obliquiervium*), and *molawin* (*Vitex spp.*). The open plant community consists of grassland interspersed with *binayuyu* (*Antidesma fratiszens*), *alibangbang* (*Peliostigma malabaricum*), and *lagundi* (*Vitex spp.*). In contrast, the species chosen for the "reforestation" component of the project include: mango (*Mangifera indica*), cashew (*Anacardium occidentale*), ipil-ipil (*Leucaena leucocephala*), yemane (*Gmelina arborea*), Benguet pine (*Pinus kesiya*), narra (*Pterocarpus indicus*), and mahogany (*Swietenia macrophylla*). The reforestation component aimed to rehabilitate the watershed by "reforesting" open grasslands, which were to be plantations of agroforestry and timber species. Besides providing employment to local people (as nursery laborers, planters and fire guards), the project benefits, as outlined by Galvez (1982: 13-14) included the "average annual production of about 10,000 tons of leafmeal, 30,000 tons of charcoal, 48,000 tons of mango fruits, 12,000 tons of cashew nuts, 27,000 tons of short-fiber pulpwood and about 24,000 tons of long-fiber pulpwood ... [as well as] about 20,000 cu.m. of timber annually from yemane and pine at the end of

40 years, the hardwood species of narra and mahogany would yield about 2.0 million cu. m." According to Galvez, "Aside from employment opportunities, the project [would] also provide revenue and profit shares to the communities in the watershed" (1982: 14).

By the early 1990s tree planting activities in Carranglan had moved away from the "regular reforestation" approach (mentioned above) of the RP-Japan, FMB, and NIA components of the Pantabangan Watershed Management and Erosion Control Project, toward a more collaborative approach with the local people under the Community Forestry Program (CFP). The DENR document, "1990 Contract Reforestation, Region 03, PENRO Nueva Ecija, District 2" lists 109 CFP contract areas in Carranglan. Of these 109 areas, the documents list the species planted for 103 contract areas. Only four different tree species were planted: *eucalyptus camaldulensis*, Japanese acacia (*Acacia auriculiformis*), narra (*Pterocarpus indicus*), and yemane (*Gmelina arborea*). All four are timber species, though Japanese acacia and eucalyptus have also been promoted as fuel wood species. The lists of species planted, given for each of the 103 contracts showed that yemane was the most likely to be planted by contractors (103 contracts listed this species), followed by Japanese acacia (93 contracts), eucalyptus (12 contracts) and narra (9 contracts).

The single CBFM project in Carranglan covers 573 hectares. The project lies adjacent to the Pantabangan watershed, within the Carranglan municipal border, approximately three kilometers west of Calo. According to the document "Appraisal of Piut Watershed Rehabilitation Subproject, Carranglan, Nueva Ecija," the project aims to:

1. Reforest a total area of 573 hectares of denuded Forest land of Barangay Piut, Carranglan, Nueva Ecija;
2. Enhance the existing forest and grassland vegetation within the project area and in adjacent areas;
3. Produce quality wood for timber, furniture, and fuel wood production;
4. Provide employment and livelihood projects for the community.

The document states that the project will plant 52 % of the area to narra and mahogany (timber species), 32 % to Japanese acacia and eucalyptus (fuel wood species), 11 % to mango, cashew and jackfruit (*Artocarpus heterophyllus*) (fruit trees) 1 % to bamboo, and 2 % to rattan. The remaining 3 % of the project area is to be used for planting upland rice and string beans.

DENR Environmental Perceptions

While government classifications regarding public lands have changed little since 1975, their land use practices have evolved. Prior to the 1980s, there were no tenurial instruments for Forest land occupants. With the implementation of the ISF program, tenure for up to 50 years was available to “forest occupants”, and similar agreements have been made available through the CFP and CBFM approaches. Land use classifications were allowed sub-classifications in 1995 as per DENR Administrative Order No. 15 of May 10, 1995, increasing the multiple uses of Forest land, as perceived by the DENR.

In Carranglan, "reforestation" or tree planting activities, however, have been the main thrust of the DENR activities in Forest lands. These began in the 1980s with what the DENR referred to as "regular reforestation," continued in the early 1990s with contract reforestation, and is now beginning a third phase under the CBFM approach. Each approach has come closer and closer to the goals of social forestry envisioned in the late 1970s and early 1980s. Local people have gone from being general laborers under "regular reforestation" to contractors themselves under CFP, to community caretakers and implementers of the DENR aims under CBFM.

While local people have been viewed differently under each new approach, selection of tree species has changed little in these tree-planting programs. The major emphasis is on growing timber species for the wood products sector of the economy. High-value hardwoods like narra and mahogany are promoted. Fast growing timber species like Japanese acacia, ipil-ipil and eucalyptus are promoted as fuel wood species under the CBFM project in Piut, but are also quite useful as pulp-wood. Mango and cashew trees have been promoted, but to a lesser extent than the timber species.

The intentions of the DENR for the Forest land in Carranglan are varied. The DENR perceive Forest land without forest cover primarily as a denuded landscape. To the DENR, it is a landscape which afflicts the environment, the economy and the people's social welfare through erosion. The DENR environmental perceptions for the Forest land of Carranglan can best be described as:

- representing the national interests, and in congruence with national guidelines, the DENR is responsible for the management of Forest lands;
- the denuded open and grassland areas of Forest land in Carranglan are in need of "rehabilitation";
- erosion in these denuded Forest lands is a form of environmental degradation, and leads to economic loss, jeopardizing people's social welfare;
- "reforestation" can "rehabilitate" these denuded areas, and increase local people's economic welfare through the planting of timber, fuel wood, fruit tree species and other minor forest products such as bamboo and rattan

The DENR envisions a forested landscape. Their goal is to transform the existing landscape with 22.33 % forest cover, to one with over 60 % forest cover, consisting of economically profitable, and socially useful, tree species, which also help arrest soil erosion in the watershed.

The Land Use Concepts/Practices and Environmental Perceptions of the People in Calo

This section of chapter five regarding the land use practices and environmental perceptions of people in Calo focuses on the Ibaloi families in the community. The Ibaloi comprise 79 % of all residents in Calo and 76 % of my research sample. The omission of Ilokano views in this section weakens the overall study. This omission is not intended to slight the Ilokano people whose views are as valid as any other group's. I assume that the addition of their views along with a historical analysis of Ilokano land use concepts and practices would add another dimension to the diverse viewpoints already presented in the study between the Ibaloi people of Calo and the DENR. This, too, is an oversimplification, a simple dichotomy, that hides potentially even greater divergence among the Ibaloi and among the various DENR employees regarding environmental perceptions.

Historical Land Use Concepts and Practices of the Ibaloi

The Ibaloi cultural hearth is located in the southern Cordillera Central, primarily in Benguet Province. Southern Benguet and northern Pangasinan provinces are the places of origin for the Ibaloi people now living in Calo. The Ibaloi region ranges from approximately 50 to 100 kilometers northeast of Calo.

Four specific land use types have dominated traditional Ibaloi practices. Prill-Brett (1992) identifies grazing lands (*bodusan* in Ibaloi), swidden farms (*uma*), hunting grounds (*anupan*) and terraced, ponded rice land (*payew*). Her study identifies community land and resource uses based on the oral accounts of territorial boundaries (*eteg*). Mining areas are an additional land use type identified by Moss (1920). Wiber notes that while the government's tax classification system identifies seven general land types¹⁵, the Ibaloi distinguish only two general land types, wet lands (*payew*) and dry lands (*uma*) (1984: 9).

¹⁵ These include wet rice land, camotal and vegetable land, areas planted to fruit trees, pasture land, "virgin" land and residential land.

Ibaloi land use patterns have changed over time. Over a span of 300 years, cattle as the basis of the Ibaloi economic system yielded initially to paddy rice cultivation and then to urbanism, tourism and the boom of the vegetable industry (Tapang, Jr. 1985). In the period of the Spanish occupation (1521 - 1898), the Ibaloi took advantage of the natural pasture environment in Benguet and established trade with Spanish outposts. Eventually, though, wet rice cultivation began to replace taro and sweet potato production in swidden fields, and by the time of the American occupation (1898 - 1946), paddy rice cultivation was a significant land use. Paddy rice cultivation transformed the steep mountain slopes into terraces irrigated by an elaborate network of canals. These terraces competed with grazing land and marked the decline in the dominance of the cattle industry in the Ibaloi culture. Rice and rice lands became significant in a family's accrued prestige, which was gained primarily through rituals in which serving rice and *tapuy* (a wine derived from a glutinous rice variety) were indicators of wealth and influence within the community. According to Tapang, Jr., "Ritual and custom law were very detailed as regards ownership, sale, lease and inheritance of rice land, and as regards planting, harvesting and distribution" (1985: 17).

Grazing land, particularly around Baguio City, was further restricted by a growing urban center characterized by mining and tourism sectors. As the transportation infrastructure throughout northern Luzon has improved over the past thirty years, Benguet, particularly the Trinidad Valley, has become the primary center of vegetable production on Luzon, competing also with lands previously under rice cultivation (Tapang, Jr. 1985). Produce from Benguet is marketed as far away as Manila.

Customary laws regulating land ownership among the Ibaloi conformed to the system of *primi occupantis*¹⁶, in which the possession of rights rests with the person who first worked or used the land. Ownership, therefore, was established through what were considered by the Ibaloi as improvements on the land (Tapang, Jr. 1985; Prill-Brett 1992). "Rights become 'owned' when the person/group enclosed (fenced in/put barriers) and/or defended the land by preventing the use, encroachment, improvement, or alienation by others of the resource" (Prill-Brett 1992: 7). Forests were not considered owned by cultivators, but crops planted and

¹⁶ Tapang Jr. also associates the demise of the cattle industry with the American policies directed toward the mining industry. These policies replaced the traditional concept of *primi occupantis* with a documented, titled land ownership system (1985).

harvested within forests were considered owned by the farmer (Prill-Brett 192).

Land Use Practices in Calo

The terrain in Calo is less rugged, topographically, and the climate is somewhat warmer than in Benguet, the cultural hearth of the Ibaloi (and the origin of the Ibaloi people now living in Calo). Even with these differences, the four land use types Prill-Brett identifies (*uma*, *bodusan*, *payew*, and *anupan*) are present in Calo. There have also been attempts at small scale mining in search for gold along the small streams in Karamramutan, though only pyrite ("fool's gold") was found.

Chapter two provides some basic information regarding the land use practices of the people in Calo. I provide this information here with respect only to the Ibaloi in Calo.

- Thirteen families (81 %) are permanent residents. Three (19 %) are seasonal.
- All sixteen families (100 %) till paddy rice, and all but one family has CSC rights to rice lands. Fields range in size from less than one hectare to seven hectares.
- Ibaloi households in Calo harvest on average 143.44 cavans (~7172 kg) of rice per year. Harvests per year, however, range from 30 to 500 cavans (~1500 – 250000 kg). Eight families (50 %) harvest only one crop per year, seven families (44 %) harvest two crops per year, and one family (6 %) enjoys three crops per year.

- Twelve families (75 %) have *kaingin* farms. Four (25 %) claimed not to have *kaingin* farms at the time they were interviewed, though one family admitted having had one in the past.
- Thirteen families (81 %) maintain house gardens. Three (19 %) do not, all of whom are seasonal residents in Calo.
- Ten families (63 %) own at least 1 carabao; seven (44 %) own at least 1 pig; eleven (69%) own at least one chicken; six (38 %) own at least one goat; eight (50 %) own at least 1 dog; and two (13 %) own cattle.

People in Calo are farmers. Though some earn income from other activities from time to time¹⁷, all sixteen Ibaloi families and five Ilokano families (100 %) claimed "farming" as their primary occupation.

The farming activities of the people in Calo form a spatial pattern. Paddy rice fields occupy relatively flat, low-lying areas that are easily irrigated during the rainy season with a network of canals. Most of these fields have been surveyed, mapped, and distributed to the people under the ISF program. Portions of the grasslands surrounding the paddy rice fields and near the houses are being planted with upland (dry varieties) of rice. This is a relatively new practice for people in Calo, being only a few years old. Other grassland areas have been planted to vegetables (*kaingin* farms),

¹⁷ People have worked as laborers for other farmers or with government projects such as the NIA and FMB reforestation efforts in the 1980s. They have also established micro-enterprises such as the manufacturing and sale of *sawali*, a woven bamboo mat used for house walls (though this recently was judged by a group of elders in the community to be an unacceptable activity). A few families own small stores known as *sari saris*.

and one area is an agro-forestry farm interplanted with banana, mango, and a variety of vegetables.

Adjacent to a portion of the rice fields, located on gently rolling hills and accessed by the NIA-constructed road, are the houses of Calo. The houses are surrounded by trees some planted, some native. Here are located the house gardens, usually fenced, occupying areas we might consider part of our yard, though no strict property boundaries apply to house lots in Calo.

Located in the same vicinity are animal shelters. Where animals spend their time, however, depends on their type. Chickens and pigs often roam freely in and around the cluster of houses. Goats do too, though some families pasture their goats just outside of the housing cluster. Carabao are most often pastured closer to fields, in wet spots, during the day, and are brought close to the houses at night. Dogs roam freely and far. Cattle are not kept close to the cluster of houses, but instead are pastured in a fenced area in the hills surrounding the low-lying rice fields, in view of the houses.

Kaingin gardens are found nestled along the stream banks in the more hilly topography west and north of the houses. Their distance away from the houses has varied over time. In the late 1980s and early 1990s, *kaingins* could be found nearly an hour's walk - approximately three to five

kilometers - away from the houses. In 1997, many could be found one kilometer or less from the houses.

According to respondents, the reason families are making *kaingins* closer to the houses has much to do with a reduction in fear. While *kaingins* have always been illegal in Forest land, the most important motivation to establish *kaingins* further away was the Aquino administration's military patrols in search of bands of the NPA. Farmers feared false accusations of being a member of the NPA. From their perspective, the further away the *kaingin* was, the less likely one was of being caught and falsely accused. These military actions lessened under the Ramos administration. Also, in 1991, many of the DENR responsibilities were passed on to the newly established Local Government Units, which have been restricted by a lack of funds and personnel. These changes have resulted in a reduction of fear among the people of Calo regarding the prospect of being caught and falsely accused of being a member of the NPA or of being penalized for an illegal activity on Forest land.

Hunting grounds are located furthest away from the houses, in the area where most of the *kaingins* were formerly located. The area is known as Karamramutan, and is a one to one-and-a-half hour walk west-north-west from the houses (5 -7 kilometers). Here can be found larger patches of

forest cover surrounding steep ravines where streams originate from springs. This is a remote area with no permanent dwellings or permanent residents. Because of its remoteness, a larger number of wildlife can be found here.

Hunting is a male activity in Calo, usually done by young married and unmarried men. Air rifles are primarily used, however, it is reported that blasting caps placed in sweet potato tubers in *kaingins* have also been used. Hunting is as much, if not more, a sport for these individuals, as it is a food-gathering activity. The distance away from the fields and houses, the small amount of fauna to hunt, and the fact that meat can easily be purchased with disposable income from the markets of San Jose and Carranglan, preclude hunting as a main livelihood activity. Small birds and tree lizards, known as *banyas* in Ilokano and *tilay* in Ibaloi, are the common prey. Wild boars, however, have also been killed, most recently in 1996 when a blasting cap was used for this purpose in defense of a farmer's *kaingin* crops. Also killed in 1996, by air rifle, were two monkeys. This has been the extent of hunting by people in Calo since 1996.

The traditional land use types of the Ibaloi are present in Calo. They are also practiced by the Ilokano families there. Wet-rice cultivation (*payew*) and *kaingins* (*uma*) are dominant. Grazing lands (*bodusan*) are held by only two families, and the hunting grounds (*anupan*) are used less for

sustenance than for sport and in protection of *kaingin* crops. Water, as a resource and animal husbandry, as a livelihood activity, are also present in Calo and in the traditional Ibaloi practices. House gardens, while not mentioned in the literature as a historic land use practice, are also present in Calo.

The only major land use activity in Calo legally recognized and accepted by the Philippine government is wet rice cultivation on fields that have been tenured with a CSC under the ISF program. House gardens, which impact only the lands adjacent to houses, are also acceptable under the law. The hunting of animals, the fencing off of pasture for cattle and the creation of *kaingins*, on the other hand, are not legally recognized land use practices in Forest lands unless permission is given by the DENR. In no case, that I am aware of, has anyone in Calo applied for or received a permit for any of these activities. While the people understand the law regarding these practices, they also hold to the Ibaloi customary law of *primi occupantis*.

Trees as a Resource in Calo

Trees (and bamboo) are resources used by the people in Calo. Trees and tree products are used for construction (houses, animal shelters), fuel wood, medicinal purposes, as sources of medicine, spices, and food, and for making material products, such as pillows made from the cotton-like fibers of the *kapok* (*Ceiba pentandra* L. Gaertn.) tree seed pod. Trees are planted by residents in Calo. They are planted in house gardens, around houses, in *kaingin* farms, along fence lines, and have even been attempted in plantations.

A number of species have been present in the landscape since the first settlers arrived in Calo in 1973. According to respondents, these include: *culibangbang* (*Piliostigma malabaricum*), *sagat* or *molave* (*Vitex parviflora*), *duyong* or *palosapis* (*Arisptera thurifera* Blanco), *bayabas* or native guava (*Psidium guajava* L.), *balete* (*Ficus* spp. Linn.), *seket* (*Terminilia catappa*), *kakuwate* (*Gliricidium sepium* Jacq. steud) *lungboy* or *duhat* (*Syzygium cumini* L. Skeels), *arosef*, *pacac*, *yamban*, *bulala*, and *alomete*. Three types of bamboo were also noted by respondents, *buho* (*Schizostachyum lumampao*) and two types of *kawayan*: *kawayan kiting* (*Blumeana vulgaris*) and *kawayan si-itan* (*Bambusa blumeana*).

Six of these species, according to respondents, are found dotting the grasslands surrounding the rice fields: *culibangbang*, *kakuwate*, *arosef*, *bulala*, *lumboy* and *bayabas*, as they were in 1973, when the first settlers arrived. The remaining species are found in the more remote and rugged topography of Karamramutan.

Since the NIA, FMB and RP-Japan efforts to reforest areas of the Pantabangan watershed, four additional species are found in some quantity in the area: (1) a small (approximately 1/2 hectare) but successful stand of Japanese acacia located across the rice fields from the houses, (2) ipil-ipil and cashew along the NIA-constructed road, and (3) yemane successfully planted by the RP-Japan efforts approximately 2 kilometers east of Calo, closer to the town of Carranglan. A few mahogany, narra, yemane, *eucalyptus*, Japanese acacia, *agoho* (*Casuarina equisetifolia*) and mangium (*Acacia glaucescens*) are growing in front the Ilokano houses and along the fence line of one of the grazing areas. While planted by families in Calo, these are the result of a botched contract reforestation effort on the part of one family. (This is discussed at length in the following chapter).

Many other species have been planted by residents in home gardens, around houses and in *kaingins*. These include: mango (*Mangifera indica*), tamarind (*Tamarindus indica* L.), star apple (*Chrysophyllum cainito* Linn.),

kamatsilis (*Pithecolobium dulce* Roxb.), papaya (*Carica papaya*), coffee (*Coffea arabica* Linn. and *Coffea canephora* var. *robusta* Linn.), pomelo (*Citrus maxima* Burm. Merr), avocado (*Persea americana*), achuete (*Bixa orellana*), calamansi (*Citrus madurensis*), banana (*Musa spp.*), malunggai (*Moringa pterygosperma*), guabano, (*Annona muricata*), jackfruit (*Artocarpus heterophyllus*), balimbing (*Averrhoa bilimbi*), coconut (*Cocos nucifera*), santol (*Sandoricum koetjape*), acapulco (*Cassia alata*), kakuwate (*Gliricidium sepium* Jacq. steud), eucalyptus, and kawayan (a species of bamboo). Plantings are usually of a few trees only, except for banana and mango trees planted in *kaingins*, which number between five and fifteen trees.

With the exception of *eucalyptus*, *kakuwate*, *acapulco*, and the bamboo, the trees planted by people in Calo provide food or, in the case of *achuete*, spice. *Kakuwate* is easily propagated with cuttings, and is often used as a living fence for home gardens. *Eucalyptus* and *acapulco* are used primarily for medicinal purposes. Unlike species used for construction or fuel wood, most often only fruits and leaves of these species are harvested.

Species used by the people in Calo for their houses include: *yamban*, *sagat* (molave), *duyong* (*palosapis*), and mimosa. All of these are found in Karamramutan, and not in the grasslands surrounding the fields of Calo.

These are also species native to the area, and not introduced by the DENR in their tree planting efforts.

Fuel wood is another resource demand placed on trees. I found that 68 % (n = 21) of the households in Calo use wood as their primary source of fuel for cooking. Only 32 % (n = 21) use LP gas. However, even gas users will use wood at certain times of the year, particularly in times of cash constraints. There appears to be no clear gender differentiation in the collection of wood for cooking fuel. Species preference also does not appear to be gender specific. Many species were noted as fuel wood: Japanese acacia, ipil-ipil, *culibangbang*, *sagat* (primarily used for the construction of houses or for fence posts), *arosef*, *kakuwate*, yemane and guava. One respondent even declared that she uses "*urai ania*," or anything. Japanese acacia and ipil-ipil were mentioned most often by respondents, and while a few families had planted some of these species near their houses, the bulk of firewood collected was from the FMB Japanese acacia plantation or along the NIA road where ipil-ipil now grows as wildings. According to respondents, *culibangbang*, *arosef*, *kakuwate* and guava were all present as native species in Calo prior to its settlement in 1973, and can still be found in the grasslands and around their houses. Also according to respondents, *sagat*, also present as a native species, could only be found in

Karamramutan. *Yemane*, like the Japanese acacia and ipil-ipil, is a plantation species introduced by the DENR tree planting efforts in the area.

Four families have attempted to plant mango trees, on a larger scale, as a long-term agricultural investment. They have done this with their own capital, and on their own initiative. Planted in the grasslands surrounding the rice fields (lands classified as Forest land and not part of their CSC lands) but close to the cluster of houses, all of these failed due to fires. One family planted 300 trees, two families 50 trees, and another 20 trees. The fire that burned the stand of 300 trees was caused by a teenage girl from another town, and was declared an accidental fire. The girl served a number of months as a maid to the family in Calo to compensate for the burning. No specific information regarding the fires that burned the other three areas was given to me in interviews.

One family also planted trees in an attempt to secure a reforestation contract under the CFP program in 1990. This, however, was not a completely voluntary activity. The family was coerced into applying for the contract by DENR officials (see chapter six). While approximately 80,000 seedlings were planted in an area about 100 hectares in size, few trees remain. Fire burned the area in 1992, and the family believes that only 80 to

100 trees survived. A more thorough description of this is given in chapter six.

Environmental Perceptions in Calo

Research for this study reveals the general land and resource use practices and, by implication, the environmental perceptions of the people. People in Calo have shaped the landscape around them by their land use activities. Primary to their farming lifestyle are paddy rice cultivation and *kaingin* farming. Resource extraction also impacts their environment, from the diversion of water in human-constructed irrigation canals, to their collection of wood for construction and fuel. Families in Calo are part of the cash-based local economy and, as such, a few have risked planting mango trees on a relatively large scale (20 to 300 trees) in an effort to profit. These attempts, unfortunately, have failed. While mango trees are perceived as potentially profitable, many other trees are also utilized by the people in Calo. On a more individual and less grand scale, the people harvest fruits and leaves from trees they plant in their home gardens and in their *kaingins*. Other tree products include leaves, barks, and fruits used for medicines and spices. These are collected both from native species and from planted trees. More intensive tree use occurs in the form of wood collection for

construction and for fuel. Construction species are found primarily in Karamramutan, while the most used wood fuel species are located closer to the cluster of houses.

People in Calo, in general, perceive themselves as masters and stewards of their environment. While the Ibaloi (and the Ilokano) like most Filipinos, live with a cosmology most Westerners would describe as superstitious, they do not possess a biocentric viewpoint. The people see themselves as caretakers of the environment, above other species in nature. As such, the environment is a landscape full of riches and resources to be tapped for their (human) benefit. In five trips to Calo, over the past ten years, the most often cited "need" of the people is irrigation from streams, six to eight kilometers away from the fields, which would provide sufficient water for multiple rice crops. Their vision of the perfect landscape is one dominated by cropland agriculture: rice fields and vegetable gardens. While a few have attempted to transform portions of the landscape into mango plantations, these were risks, undertaken by a few of the more wealthy families who enjoy more financial security than most of the people in Calo. Their attempts to plant trees were motivated by profit.

Trees, in Calo, are perceived by the people as abundant. While the landscape is not dominated by forest cover, the trees that exist appear to

them to be sufficient for their needs. Most say that there are more trees in the landscape now than when they first arrived in Calo. Collecting wood fuel is a consistent activity in Calo. People in Calo explain that it is easier to collect wood fuel now than when they first came. This is true because of two reasons: (1) some fast growing trees have been established through planting efforts of the government (ipil-ipil along the NIA-constructed road, and a 1/2 hectare Japanese acacia plantation near the rice fields), and (2) forestry laws restricting the collection of wood are not enforced as strictly as before since the passage of the Local Government Code of 1991.

People in Calo do not perceive the environment in the same way as the DENR. While they understand that it is classified as Forest land, they have occupied an environment dominated by grasslands and agricultural fields since settling in the area. Trees are an important resource for them, but their livelihood sources are dominated by paddy rice cultivation and *kaingins*. Trees grown as plantations are perceived to be potential income sources, but only with mango species. The large-scale growing of species other than mango is not perceived as a worthy activity. The people in Calo would prefer to see a landscape dominated by rice and vegetable fields with year-round irrigation, and possibly mango plantations.

CHAPTER SIX

Discussion of Findings

Effects of Divergent Land Use Practices and Environmental Perceptions on Social Forestry

My research findings show that: (1) while the majority of Carranglan is classified as Forest land, the bulk of it is covered in grassland and a mix of grassland with cultivation, and (2) divergent land use practices and environmental perceptions exist between the local people of Calo and the DENR. It is not entirely clear whether or not grasslands in Carranglan are a product of the conversion of lands from forest cover. There is some evidence that suggests the possibility that these grasslands are not a result of land cover change. Regardless, the DENR seeks to "rehabilitate" these lands in an effort to arrest soil erosion, the siltation of the Pantabangan Reservoir, and the decreased lifespan of its service. Efforts toward establishing tree cover in Carranglan have produced less-than-optimal results. This research poses the possibility that one factor affecting the suboptimal performance of tree planting activities is divergent land use practices and environmental perceptions. In examining this I pose two questions.

To what extent do the people of Calo share the same problem definition as the DENR? The DENR perceives Carranglan as a degraded environment. This degraded environment is responsible for social, environmental, and economic costs - - mostly associated with the Pantabangan multi-purpose dam. The solution to these problems, in the view of the DENR, is the conversion of grassland into forest cover. The means to this end involves tree-planting activities that try to include local people.

The people of Calo, on the other hand, perceive three important needs: (1) improved irrigation from sources approximately six to eight kilometers from their rice fields, (2) the paving of the NIA road to provide easier access to and from the markets in Carranglan, San Jose, and Baguio City, Benguet, and (3) better local health care. These are their long-range "problems".

There are other important obstacles in their lives: lack of credit for fertilizers and pesticides, unpaid debts, no consistent vehicle service in and out of Calo, crop failures from drought, prejudice toward them in San Jose, abuse by the military, and so on. The people of Calo do not, however, perceive a degraded environment around them. They do not perceive any negative consequences on their lives from the siltation of the Pantabangan reservoir. They do not share the DENR's perception that they occupy an area in need

of "rehabilitation" through the large scale conversion of grasslands to forest cover. They do not feel there is a lack of trees that are an important resource to them. On the contrary, it is their view that since they first settled in the area, more trees are present than before. The problems faced by the people of Calo relate directly to their land use practices and environmental perceptions. The same can be said for the problems defined by the DENR regarding Carranglan's environment.

If the people of Calo do not share with the DENR/FMB the same problem definition(s) for their environment, and if divergent land use practices and environmental perceptions underpin these, then it appears this divergence does impact the tree planting efforts of the DENR/FMB. It seems logical that the likelihood of success is small in a collaborative, participatory endeavor in which the various groups do not share the same problem(s) or problem definition(s). To assume that the local people of Calo and the DENR do share the same problem definition(s), land use concepts and environmental perceptions is folly.

My second question, is to what extent do the people of Calo benefit from tree planting activities? The social forestry programs in Carranglan are designed to address a number of issues. Primary, of course, is the reduction of erosion in the watershed. This is not the sole objective, however. Social

forestry programs are also intended to benefit the local people. Project analyses often present two scenarios, one regarding the impact with the project, another without. Usually the outcomes are presented in terms of economic benefits. This type of analysis was performed for the Pantabangan Watershed Reforestation Project (Reyes and Mendoza 1983). Economic benefits projected by such analyses, however, often do not materialize.

The tree planting programs in Carranglan and the Pantabangan watershed were intended to benefit local people by increasing their socio-economic well-being. Profits from wood resources would supposedly benefit local people through profit-sharing. Furthermore, wood resources would become more abundant for local fuel, construction and other needs. While profit-sharing was never realized in tree planting programs, local people have benefited from the few successfully established trees. The people of Calo frequently use the Japanese acacia (*Acacia auriculaformis*) trees planted by the BFD just across from their rice fields, and the ipil ipil (*Leucaena leucocephala*) trees reproducing as wildings from seeds scattered by NIA during the construction of the road. These trees are basically used for fuel, posts, and light construction needs. These, however, are not the only species used by the people of Calo for fuel, posts or construction.

At a slightly larger scale, and more central to the DENR goals of establishing forest cover in Carranglan, are the benefits derived from the Pantabangan dam. This project has an irrigation coverage of 83,700 hectares in the central plains of Luzon, the Philippine 'rice bowl'. The hydroelectric facility provides 70 MW to the Luzon power grid. The reservoir supplies domestic water to approximately 150,000 people in five municipalities. The dam also regulates water flow minimizing flood damage to crops (Reyes and Mendoza 1983).

Unfortunately, while the people of Calo live within one day's walk of the Pantabangan Reservoir, they receive none of its benefits. Calo is located upstream from the dam, along a stream which empties into the reservoir (see figure 13). The hills surrounding Calo, where the headwaters of this stream originate, are dominated by grassland, and have been the targets of NIA and DENR tree planting programs. Calo does not receive electricity from the hydroelectric facility. Being upstream, Calo will never benefit from irrigation, the single most important need identified by the people of Calo. Calo does not receive household water from the reservoir. And, it does not benefit from flood control. Under the social forestry programs the burden of establishing forest cover in and around Calo is meant to be borne by the

local people, and yet, in this case, they receive no benefits from the reservoir which their actions are intended to save.

The efforts of the people of Calo are, for the most part, directed at rice and vegetable farming. Their goal is to make a profit in the local economy. They do use and rely on trees as resources, and people have benefited from trees being established during various, government planting programs. However, consistent with their goals for rice and vegetable production, people in Calo feel that the only species they might consider planting on a large-scale would be mango trees (*Mangifera indica*). Mangos are profitable. Four families in Calo have attempted to grow mango trees, but were unsuccessful. There is a potential within the land use concepts of the people of Calo, for the large-scale planting of mangos in the grasslands surrounding their fields. The goal, of course, would be profit from selling the fruit. Inconsistent with their land use concepts are (1) the large-scale planting of tree species other than mango, which they perceive as the only profitable species able to survive in their environment, and (2) the conversion of grasslands to forest cover as a means to continue the multiple functions of the Pantabangan reservoir and dam. The examination of land use concepts and environmental perceptions in relation to project benefits reveals how divergence can undermine project intentions.

Divergent land use practices and environmental perceptions, therefore, can impact the social forestry programs in Carranglan. By examining problem definition(s) and project benefits within the context of land use and environmental perception, divergence between groups can potentially affect project goals. In the case of tree planting in Carranglan, the local people of Calo do not share the DENR's view of a degraded environment. Furthermore, the intended benefits have not reached the people of Calo, and for the most part do not fit their particular land use concepts or environmental perceptions.

Constraints to Social Forestry in Carranglan

Social forestry can be affected by divergent land use practices and environmental perceptions. These, however, are not the only factors which influence the success or failure of social forestry. The KITE framework for political ecology, as mentioned previously, provides a heuristic device that can be used to examine environmental, economic, political, and socio/cultural factors. In exploring the Ibaloi land use practices and environmental perceptions, past and present, this thesis addresses one socio/cultural factor affecting tree planting programs in Carranglan. I have

tried to emphasize the role of human agency in understanding social forestry failures within the broad context of human environment interaction.

Social forestry programs in Carranglan are also affected by other factors. These factors became apparent over my three months of fieldwork in the Philippines. Environmental, economic, political and other social factors besides land use and environmental perception, all influence the outcomes of tree planting activities in Carranglan. I address specific factors within three general categories below. No factor acts in isolation, and I have attempted to explain the linkages between factors.

Environmental

The climate in Carranglan is tropical and monsoonal. The area experiences a dry season from December to May or June, and a rainy season from June to November. Carranglan experiences a six to seven month dry season that spans the areas hottest months - April and May. Low survival rates of seedlings is partially a result of low soil moisture. Some areas are further constrained by low soil fertility (Reyes and Mendoza 1983). Probably the most damaging environmental factor, however, is the occurrence of fires during the long, hot dry season.

Four respondents worked as laborers during the regular reforestation period in the late 1970s and early 1980s in Carranglan. Each respondent indicated very low tree survival rates, primarily due to fires. No common answer was given regarding how the fires were started. Accidental fires can be a result of clearing for *kaingins*, of discarded cigarettes, or a result of natural causes, like lightning. Some fires are not accidental. Fires are set by local people, DENR laborers, and non-laborers. Fires are set by people collecting fuel wood who burn trees in order to kill them. Once killed, it is legal to take them for personal use. Fires are set by people who collect *cogon* grass to sell at the market, because burning ensures re-growth. Fires are set as a means of getting rehired in order to plant the same area next planting season. Fires are set in protest against the government and they are set for no reason at all.

The DENR realized in the early 1980s that fires would need to be fought. At periodic intervals fire lanes were cleared off of the NIA road through the grass-covered hills. An FMB fire watchtower was manned by forest guards. Local people were hired as well to monitor more remote areas. Two individuals in Calo were hired by the FMB in 1988 as fireguards to monitor approximately 500 hectares of planted hills in Karamramutan, a forty minutes walk north-northeast of Calo. They explained that in other

areas, closer to the main road, as many as six or seven people were hired to protect areas much smaller in extent. They admitted that two people could not effectively combat fire in the 500 hectares in Karamramutan. The area has burned repeatedly since the 1980s, in spite of the efforts of fireguards. Measures taken by the DENR to combat fires have been inadequate, and indicate the unequal distribution of its resources.

Political - Economic

Corruption is not a new vice in Philippine politics or in association with the Philippine DENR. In my discussions with residents in Calo and in examining documents provided to me by the DENR, it appears that political favoritism, cronyism, and nepotism are alive and flourishing in the social forestry programs specifically, and in Forest land management in general, in Carranglan. This corruption has affected the success of tree planting programs, particularly in the immediate region surrounding Calo.

Social forestry is all about the inclusion of local people. Local, however, is a subjective and general term. If one objective of social forestry is to include local people in forest management activities, it seems logical to target people who live closest to the areas in question. These would be the most local people to a project site. In the grass-covered hills north and

northeast of Calo, extending as far as Karamramutan, the people in Calo, or in the neighboring *sitios* of Saba, Butaling and Manbeha, would be the most local. These areas have been targets of tree planting activities first under the regular reforestation activities and then under contract reforestation. Not a single contract, however, has been given to the people of Calo.

Residents informed me that contracts were awarded to politicians and people with connections to DENR employees. They allege that contracts for 1000 hectares were awarded to a former Carranglan mayor, a doctor from Carranglan, and a relative of a forester. Other contracts were given to the current mayor of Carranglan, a *barangay capitan* (the head of a locally elected town council), an individual who lives in San Jose and is relative of a CENRO officer in Nueva Viscaya, and an individual, who residents claim, is a front or "dummy" for the former district forester for northern Nueva Ecija who now works at the regional office.

I encountered no paper trail with which to confirm these allegations. However, the Contract Reforestation documents from the DENR lists some very suspect contract recipients for areas located in Calo and Karamramutan. Again, the statistics vary from one document to the other, but there were supposedly thirteen or fourteen contracts awarded in Calo covering 481 or 672 hectares (depending on the document). A number of different

associations and organizations are listed as the recipient of each contract. The list includes eleven teacher parent associations (TPAs). This is quite curious, as there is no school present in Calo, and therefore no TPA. Possibly, these are TPAs from other areas near Calo that do enjoy having a school. One contract for Karamramutan identifies the Karamramutan Upland Farmers Association as the contract recipient. There are no permanent residents in Karamramutan. When I inquired from the DENR about this association's members, I was told that information was not available in the CENRO office, but that it was all located at the regional DENR office in San Fernando, Pampanga.

Whoever the people are who have received these contracts, one thing is certain, they are not people living in Calo. Other people, living further away from the contract sites than the people in Calo have most likely profited from receiving reforestation contracts. According to project documents that list disbursement amounts, these people are paid thousands of pesos to plant and maintain contract areas ranging in size from 20 to 100 hectares. These contract recipients, according to the people of Calo, are politically connected or relatives of DENR officials. They are the "local people" who have benefited from tree planting activities.

One family in Calo did apply for a contract. They did so, not of their own accord, but according to them were coerced by DENR officials into applying. This family had fenced off an area in the hills near the rice fields, of approximately 100 hectares in size. The family began raising cattle in the mid-1980s. Though they did not have permission from the DENR to establish a ranch on forest land, they did so with the compliance of a local government official, who kept his own cattle in the family's fenced area. The family bred and took care of the cattle. Other ranches had been established, legally and illegally, in Carranglan. One legal ranch was a 1000 hectare area given to Central Luzon State University as a *carabao* (water buffalo) research station. It was reported by people in Calo, however, that the ranch also supported cattle owned by local politicians and wealthy individuals from Carranglan.

The family in Calo eventually raised enough cattle to sell and purchase a jeepney, which they used to transport the people in Calo to and from Carranglan, San Jose and Baguio City, primarily for marketing. This was an investment for the family by which they hoped to profit in the long run. Two years after they purchased the jeep, DENR officials called on the family in Calo. The family was told to dismantle the ranch, which still held a few cattle, or face penalties. The family protested, indicating that others,

most of them politicians, also possessed illegally fenced areas for ranches. The husband said he would take down his fences when these people did. He was later called into the DENR office in Munoz, Nueva Ecija. He was told that he could keep his ranch if he applied for a reforestation contract that covered that area. He agreed to apply.

In order to apply for a contract covering more than two hectares, the family had to organize an association, which was called the Calo Igorot Association, and included (on paper) the residents of Calo. The family also had to establish a seedling nursery before they would be given a contract. They used 1/4 hectare taken from one of their rice fields to establish approximately 250,000 seedlings. These were propagated primarily from seed in plastic planting containers. They grew species selected by the DENR: narra, mangium, gmelina, eucalyptus, mahogany and Japanese acacia. The costs associated with establishing and supporting the tree nursery included the procurement of seeds and cellophane bags and the hiring of labor to mix potting soils and to pot the seeds. In order to fund this, the family had to sell their jeepney, sell what few cattle remained, and even borrow money from relatives. For a period of two years, while the nursery was established, they also lost rice production in the area used for the nursery.

The DENR surveyed the contract area, took pictures of the established seedling nursery, and instructed the family to plant the seedlings inside the ranch. According to the family, a total of 80,000 seedlings were planted in the ranch, at a cost of P1.50 (~\$0.06) per seedling. All funds came out of the family's pocket. I was told that when the husband went to the DENR to inquire about the status of his contract, he was told by the district forester he would get the contract if he was willing to split the money, one third to the district forester and two-thirds to his family to cover the cost of planting. He agreed. He was told to bring his copy of the contract proposal to the DENR office. That is the last he has heard regarding the reforestation contract. The family no longer has their copy of the proposal, and the DENR claims to know nothing of it. Allegedly, the family never received any payment for their services, but they suspect the district forester simply took the contract money and claimed on project documents that the area was given to another contractor. There is no record of a Calo Igorot Association in the DENR contract reforestation documents.

Corruption, greed, cronyism and nepotism certainly affect social forestry in Carranglan. Individuals are given contracts, not because they live adjacent to contract areas, but because they are politically connected. The people of Calo are understandably suspicious of tree planting programs.

Contracts with the government are risky ventures. Money can be, and often is, made through such endeavors. However, it is known to all in Calo that one of their own has been hurt by it. What they understand, from witnessing who gets contracts, is that the DENR may be interested in the growing of trees, but that the growing of trees is also a very profitable business. Tree planting appears to be a political game driven by the economic incentive of profit.

Social - Economic

Social factors also affect the success of social forestry in Carranglan. While I have chosen to present the impact of people's political relationships under the general category of Political - Economic, in the above section, certainly it borders on social stratification between those who receive contracts and those who do not. In this section, I wish to highlight the general diversity among local people in Carranglan. My research focused on the people of Calo, but I gained knowledge of other people's activities in neighboring communities. It is their actions that I examine in this section.

Though I was unable to uncover much diversity within Calo as a community, I was able to gather some information useful in comparing their actions with other people's. This comparison points to social differences

between local people. The people of Calo use wood resources primarily for direct consumption. They do not practice the harvesting of timber for sale, and they are not charcoal makers. On the other hand, there are people living in neighboring communities in which families do harvest trees for the making of charcoal. This, of course, is an illegal activity. When I approached a vendor in the San Jose market, who was selling wood fuel and charcoal, she told me that most of it came from Pantabangan and Carranglan. How much of this is legally made, I do not know.

On one occasion, a tree was pointed out to me by a resident of Calo. The tree had been collared. About two feet off the ground, the bark was peeled from around the tree. The objective, my companion told me, was to kill the tree so that it would be legal to harvest it. This, he said, was done by outsiders, people not living in Calo. On another outing, a resident of Calo took me to see what was being done to the pine trees planted by the RP-Japan reforestation project. In a small area near the road about four kilometers west of Calo, a number of pine trees had been scared. People evidently collect the pine sap to use as a fire starter.

People living in Calo mentioned to me, during interviews, that outsiders come to Calo and the areas surrounding it to harvest products that they then sell in the market. Most common is the collection of *cogon* grass,

and *buho*, a type of bamboo used to make wall material. When asked why the people in Calo do not become involved in such ventures, they responded that they do not want to deplete the resources in the area. The people in Calo feel comfortable harvesting and using resources for personal use, but feel that to profit from this type of activity is not in the best interest of the community. When one person in Calo did try to collect and sell *buho*, the community had a meeting to discuss its implication. The result of the meeting was an agreement not to sell local resources gathered from the environment.

People's actions vary from group to group, and even within groups. They also vary over space and time. As close as one or two kilometers from Calo, families are making charcoal. Outsiders come into the environment surrounding Calo and harvest resources. These social differences impact forest management. Underlying these actions are people's land and resource use concepts and their environmental perceptions. Attempts to include local people in social forestry and forest management practices need to explore the contextual differences within and among these various social actors.

The Convergence of Political Ecology and Environmental Perception

Tree planting and social forestry programs in Carranglan are affected by numerous factors. Commonly cited factors in the literature can be examined through a political ecology framework. The most important explanations regarding the impediments to social forestry in Carranglan include fires that burn newly planted areas, poor soil conditions, drought, poor access roads and transportation facilities, insufficient fire prevention and protection, and slow procurement of seeds and propagation of planting material (Galvez 1984, Reyes and Mendoza 1983). In the previous sections I have examined a few of these factors with respect to Calo and Carranglan. Environmental, economic, political and social factors should be examined within a temporal context and across scales in order to more fully understand the obstacles to successful tree planting programs. The understandings gained through such a framework, however, are not enough. As my findings indicate, divergent land use practices and environmental perceptions also impact social forestry activities. The political ecology framework does not explicitly include these factors. Therefore, the use of political ecology together with the study of land use practices and environmental perceptions should be used in order to more fully comprehend a phenomenon such as the

failure of social forestry in the Philippines. These two methods complement one another and add to our understanding of human environment interaction.

The case study of Calo indicates that divergence exists between the local people and the DENR regarding land use practices and environmental perceptions. This divergence may impact tree-planting activities. This alone, however, does not explain why tree-planting activities are not more successful in Carranglan. The political ecology framework adds numerous factors to our understanding. Climate, growing conditions, fires, connections to DENR officials, social status, corruption, and behavioral differences among local people - all, contribute to why tree planting in Carranglan has not been more successful.

CHAPTER SEVEN

Implications for Future Philippine Forest Management Programs

The findings of this research highlight an additional factor to the current understanding of why social forestry practices may or may not be successful, particularly tree planting activities, in Carranglan, Nueva Ecija. While structural constraints were identified as early as fifteen years ago, divergent environmental perceptions, as I have shown, may also play an important role. Political ecology, along with environmental perception, provides the theoretical and methodological tools with which to uncover and comprehend the failure of social forestry in Carranglan. The value in this rests in the potential for more successful forest management programs, which means not simply meeting the goals of the DENR, but also redefining the concepts underlying forest management practices in the Philippines.

Divergent land use practices and environmental practices exist between the people living in Calo and the DENR. This divergence affects the success of tree planting programs in Carranglan. Other factors, as identified through a political ecology framework, also affect these tree-planting programs. In order to achieve greater success in social forestry: (1)

the political, economic, social, and environmental factors need to be understood and addressed, and (2) the potential for divergent land use practices and environmental perceptions, at the very minimum, needs to be acknowledged and explored. In the remainder of this chapter, I briefly explore three implications of my research regarding the future of Philippine forest management practices: (1) the conceptualization and role of participation in Philippine social forestry, (2) the search for "common ground" in forest management with respect to divergent land use practices and environmental perceptions, and (3) political impediments to social forestry practices.

The Practice of Participation in Philippine Social Forestry

As I have attempted to show, there are a variety of forms of participation in the practice of natural resource management and development. How projects are defined and conceptualized and the roles and responsibilities of each stakeholder, or group of stakeholders, are important factors in participatory strategies. Beyond these variations, participation becomes problematic when divergent environmental perceptions exist between "participants." Underrepresented in my own research, yet also very important, is the even more diverse range of perceptions within both of these groups, the DENR and the people in Calo.

Divergence at this level may also certainly play a role in our understanding of why social forestry practices are not more successful. While this study does not attempt to address divergence at this level, I recognize its importance.

Community-Based Forest Management (CBFM) is the most recent social forestry program being implemented in the Philippines. Under the CBFM program, communities must first form an organization and register it with a government agency. Once formed and registered, the organization, along with an NGO and DENR staff, devise a management plan for the area under consideration. The management plan must include target areas and species selected for reforestation. The extent to which the community is allowed to decide which areas are to be planted and what trees will be planted is always subject to question. In the case of the CBFM project in Piut, the selection of tree species was consistent with "regular reforestation" species, a program that viewed local people merely as laborers. In this particular case, while the CBFM strategy appears to be more participatory, allowing people a voice in creating the forest management plan for their area, it also appears that little has changed from the less-participatory approaches in the past regarding the intended goal (i.e. to establish forest cover dominated by timber species).

Participation in CBFM programs is a laudable goal but I am uncertain as to how well the participatory approach described in program documents is actually put into practice. Even when “participation” is more than just rhetoric, a problem remains that only communities that are willing to organize themselves are able to apply to the program. Not all communities are willing to do so and even in those that do form organizations, to what extent are all members of the community involved? Participation that is dependent upon a community's ability and willingness to form an organization is problematic.

People in Calo have participated in the social forestry programs in Carranglan. Those who have worked under the regular reforestation program did so as hired laborers. Their “participation” centered of the potential to earn money, not on the potential to transform their local environment into one dominated by trees. People in Calo also through dubious means are participating in the Piut Watershed Rehabilitation project, but only as names on a census list used to acquire a larger funding sum for the project. Others in Carranglan, certainly have participated in tree planting programs, particularly the Contract Reforestation. These “locals,” from the information I was able to gather, are the either political or economic elites, or relatives of those within the DENR bureaucracy, or both.

More central to my own research is the impact that divergent environmental perceptions may have on participatory approaches. If programs are truly giving local people more political power to define problems and decide the means with which to solve them in their area, these may have little in common with the problem definitions and goals of the DENR. The CBFM project in Piut serves as an example.

Applying for a CBFM project involves a great deal of work on the part of local people. A linkage must be formed with a local NGO. The community must formally organize themselves. They must be willing to attend training workshops held by the NGO. They must help prepare a management plan for the target area. They must then submit their documents along with the application fees [P 5.00 (~\$0.20) per hectare or P 1000.00 (~\$40.00) per project whichever is greater] to the DENR. If accepted, the organization receives a substantial amount of money in order to implement the project. In the case of the Piut project, this was P 10.62 million (~\$424,800.00). If survival rates for planted seedlings are high enough after three years, the community may then apply to receive tenure to the area for twenty-five years, renewable for another twenty-five years. Certainly, like the CFP contracts, there is a great initial incentive to apply and to hope for such a large sum of money. If seedlings are planted, and if

they survive, so much the better. But if they do not get planted or they do not survive, the community is still much further ahead economically than if they had never taken the time to apply.

The president of the Piut community organization that received the CBFM contract is the son of a family living in Calo. I was told that in order to apply for an area as large as 573 hectares, they had to show that the community was large enough to support the planting of such an area. With the assistance of the NGO working with them, they took a census of the community. However, they did not stop with just the members of *sitios* identified in the project area description. People in Calo, and other communities, were asked to sign the census. The objective was to register enough people in order to represent a large enough area and receive a greater sum of money to implement the project. The motivation is profit-driven. Local people understand the jargon and the objective of the DENR. They often learn how to play the political game with government officials. On the surface, in the project documents and descriptions, we see what potentially is a very sound project to reforest a large area in Carranglan. It appears, on paper, that local people and the DENR have successfully collaborated through an equal sharing of decision-making processes.

Questions addressing why people participate need to be explored in such programs. An understanding may reveal underlying factors that could contribute to the success or failure of tree planting, or other resource management, endeavors.

Participation in social forestry programs as it is practiced in Carranglan appears far removed from the ideal of participation expressed in the development literature. The concepts of the social forestry programs have moved beyond identifying local people simply as laborers (as they were under the “regular reforestation” programs), to viewing them as partners (as they are under the CBFM strategy). However, local people do not always participate in these programs with the long-term intentions as those expressed in DENR project descriptions. While the project descriptions speak of ecological benefits that in turn can become economic benefits to local people, these same local people (as in the case of the Piut Watershed Rehabilitation project) may become involved, at least initially, because of the large sum of money dispersed to the community for project start up purposes. Furthermore, we have to recognize the fact that lands classified as Forest land are property of the state, under DENR jurisdiction. People living in Forest lands are at a disadvantage in a “participatory” project in which land and land use are the central components. How can

they act or be perceived as equal partners in an endeavor when the lands they occupy are owned by the state?

The Quest for Common Ground

Because corruption exists to the detriment of social forestry programs in Carranglan, does not mean we should avoid addressing other important issues regarding these programs. Assume, for the moment, corruption is not a factor impeding the success of tree planting programs. Assume, too, that local people share equal weight with the DENR in the design and implementation of such programs. If local people do not share the same problem definitions, the same land use practices or the same environmental perceptions as those of the DENR, then where is the common ground on which to build these projects?

Ideally, participation in natural resource management should foster dialogue and understanding prior to any mention of project specifics. The various stakeholders need to recognize that each brings a particular, biased view regarding the ways they perceive the environment, its uses, and the roles of humans within such environments. Only from explicitly recognizing divergence in these areas, can projects begin to address a fundamental constraint to its success. Each perspective, too, must be recognized as legitimate. It should not be the purpose of either the DENR or

the local people to engage in social engineering, in which one group is forced or coerced to embrace the other's views and definitions. Dialogue and interaction provide a medium within which learning and understanding take place. Through such actions, the various groups can begin to understand each other's perspectives and objectives. This endeavor should seek overlaps, or common ground, between groups, but recognize the importance and potential of divergence. Common environmental perceptions, problem definitions and land use practices are the areas upon which project plans can be built. Divergence in these areas needs to be understood, however, in order to minimize its potential adverse effects. Project planning needs to include and account for divergence in as many areas as can be identified.

Communities, natural resources, and environments are heterogeneous across space and over time. Each community and project is contextual. There most certainly may be instances when only divergence exists and no common ground can be identified. This poses a particular problem. Success of participatory, natural resource management projects depends, in part, on the sharing of project goals, environmental perceptions, and problem definitions. In cases where this does not exist, what should be done to increase the potential for a project's success? Is one perspective to win over

the other? Who decides this? In Carranglan, the will of the DENR appears to be for the greater good of a larger number of people benefiting from the services of the Pantabangan dam. Yet local people, like those who live in Calo, are expected to shoulder the burden for these projects without reaping any of the larger, intended benefits. Do their land use objectives become secondary to those of the DENR? Are governments to resort to draconian measures in order to ensure their objectives are reached? This is directly opposed to the most recent trends of participatory, "bottom up" development. On the other hand, if we value people's rights to their cultural and social perspectives, if we value this diversity of humanity, and projects are never or only slowly defined and implemented because of divergence, then others may suffer, including the environment itself. The dilemma is not an easy one.

Political Impediments to Social Forestry in Carranglan

This study has focussed primarily on divergent land use practice and environmental perceptions as potential factors for understanding why social forestry programs have not been more successful in Carranglan. There is, however, a number of overriding political constraints to this phenomenon. A section in the previous chapter dealt in some detail about the role of

corruption and its impact on social forestry in Carranglan. A wider range of political problems, beyond corruption, exists, as do potential political solutions. An argument can also be made that these political constraints are the overriding obstacles affecting the outcomes of social forestry.

Using the perspective of scales, a number of political problems that affect social forestry practices emerge. At the international level, stipulations of the Asian Development Bank's forestry sector loan to the Philippine government for reforestation partially direct the DENR's efforts. One such stipulation is the setting of reforestation targets. The first contribution of the loan targeted the planting of 71,600 hectares per year over a five-year period (Korten 1994). The result of this directed goal was the overestimation of project statistics on the part of the DENR as they attempted to meet the planting targets in order to secure the future funding cycles.

At the national level two related issues contribute to why social forestry programs have not been more successful: land reform and state controlled lands. These are issues of tenure rights, including rights to lands as well as rights to property such as trees. The Comprehensive Agrarian Reform Program (CARP), signed by President Aquino in 1988, has been criticized as being biased "towards the interests of large landowners

agribusiness corporations, and traditionally powerful families”(Putzel and Cunningham 1989). Combine this with the fact that close to half of the total land area (47.05 %) is state owned and classified as Forest land. These two issues underpin land access and land security which in turn have been identified as important issues regarding social forestry practices (AGNOC 1991b; Aguilar 1982; Cernea et al. 1991; World Bank 1989).

At the local level diversity among local people, even in a community as small as Calo, also creates differential power. There are people in Calo who could be characterized as risk-takers and those who are more conservative. I believe the risk-takers attempt to build linkages between themselves and the political and economic elite in Carranglan and in Northern Nueva Ecija. In doing so, they may build upon the Filipino cultural norm of *uton na loob*, which literally translates to “debt of life.” In such a relationship security is built even between individuals or families with disparate socio-economic levels. Not all attempts at such linkages prove beneficial. However, the risk-takers potential for some benefits outweighs those of the conservative counterpart in Calo. The same can be said between communities. Ilokano-dominated communities are more likely to be linked to political or economic elites in Carranglan than Ibaloi or other ethnic groups, because Carranglan is predominantly an Ilokano municipality.

The effect of linkages in obtaining contracts to plant trees has already been addressed in the previous chapter.

Political problems, at many scales, contribute to why tree-planting efforts are not more successful in Carranglan. Political solutions should be pursued, also at many scales, in order to improve the potential for more successful projects that aim to re-establish tree cover in the Philippines. One solution being pursued is the use of non-governmental organizations (NGOs). These groups may act as linkages between the government agencies and the local people. There are over 18,000 registered NGOs in the Philippines. Some are people's organizations, some are professional and civic groups, others are government-formed NGOs, affectionately referred to as GRINGOs (Miclat-Teeves and Lewis 1993). NGOs, however, are problematic as political go-betweens. They, too, have particular political, social, environmental and economic agendas. Any particular NGO group's knowledge of a local community may also be dubious. They may be no more, or even less, informed than the government agency on whose behalf they may be acting. The great diversity of NGOs operating in the Philippines only adds the multiple dimensions of finding political solutions which advance the prospects of more successful social forestry programs.

Conclusion

My research contributes to our understanding of the failure of reforestation in Carranglan, Nueva Ecija. I have shown that divergent land use practices and environmental perceptions exist between the local people of Calo, and the DENR/FMB. This divergence may adversely impact the success of tree planting attempts in Carranglan. This alone, however, does not provide a complete understanding of why these projects have not been more successful. Other factors have influenced their outcomes.

Environmental constraints to seedling survival, favoritism, greed and corruption among DENR professional, reforestation perceived simply as a lucrative venture, and social differentiation among local people in Calo - all affect tree planting outcomes.

The implications of this research for Philippine social forestry, specifically, and natural resource management, in general, are many. I have briefly addressed only three in this final chapter: (1) participation as a practice and objective, (2) the search for commonality between local people and government agencies responsible for directing these programs and (3) the overriding political impediments to social forestry in Carranglan. Much more should be done, however, regarding the study of divergent land use practices and environmental perceptions. Comparing case studies would be

a start. While I have attempted a thorough investigation of this topic in Carranglan, many questions remain to be answered: Are there comparable projects and communities in other areas of the Philippines and other countries? Is this phenomenon generally one associated with developing countries? Is there a way to measure the relative significance of divergent environmental perceptions with other factors affecting social forestry projects? Is this case simply an anomaly? Do cases exist where divergence is present and yet projects have been successful? What contributing factors are present in such cases which are not present in Carranglan or Calo? Many questions remain.

APPENDICES

APPENDIX A

UCRIHS Approval Letter

MICHIGAN STATE UNIVERSITY

April 22, 1997

TO: Edward A. Whitesell
315 Natural Science Building

RE: IRB#: 97-229
TITLE: PHILLIPINE SOCIAL FORESTRY: A CASE STUDY OF
DIVERGING LAND USE CONCEPTS AND ENVIRONMENTAL
PERCEPTIONS IN THE CONTEXT OF LOCAL
PARTICIPATION
REVISION REQUESTED: N/A
CATEGORY: 1-C,D,E
APPROVAL DATE: 04/17/97

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

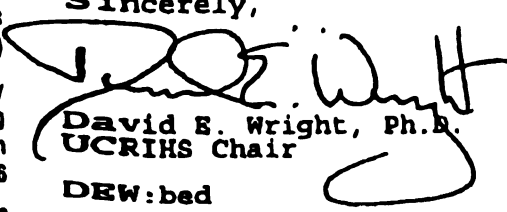
REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

**PROBLEMS/
CHANGES:**

Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,


David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: ✓ Jay H. Samek



OFFICE OF
RESEARCH
AND
GRADUATE
STUDIES

University Committee on
Research Involving
Human Subjects
(UCRIHS)

Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/432-1171

APPENDIX B

Survey Questionnaire in Ilokano

Questionnaire Survey

Demographic/Historical

1. Ania ti nagan yo, apo? Kastoy ti nagan yo?
Ti apelyedo ngay?
Ania ti bunyag yo?
2. Mano ti tawen yo?
3. Taga-ano kayo? Ayanna ti poon yo? Ayanna ti nagapuan yo
_____ **Ibaloi** kayo? _____ **Ilokano** kayo? _____ **Bontoc** kayo?
Ania kayo ngay? _____
5. Adda ti asawa yo? _____ **Adda** _____ **Awan**
Balasang/Baro kayo? _____ **Wen** _____ **Saan**
Balo kayo? _____ **Wen** _____ **Saan**
6. Adda iskeula idaiy *place of origin*? _____ **Adda** _____ **Awan**
Nagiskuela kayo idiay?
Ania ti kangatuan ti nalpas yo? _____ **Elem.**
_____ **High School** _____ **College**
7. Adda ti anak yo? _____ **Adda** _____ **Awan**
Mano dagiti annak yo?
8. Mano dagiti tatawen dagiti annak yo?
9. Sadinno ngay ti nagianan yo kasanuanan kayo imay ditoy Calo?
Ania a tawen idi umay kayo ditoy Calo?
10. Adda pay sabali a lugar itatta a paggigianan yo ngem ditoy Calo?
_____ **Adda** _____ **Awan**
Siguro adda, ayanna?
11. Idi napalabas a lima nga tawen mano a bulan ti uneg ti maysa nga
tawen nga aggian kayo ditoy Calo? # _____ bulan
_____ summer
_____ tiempo to agtudo (rainy season)
_____ tiempo ti agani (harvest season)
_____ tiempo ti agmula (planting season)
_____ iskuela/bacasion (school/vacation)
_____ intawen/kanayon (all year/always)
12. Mano ti tattao nga aggigian ditoy balay yo ti tinawen?

Rice Farming

13. Ania ti araramiden yo ditoy manipud idi imay kayo ditoy Calo?
14. Ania ti talaga a trabaho yo itatta?
15. Adda taltalanan yo? _____ **Adda** _____ **Awan**
Kokuayo amin? _____ **Wen** _____ **Saan**
16. Mano hectaria ti palayan yo? _____ **ha**
Mano dagiti canavans ti palay iti ani? _____ **cavans**
17. Mano nga a basis nga agapit ti pagay ti uneg ti maysa nga tawen?
_____ **Maysa** _____ **Dua** _____ **Tallo**
18. Ania ti pagapuan ti danum ti talon yo?
19. Adda ti (CSC) *local term* yo? _____ **Adda** _____ **Awan**
20. Kaano a naala yo ti (CSC) yo? Ania a tawen idi naala yo?

Kaingin

21. Adda ti bangkag yo? _____ **Adda** _____ **Awan**
Kaingin dayta? _____ **Wen** _____ **Saan**
22. Nagkaingin kayo idi? _____ **Wen** _____ **Saan**
23. Ania ti immulmula yo idiay bangkag yo? Dagiti natnateng? Dagiti kaykayo? Ania nga clase dagiti _____ natnateng ken dagiti kaykayo (ken *root crop types*)?

Mulmula

_____ balenged	_____ kutsay	_____ patatas	_____ tabungaw
_____ balatong	_____ laya	_____ petsay	_____ ube
_____ gabi	_____ letsugas	_____ pipino	_____ utong
_____ kamatis	_____ marunggay	_____ tarong	_____ u-uns
_____ kamote	_____ mais	_____ rabanos	
_____ kamoteng kahoy	_____ mustasa	_____ repolyo	
_____ kangkong	_____ okra	_____ sibuyas	
_____ karabasa	_____ pagay	_____ sili	
_____ karot	_____ singkamas	_____ pallang	
_____ kulitis	_____ parya	_____ sitsaro	

Kaykayo/Prutprutas

_____ bayabas	_____ kasuy	_____ salamangi
_____ buho	_____ kawayan	
_____ daligan	_____ langka	

_____ <i>Eucalyptus</i>	_____ mangga	_____
_____ ipil ipil	_____ papaya	_____
_____ kaimito	_____ rimas	_____
_____ kakuwat	_____ saba	_____

24. Apay a agmulmula kayo ti clase nga nateng/kayo?

25. Ania ti immulmula yo para:

Ilako yo?

kanen yo?

"Medicinal" Pagagasyo?

"Spiritual/Cultural" Pagcanaoyo?

"For Spices" Pagrekadoyo?

"Fuelwood" Paglutoyo?

"Fodder" Ipakan yo ti ayup yo?

"Construction material" Pagaramid yo ti balay?

26. Ayanna ti lugar paglakoan yo ti . . . ?

27. Pagagapuan ti immulmula yo a kayakayo ti bukel wenno ti mula?

28. Inabunuan yo ti bangkag yo? Ania ti clase ti abuno ti ususeran yo?

29. Mabalin umayak idiyang bangkag yo no dadduma? Kayatko a makita daydiay.

House Garden

30. Adda pay ti mulmula ti inaladen yo? _____ **Adda** _____ **Awan**

31. Mabalin a umayko kitaen dagiti mulmula ti inaladen yo? Mabalin nga ibaga yo keniak ti nagan ti mulmula yo? Kayatko a makita daydiay.

32. Ania ti nagan nga mula daytoy, dayta, daydiay? Ruot wenno saan?

33. Apay a immulmula yo ti clase nga nateng/kayo?

34. Ania ti immulmula yo para:

Ilako yo?

kanen yo?

"Medicinal" Pagagasyo?

"Spiritual/Cultural" Pagcanaoyo?

"For Spices" Pagrekadoyo?

"Fuelwood" Paglutoyo?

"Fodder" Ipakan yo ti ayup yo?

"Construction material" Pagaramid yo ti balay?

35. Ayanna ti lugar paglakoan yo ti . . . ?

36. Pagagapuan ti immulmula yo a kayakayo ti bukel wenno ti mula?

37. Inabunuan yo ti bangkag yo? Ania ti clase ti abuno ti ususeran yo?

38. Mabalin umayak idiyay inaladen yo no dadduma? Kayatko a makita daydiay.

Resources

Kayatko ti agsaludsod kadakayo maipanggep ditoy Calo ken ti arubayan, dagiti karkaruutan (grasslands), dagiti turturod (hills), dagiti bakbakir (forests), kesla.

Four time periods:

1. *When individual first came to Calo (pre-1988)*
2. *1988 (picture of Calo)*
3. *Present time (1997)*
4. *Future (10 year from today, 2007)*

39. Malagip yo ti itsura ti Calo ken ti arubayan idi immay kayo ditoy idi 19__? Ipalawag yo man ti itsura ti Calo ken ti arubayan idi immay kayo ditoy?

40. Daytoy dua dagiti ladladawan ti Calo idi addaak ditoy nga Peace Corps bolunteer. Ammoyo ti lugar? Kitaen yo dagiti balbalay ti Calo? Ipalawag yo man ti itsura ti Calo ken ti arubayan ken dagiti ladladawan?

41. Ti panagkonayo nagsukat ti itsura ti Calo ken ti arubayan itatta ngem idi immay kayo ditoy idi 19__? Ipalawag yo man no ania dagiti nagsbalianan?

42. Ti panagkonayo apay nga nagsabali ti Calo ken ti arubayanna ditoy?

43. Ti panagkonayo immadu, bimmassit, wenno iso met nga iso dagiti kaykayo idi imay yo ditoy ngem itatta?

	Immadu	Bimmassit	Iso met nga iso
kaykayo	_____	_____	_____
taltalon	_____	_____	_____
tattoo	_____	_____	_____
kakaingin	_____	_____	_____
tudtudo	_____	_____	_____
bakbakir	_____	_____	_____
karkaruutan	_____	_____	_____
ayayop	_____	_____	_____

44. No mabalin, ania ti sabali ti istura ti Calo ken ti arubayan? Ania ti kayat yo?

FMB/Social Forestry Projects

45. Adda immay nga tattao ti gubierno ditoy Calo manipud idi imay kayo ditoy? _____ **Adda** _____ **Awan**
46. Ania ti inaramid da ditoy?
47. Adda tattao manipud iti FMB nga imay ditoy? _____ **Adda** _____ **Awan**
48. Ania ti inaramid da ditoy?
49. Nagian da nabiag ditoy Calo? _____ **Wen** _____ **Saan**
50. Mano a besis ngay imimayda ditoy?
Ania ti nasursurod yo kenya?
51. Kayat yo dagiti inaramid da ditoy wenno saan yo nga kayat?
Apay ngay? _____ **Kayat** _____ **Saan nga kayat**

APPENDIX C

Survey Questionnaire in English

Calo Questionnaire/English Version

Demographic/Historical

1. Name:
2. Age:
3. Where are you from originally (before coming to Calo)?
4. What is your ethnicity? **Ibaloi** **Ilokano** **Bontoc**
Other _____
5. Are you married? **Single?** **Widowed?**
6. What level school have you completed? **Elem.HS** **College**
7. How many children do you have?
8. How old are they?
9. When (what year) did you first come to live in Calo?
10. Do you also have another house elsewhere besides in Calo? Where?
11. In the past five years, how many months on average do you stay in Calo per year?
summer ~3 months
rainy season ~ 5/6 months
planting season ~ 1/2 months
harvest season ~ 1/2 months
school/vacation ~ 9 and 3 months
all 12 months in Calo
12. How many are living in your house with you now?

Rice Farming

13. What did you first do to make a living when you came to Calo?
14. What is your primary livelihood job now?
15. Do you have rice fields? Do you own them?
16. How many hectares of rice fields do you have?
17. How many times in a year do you harvest rice from your fields?
1 **2** **3**
18. Where is the water from that irrigates your rice fields?
19. Do you have a Certificate of Stewardship Title for your rice fields?
20. What year did you receive this?

Swidden Farming

21. Do you have a "garden" farm? Is it a swidden farm?
22. Have you ever had a swidden farm?
23. What do you plant in your "garden" farm? What types of plants and trees?

Plants: list of common vegetables

Trees: list of common trees (fruit and other)

24. For what reasons do you plant name of plant indicated by respondent?
(Asked for each plant and tree type indicated by the subject)
25. What else do plant and/or gather to be used for:
 - selling at the market?
 - food?
 - medicinal purposes?
 - spiritual/cultural purposes?
 - spices in cooking?
 - fuel?
 - fodder?
 - building purposes?
26. Where is the place where you sell your produce?
27. What is the source of your trees, seeds or seedlings?
28. Do you use fertilizer on your "garden" farm? What kinds of fertilizer do you use?
29. Is it possible for me to come with you to your "garden" farm sometime?
I would really like to see it.

House Garden

30. Do you have a house garden?
31. Is it possible to go out and for me to see your house garden? Is it possible for me to ask you the names of the plants in your house garden? I would really like to see it.
32. What is the name of that plant here? there? over there? Is it a weed?
(This would be done for all plants in the garden)
33. For what reasons do you plant name of plant indicated by respondent?
(Asked for each plant and tree type indicated by the subject)
34. What else do plant here to be used for:
 - selling at the market?

- food?
- medicinal purposes?
- spiritual/cultural purposes?
- spices in cooking?
- fuel?
- fodder?
- building purposes?

35. Where is the place where you sell your produce?
36. What is the source of your trees, seeds or seedlings?
37. Do you use fertilizer on your "garden" farm? What kinds of fertilizer do you use?
38. Is it possible for me to come with you to your "garden" farm sometime? I would really like to see it.

Resources

I would like to ask you some questions about the environment¹ surrounding Calo. About the grasslands, the hills, and the forests.

39. Do you remember what the surrounding area of Calo looked like when you first arrived here in 19__? Could you please describe it for me?
40. Here are two pictures of Calo from 1998, from when I was a Peace Corps volunteer here in Calo. Do you recognize these views? Could you please describe the environment that you see in these pictures?
41. In your opinion would you say the area around Calo has changed since you first came here to Calo and now? Could you please describe the changes that have taken place here in Calo?
42. In your opinion why have these changes taken place?
43. In your opinion would you say there is more, less or the same trees now than when you first came to Calo?

	More	Less	The Same
Trees	_____	_____	_____
Rice fields	_____	_____	_____
People	_____	_____	_____
Swidden Farms	_____	_____	_____
Rain	_____	_____	_____

¹ The term used in the Ilokano version of the questionnaire is *arubayan* which translates to "surroundings". The phrase "baknang ti arubayan yo," which translates to the wealth of your environment, was also used. This focuses the attention onto those aspects of the natural environment which are considered valuable resources.

Forests

Grasslands

Wild Animals

44. If you had the chance, how would you change the environment of Calo?
What _____ would you do?

Forest Management Bureau/Social Forestry Projects

- 45. Have any people from the government ever come here to Calo?
- 46. What did they do here?
- 47. Have any Forest Management Bureau people come here to Calo?
- 48. What did they do here?
- 49. Did they stay here for a long time?
- 50. How many times have they come here to Calo?
- 51. Did you like what they were doing here? Why or why not?

Bibliography

- Aguilar, Jr., Filomeno V. 1982. Social Forestry for Upland Development: Lessons from Four Case Studies. Quezon City, Philippines: Institute of Philippine Culture.
- Anderson, A. B., ed. 1990. Alternatives to Deforestation: Steps Toward Sustainable Use of the Amazon Rain Forest. New York, New York: Columbia University Press, pp. 65-85.
- Anderson, James N. 1987. "Lands at Risk, People at Risk: Perspectives on Tropical Forest Transformation in the Philippines," in Lands at Risk in the Third World: Local Perspectives, eds. Peter D. Little, Michael M. Horowitz and A. Endre Nyerges. Boulder, Colorado: Westview Press, pp. 249-267.
- Arizpe, Lourdes, Fernanda Paz and Margarita Velazquez. 1996. Culture and Global Change: Social Perceptions of Deforestation in the Lacandona Rain Forest in Mexico. Ann Arbor, Michigan: The University of Michigan Press.
- Axinn, George H., and Nancy W. Axinn. 1996. Collaboration in International Rural Development. Unpublished manuscript.
- Banuri, Tariq, and Frederique Apffel Marglin, eds. 1993. Who Will Save the Forests? Knowledge, Power and Environmental Destruction. New York, New York: Zed Books.
- Bassett, Thomas J. 1988. "The Political Ecology of Peasant-Herder Conflicts in the Northern Ivory Coast," Annals of the Association of American Geographers 78, 3: 453-472.
- Benitez, Helena Z. 1990. Legacy to Posterity: An Update Report on the Philippine Environment. Manila, Philippines: Humanitarian Sciences Foundation.
- Bennagen, Ponciano L., and Maria Luisa Lucas-Fernan, eds. 1996. Consulting with the Spirits, Working with Nature, Sharing with Others. Philippines: Sentro Para sa Ganap na Pamayanan.

Blaikie, Piers, and Harold Brookfield. 1987. Land Degradation and Society. New York, New York: Methuen.

_____. 1993. "Defining and Debating the Problem," in The Earthscan Reader in Tropical Forestry ed. Simon Rietbergen. London: Earthscan Publications Ltd., pp. 137-164.

Blaikie, Piers. 1994. Political Ecology in the 1990s: An Evolving View of Nature and Society, CASID Distinguished Speaker Series No. 13. East Lansing, Michigan: Center for Advanced Study of International Development, Michigan State University.

_____. 1995. "Changing Environments or Changing View? A Political Ecology for Developing Countries," Geography 80(3): 203-214.

Boado, Eufresina L. 1988. "Incentive Policies and Forest Use in the Philippines," in Public Policies and the Misuse of Forest Resources, eds. Robert Repetto and Malcolm Gillis. New York, New York: Cambridge University Press, pp. 165-203.

Bonner, Raymond. 1987. Waltzing with a Dictator: The Marcoses and the Making of American Policy. New York: Times Books.

Borlagdan, Salve B. 1997. Title. Ph.D. diss., University of the Philippines, Los Banos, Philippines.

Boserup, Esther. 1965. The Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population Pressure. London: George Allen and Unwin Ltd.

Boyce, James K. 1993. The Philippines: The Political Economy of Growth and Impoverishment in the Marcos Era. Honolulu, Hawaii: University of Hawaii Press, pp. 225-244.

Braganza, Gilbert C. 1996. "Philippine Community-Based Forest Management," in Environmental Change in South-East Asia: People, Politics and Sustainable Development, eds. Michael J. G. Parnwell

and Raymond L. Bryant. New York, New York: Routledge, pp. 331-329.

Broad, Robin, and John Cavanaugh. 1993. Plundering Paradise: The Struggle for the Environment in the Philippines. Berkeley, California: University of California Press.

Brookfield, Harold C. 1969. "On the Environment as Percieved," Pogress in Geography 1: 51-80.

Buttimer, Anne. 1980. "Home, Reach and the Sense of Place," in The Human Experience of Space and Place, eds. Anne Buttimer and David Seamon, 166-187. London: Croom Helm.

Campbell, David J., and Jennifer M. Olson. 1993. Framwork for Environment and Development: The Kite, CASID Occasional Paper no 10. East Lansing, Michigan: Center for Advanced Study of International Development, Michigan State University.

Carter, Jane, and Jane Gronow. 1993. "Participatory vs. Promotional Approaches to Tree Cultivation on Private Land: Experiences in the Middle Hills of Nepal," Forests, Trees and People Newsletter 19: 4-9.

Caufield, Catherine. 1985. In The Rainforest. New York: Alfred A Knopf.

Cerna, Lapu-lapu, Leornado Moneva, and Rainera Noel. 1991. "Mag-uugmad Foundation's Experience in Community-Based Contract Reforestation," in Forests for People: Experiences and Issues in Community Management. Makati, Metro-Manila, Philippines: Asian NGO Coalition for Agrarian Reform and Rural Development, pp. 80-91.

Cernea, Michael. 1991. "The Social Actors of Participation Afforestation Strategies," in Putting People First: Sociological Variables in Rural Development ed. Michael Cernea. New York, New York: The World Bank, pp. 340-393.

Cosgrove, Dennis E. 1984. Social Formation and Symbolic Landscape. London: Croom Helm.

- _____. 1994. "Geosophy" in The Dictionary of Human Geography eds. R. J. Johnston, Derek Gregory and David M. Smith. Cambridge, Massachusetts: Basil Blackwell, Inc., pp. 724.
- Croll, Elisabeth, and David Parkin, eds. 1992. Bush Base: Forest Farm Culture, Environment and Development. London: Routledge.
- Davis, Shelton H., ed. 1993. Indegenous Views of Land and the Environment. Washington, D.C.: IBRD/The World Bank.
- Department of Environment and Natural Resources. 1997. DENR Manual of Operations for Devolved Forest Management Functions. Quezon City, Philippines: DENR.
- _____. 1987. *Certificate of Stewardship*. Quezon City, Philippines: Ministry of Natural Resources.
- _____. 1992a. *DENR Memorandum Circular No. 17*. Quezon City, Philippines: DENR.
- _____. 1992b. A Compilation of Environment and Natural Resources Policy Issuances CY 1992. Quezon City, Philippines: Planning and Policy Studies Office, DENR.
- _____. 1993. 1993 Annual Report. Quezon City, Philippines: Project Development and Evaluation Division, Planning Service, DENR.
- _____. 1994. Piut Watershed Rehabilitation, Carranglan, Nueva Ecija, Subproject Appraisal Report. Quezon City: DENR.
- _____. 1995a. *Administrative Order No 96-29*. Quezon City, Philippines: DENR.
- _____. 1995b. A Compilation of Environment and Natural Resources Policy Issuances CY 1995. Quezon City, Philippines: Planning and Policy Studies Office, DENR.

- _____. 1996. "On-Going CREF PENRO Funded Projects, Region III, PENRO: Nueva Ecija, Fund: OECF, As of June 1996." Data document.
- _____. 1997. Buklod: The Official Newsletter of the Department of Environment and Natural Resources 2(1): 8.
- _____. nd. "1990 Contract Reforestation, Region 3, PENRO: Nueva Ecija, District 2." Data document.
- DENR-CENRO. 1997. "Land Use Map." 1:50,000. Munoz, Nueva Ecija, Philippines: CENRO.
- _____. nd. "Status of Projects Within CENRO Munoz, Nueva Ecija." Data document. Munoz, Nueva Ecija, Philippines: CENRO.
- Dizon, Elvira L. 1986. "The Reforestation Project in the Nabuklod Reservation," Philippine Studies 34: 409-435.
- Duncan, James S. 1993. "Landscapes of the Self/Landscapes of the Other(s): Cultural Geography 1991-92," Progress in Human Geography 17(3): 367-377.
- Emel, Jodi. 1994. "Environmental Perception" in The Dictionary of Human Geography eds. R. J. Johnston, Derek Gregory and David M. Smith. Cambridge, Massachusetts: Basil Blackwell, Inc. pp. 724.
- Erlich, Paul and Ann Erlich. 1970. Population, Resources and Environment: Issues in Human Ecology. San Francisco: W. H. Freeman.
- Evernden, Neil. 1981. "The Ambiguous Landscape," The Geographical Review 71: 147-157.
- _____. 1992. The Social Creation of Nature. Baltimore, MD: Johns Hopkins University Press.
- Friere, Paulo. 1990. Pedogogy of the Oppressed. New York: Continuum.

- Gacoscosim, Melanio M. 1995. Philippine Forestry in Action. Quezon City, Philippines: Pheonix Publishing House, Inc.
- Gaile, Gary L., and Cort J. Willmott, eds. 1989. Geography in America. Columbus, Ohio: Merrill Publishing Co.
- Ganguli, Barin N. 1995. Breakthroughs in Forestry Development: Experience of the Asian Development Bank. Manila, Philippines: Asian Development Bank.
- Gaspar, Br. Karl, Elpidio Lapad, Tess Dela Cruz-Jabon and Mary Ann Fuertes. 1994. Behind the Growing Trees: An Evaluation of the San Fernando Integrated Forestation Project. Davao City, Philippines: Kinaiyahan Foundation, Inc.
- George, Susan and Fabrizio Sabelli. 1994 Faith and Credit: The World Bank's Secular Empire. Boulder, Colorado: Westview Press.
- Gibbs, Christopher, Edwin Payuan and Romulo del Castillo. 1990. "The Growth of the Philippine Social Forestry Program," in Keepers of the Forest: Land Management Alternatives in Southeast Asia, ed. Mark Poffenberger. Hartford, Connecticut: Kumarian Press, pp. 253-265.
- Galvez, Jose A. 1984. Management and Cost of Watershed Reforestation: The Pantabangan and Magat. Philippine Institute for Development Studies Working Paper 84-08. Makati, Manila, Philippines: Philippine Institute for Development Studies.
- Gold, John R., and Brian Goodey. 1983. "Behavioral and Perceptual Geography," Progress in Human Geography 7: 578-86.
- Gould, P. R. 1966. On Mental Maps. Michigan Interuniversity Community of Mathematical Geographers, Discussion Paper 9, Department of Geography, University of Michigan.
- Greider, Thomas, and Lorraine Garkovich. 1994. "Landscapes: The Social Construction of Nature and the Environment," Rural Sociology 59(1): 1-24.

- Gregersen, Hans, Sydney Draper and Dieter Elz, eds. 1989. People and Trees: The Role of Social Forestry in Sustainable Development. Washington, D.C.: The World Bank.
- Greenberg, James B., and Thomas K. Park. 1994. "Political Ecology," Journal of Political Ecology 1: 1-11.
- Grossman, Lawrence. 1984. Peasants, Subsistence Ecology and Development in the Highlands of Papua New Guinea. Princeton: Princeton University Press.
- Gunasekara, Charles. 1996. "Philippines: Communal Irrigation Projects," in The World Bank Participation Sourcesbook. Washington, D.C.: The World Bank.
- Hamilton, Lawrence S., ed. 1983. Forest and Watershed Development and Conservation in Asia and the Pacific. Boulder, Colorado: Westview Press.
- Hannigan, John A. 1995. Environmental Sociology: A Social Constructionist Perspective. New York: Routledge.
- Hardin, Garrett. 1968. "The Tragedy of the Commons," Science 162, 13: 1243-1248.
- Hurst, Philip. 1990. Rainforest Politics: Ecological Destruction in South-East Asia. Atlantic Highlands, New Jersey: Zed Books, Ltd., pp. 162-206.
- Kirk, W. 1963. "Problems of Geography," Geography 48: 357-371.
- Korten, Francis F. 1994. "Questioning the Call for Environmental Loans: A Critical Examination of Forestry Lending in the Philippines," World Development 22(7): 971-981.
- Kummer, David M. 1991. Deforestation in the Postwar Philippines. University of Chicago Research Paper No. 234. Chicago, Illinois: University of Chicago Press.

- Laking, Jimmy K. 1994. "Davao Oriental: A Milking Ground for Loggers and Corrupt DENR Personnel," Ang Peryodiko Dabaw February 5, 1994: 4.
- Ley, David. 1981. "Cultural/humanistic Geography," Progress in Human Geography 5(2): 249-257.
- _____. 1987. "styles of the Times: Liberal and Neo-conservative Landscapes in Inner Vancouver," Journal of Historical Geography 13: 40-56.
- Little, Peter D. 1994. "The Link Between Local Participation and Improved Conservation: A Review of Issues and Experiences," in Natural Connections: Perspectives in Community-based Conservation eds. David Western and Michael Wright. Washington, DC: Island Press, pp. 347-372.
- Lowenthal, David. 1961. "Geography, Experience and Imagination: Towards a Geographical Epistemology," Association of American Geographers 51: 241-260.
- _____. 1968. "The American Scene," Geographical Review 58: 61-88.
- Lowenthal, David and Marquita Riel. 1972. "The Nature of Percieved and Imagined Environments," Environment and Behavior 4(2): 189-207.
- Lynch, Owen. 1986. "Philippne Law and Upland Tenure," in Man, Agriculture and the Tropical Forest eds. Sam Fujisaka, Percy Sajise and R. del Castillo. Bankok, Thailand: Winrock International Institute for Agricultural Development.
- Makil, Perla M. 1982. Toward a Social-Forestry Oriented Policy: The Philippines Experience. Quezon City, Philippines: Institute of Philippine Culture.
- Miclat-Teeves, Aurea G. and David J. Lewis. 1993. "Overview" in Non-Governmentla Organizations and the State in Asia, eds., John

- Farrington and David J. Lewis. New York, New York: Routledge, pp. 227-239.
- Mikesell, Marvin W. and Alexander B. Murphy. 1991. "A Framework for Comparative Study of Minority Group Aspirations. Annals of the Association of American Geographers 81: 581-604.
- Meinig, Donald W. 1979. "The Beholden Eye: Ten Versions of the Same Scene," in The Interpretation of Ordinary Landscapes ed. D. W. Meinig, 33-48. New York: Oxford University Press.
- Moss, C. R. 1920. "Nabaloi Law and Ritual," University of California Publications in American Archaeology and Ethnology 15 (3): 207-342.
- Multinational Monitor. 1994. "Agenda for Sustainability: An Interview with Maximo Kalaw," Multinational Monitor 15(1): 29-31.
- Nabhan, Gary Paul. 1995. "Cultural Parallax in Viewing North American Habitats," in Reinventing Nature? Responses to Postmodern Deconstruction, eds. Michael E. Soule and Gary Lease, 87-101. Washington, D.C.: Island Press.
- Oelshlaeger, M. 1991. The Idea of Wilderness. New Haven, CT: Yale University Press.
- Olofson, Harold. 1996. "Taboo and Environment, Cebuano and Tagbanuwa: Two Cases of Indigenous Management of Natural Resources in the Philippines and Their Relation to Religion, " in Consulting with the Spirits, Working with Nature, Sharing with Others eds. Ponciano L. Bennagen and Maria Luisa Lucas-Fernan. Philippines: Sentro Para sa Ganap na Pamayanan. pp. 88-102.
- Park, Chris C. 1992. Tropical Rainforests. New York: Routledge.
- Peluso, Nancy Lee. 1995. "Whose Woods are These? Counter-Mapping Forest Territories in Kalimantan, Indonesia," Antipode 27(4) 383-406.

- Peluso, Nancy Lee, Peter Vandergeest and Lesley Potter. 1995. "Social Aspects of Forestry in Southeast Asia: A Review of Postwar Trends in the Scholarly Literature," Journal of Southeast Asian Studies 26(1): 196-218.
- Pickles, John, and Michael J. Watts. 1992. "Paradigms for Inquiry?" in Geography's Inner Worlds eds. Ronald F. Abler, Melvin G. Marcus, and Judy M. Olson. New Jersey: Rutgers University Press pp. 301-326.
- Porter, Gareth, and Delfin J. Ganapin, Jr. 1988. "Destroying the Forests: Causes and Consequences," in Resources, Population, and the Philippines' Future: A Case Study. Washington, DC: World Resources Institute, pp. 23-33.
- Porter, Gareth. 1994. "The Environmental Hazards of Asia Pacific Development: The Southeast Asian Rainforests," Current History 93: 430-434.
- Porter, Philip W. 1979. Food and Development in the Semi-Arid Zone of East Africa. Syracuse, New York: Syracuse University, Maxwell School of Public Affairs.
- Prill-Brett, June. 1992. Ibaloy Customary Law on Land Resources. Baguio City, Philippines: Cordillera Studies Center, University of the Philippines College Baguio.
- _____. 1997. "Resource Tenure and Ancestral Domain Considerations: Their Importance to a CBNRM Research Agenda," IDRC Publications: Web Site.
<http://www.idrc.ca/cbnrm/documents/publications/prillbrett.html>.
- Rahman, Anisur. 1993. People's Self-Development. New Jersey: Zed Books Ltd.
- Rahnema, Majid. 1992. "Participation," in The Development Dictionary ed. Wolfgang Sachs, New Jersey: Zed Books Ltd, pp. 116-131.

- Rainforest Action Network. 1993. Southeast Asian Rainforests: A Resource Guide and Directory. San Francisco: Rainforest Action Network.
- Repetto, Robert. 1988. "Philippines," in The Forest For the Trees? Government Policies and the Misuse of Forest Resources. Washington, DC: World Resources Institute, pp. 59-65.
- Repetto, Robert, and Malcolm Gillis, eds. 1988. Public Policies and the Misuse of Forest Resources. New York, New York: Cambridge University Press.
- Reyes, Martin R., and Valerio B. Mendoza. 1983. "The Pantabangan Watershed Management and Erosion Control Project," in Forest and Watershed Development and Conservation in Asia and the Pacific, ed. Lawrence S. Hamilton. Boulder, Colorado: Westview Press, 485-555 & introduction.
- Robles, Alan. 1993. "Logging and Political Power," in Saving the Earth: The Philippine Experience eds. Eric Gamalida and Sheila Coronel. Makati, Philippines: Philippine Center for Investigative Journalism, 21-26.
- Rocheleau, Dianne. 1991. "Participatory Research in Agroforestry: Learning from Experience and Expanding Our Repertoire," Agroforestry Systems 15: 111-137.
- Rocheleau, Dianne, and Laurie Ross. 1995. "Trees as Tools, Trees as Text: Struggles Over Resources in Zambrana-Chacuey, Dominican Republic," Antipode 27(4): 40 -428.
- Rodman, M. 1992. "Empowering Place: Multilocality and Multivocality," American Anthropologist 94: 640-656.
- Rowe, R, N Sharma and J. Browder. 1992. "Deforestation: Problems, Causes, and Conecrns," in Managing the World's Forests ed. By N. P. Sharma. Dubuque, Iowa: Kendall/Hunt Publishing Co.

- Rowntree, Lester B. 1996. "The Cultural Landscape Concept in American Human Geography," in Concepts in Human Geography eds. Carville Earle, Kent Mathewson and Martin S. Kenzer. Maryland: Rowman & Littlefield Publishers, Inc.
- Sajise, Percy E., and Elizabeth A. Omeigan. 1990. "The Changing Upland Landscape of the Northern Philippines," in Keepers of the Forest: Land Management Alternatives in Southeast Asia, ed. Mark Poffenberger. Hartford, Connecticut: Kumarian Press, pp. 56-68.
- Scheerer Otto. 1905. The Nabaloi Dialect. Manila, Philippines: Bureau of Public Printing, pp. 173-178.
- Scott, Willaim Henry. 1993. Of Igorots and Independence. Baguio City, Philippines: ERA.
- Selby, J. Ashley, and Leena Petajisto. 1995. "Attitudinal Aspects of the Resistance to Field Afforestation in Finland," Sociologia Ruralis 35(1): 67-92.
- Simmons, Ian Gordon. 1993. Interpreting Nature: Cultural Constructions of the Environment. London: Routledge.
- Tapang Jr., B. P. 1985. Innovation and Social Change: The Ibaloy Cattle Enterprise in Benguet. Baguio City, Philippines: Cordilera Studies Center, University of the Philippines College Baguio.
- Thapa, Gopal B. and Karl E. Weber. 1990. "Actors and Factors of Deforestation in 'Tropical Asia'," Environmental Conservation 17(1): 19-27.
- Tuan, Yi-Fu. 1974. Topophilia: A Study of Environmental Perception, Attitudes and Values. New Jersey: Prentice-Hall Inc.
- _____. 1977. Space and Place: The Perspective of Experience. Minneapolis: University of Minnesota Press.

- Upland NGO Assistance Committee (UNAC). 1992. An Assessment of Selected Contract Reforestation Projects. Manila, Philippines: Philippine Upland Resources Center.
- Vitug, Marites Danguilan. 1993. The Politics of Logging: Power from the Forest. Philippines: Philippine Center for Investigative Journalism.
- Walpole, Peter W. 1990. "Success in Reforestation," Intersect November, 1990.
- Wernstedt, F. F., and J. E. Spencer. 1967. The Philippine Island World: A Political, Cultural, and Regional Geography. Berkeley, California: University of California Press.
- White, G. F. 1964. Choice of Adjustment to Floods. Department of Geography, University of Chicago, Research Paper 93.
- Wiber, Melanie G. 1984. "Corporate Groups in the Productive Technology of the Ibaloi: A Preliminary Report," Folio 2. . Baguio City, Philippines: Cordilera Studies Center, University of the Philippines College Baguio, pp. 4-37.
- Wright, John. K. 1947. "*Terrae Incognitae*: The Place of the Imagination in Geography," Annals of the Association of American Geographers 37: 1-15.
- Yabes, Criselda. 1993. "Boon or Ban?" in Saving the Earth: The Philippine Experience eds. Eric Gamalida and Sheila Coronel. Makati, Philippines: Philippine Center for Investigative Journalism, pp. 27-30.
- _____. 1988. "Family-Based Reforestation Program: New Road Toward Philippine Reforestation," Philippine Daily Inquirer June 30, 1988.
- _____. 1988. Philippine-German Resources Inventory Project, "Survey of Government Reforestation Projects." Quezon City, Philippines: Forest Management Bureau, Department of Environment and Natural Resources.

- _____. 1989. Philippines: Environment and Natural Resource Management Study. Washington, DC: The World Bank, pp. 9-32, 97-102.
- _____. 1989. Review of Forest Management Systems of Tropical Asia, FAO Forestry Paper No. 89. Rome: FAO, pp. 147-191.
- _____. 1989. Sustainable Natural Resource Assessment - Philippines. Manila, Philippines: USAID.
- _____. 1991a. Community Participation, NGO Involvement and Land Tenure Issues in the Philippines Reforestation Program. Makati, Metro-Manila, Philippines: Asian NGO Coalition for Agrarian Reform and Rural Development.
- _____. 1991b. Forests for People: Experiences and Issues in Community Management. Makati, Metro-Manila, Philippines: Asian NGO Coalition for Agrarian Reform and Rural Development, pp. 1-11, 20-34, 80-91.
- _____. 1992. Handbook on Land and Other Physical Resources. Philippines: National Economic Development Authority.
- _____. 1992. Forest and Forest Peoples in Crisis: An Overview. Legal Rights and Natural Resources Center - Kasama sa Kalikasan/Friends of the Earth - Philippines. Philippines: LRC-KSK/FOE - Philippines, pp. 1 - 15.
- _____. 1993a. Forest Resources Assessment 1990: Tropical Countries, FAO Forestry Paper no. 112. Rome: FAO, appendix, table 8b.
- _____. 1993b. Forestry Policies of Selected Counties in Asia and the Pacific, FAO Forestry Paper No. 115. Rome: FAO, pp. 121-138, 209-236.
- _____. 1995. Traditional Knowledge and Sustainable Development. Environmentally Sustainable Development Proceedings Series, No. 4. Washington, DC: World Bank.

_____. 1996. The World Bank Participation Sourcebook.
Washington, D.C.: The World Bank.

MICHIGAN STATE UNIV. LIBRARIES



31293017743901