SUSTAINABLE DEVELOPMENT AND BIOSPHERE RESERVES: INTEGRATING COMMUNITY DEVELOPMENT AND BIODIVERSITY CONSERVATION IN THE SIERRA DE MANANTLÁN BIOSPHERE RESERVE, MEXICO

By Carlye D. Watson

A Thesis Submitted to Saint Mary's University, Halifax, Nova Scotia,
in Partial Fulfillment of the requirements for
the Degree of Master of Arts in International Development Studies

September, 2006, Halifax, Nova Scotia

Thesis Approved by:

Dr. Anthony O'Malley
Supervisor

Dr. Martin Willison
First Reader

Maestra Maite Cortés
External Reader

Date : August 31, 2006

Your file Votre référence
ISBN: 978-0-494-23865-3
Our file Notre référence
ISBN: 978-0-494-23865-3

ABSTRACT

Sustainable Development and Biosphere Reserves: Integrating Community Development and Biodiversity Conservation in the Sierra de Manantlán Biosphere Reserve, Mexico

By Carlye D. Watson

Biosphere Reserves were devised as a means of reconciling local development needs with international concerns for biodiversity conservation. However, the literature reviewed on sustainable development and Biosphere Reserves suggested that local community development objectives are being sidelined by a biodiversity conservation bias. The case study analysis of the Sierra de Manantlán Biosphere Reserve, Mexico revealed that while many genuine efforts are being made toward achieving sustainable community development, this goal will not be fulfilled unless significant changes are made to both the model and implementation of Biosphere Reserves in Mexico. Two main reasons explain this. First, Biosphere Reserve efforts remain rooted in the mainstream Yellowstone model of biodiversity conservation at the international, national, and regional levels, despite the adoption of community development and community participation initiatives. Secondly, the Neoliberal policies pursued by the national level government are in direct conflict with the objectives of Biosphere Reserves and are impeding their success.

August 31, 2006

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

I owe many thanks to the people who assisted me in the realisation of this Master's thesis. First and foremost, I give many thanks the employees of the Directorship of the Sierra de Manantlán Biosphere Reserve (SMBR) for providing the institutional and logistical support required to carry out my field research, for their patience in answering my endless questions, and their many friendships. I also thank all the people of the many communities of the SMBR for their trust and honesty in responding to my inquiries. I also owe many thanks to:

- Darcy Tetreault for helping me get my research off the ground, for putting me in contact with so many wonderful people in Guadalajara and the sierra, for his encouragement and praise, and for being a solid friend.
- Maite Cortés and Mario Silva, who were my family away from home, and to Maite, for joining my thesis committee on such short notice.
- Dr. Anthony O'Malley for intervening with insight and encouragement at key times during this thesis process, and for agreeing to give me a deadline.
- Dr. Martin Willison, for balancing out the perspectives on my committee, and for his detailed comments of my dissertation and defense.
- My dearest friends Courtney Upshall and Eve Lerner, who dedicated their editing skills to my cause.
- My family and friends, who provided a open ear during the high and low points of my Master's process, and sticking with me to the very sweet end!

LIST OF TABLES AND FIGURES

LIST OF ACRONYMS*

AC	Advisory Committee
AOP	Annual Operating Plan
CBNRM	Community-Based Natural Resource Management
CONABIO	National Commission for the Knowledge and Use of Biodiversity, *Comisión Nacional para el Conocimiento y Uso de la Biodiversidad*
CONAFOR	National Forestry Commission, *Comisión Nacional Forestal*
CONANP	National Commission for Natural Protected Areas, *Comisión Nacional de Áreas Naturales Protegidas*
CUCSUR	University Centre of the South Coast, *Centro Universitario de la Costa Sur*
DFID	Department for International Development of England
DRBSM	Directorship of the Sierra de Manantlán Biosphere Reserve, *Dirección de la Reserva de la Biosfera Sierra de Manantlán*
ECLJ	Las Joyas Scientific Research Station, *Estación Científica Las Joyas*
EPOCA	Popular Education and Capacity Building, *Educación Popular y Capacitación*
IMECBIO	The Manantlán Institute of Ecology and Biodiversity Conservation, *Instituto Manantlán de Ecología y Conservación de la Biodiversidad*
IMF	International Monetary Fund
INI	National Indigenous Institute of Mexico, *Instituto Nacional Indigenista*
IRNA	Natural Resource and Farming Engineering, *Ingeniería de Recursos Naturales y Agropecuarías*
IUCN	World Conservation Union
LGEEPA	General Law of Ecological Equilibrium and Environmental Protection, *Ley General del Equilibrio Ecológico y Protecctión al Ambiente*
LNLJ	Las Joyas Natural Laboratory, *Laboratorio Natural Las Joyas*
MAB	Man and the Biosphere Programme
NAFTA	North American Free Trade Agreement
NGO	Non-Government Organisation
PA	Protected Area
PAN	National Action Party of Mexico, *Partido Acción Nacional*
PET	Seasonal Employment Programme, *Programa de Empleo Temporal*

PRD	Democratic Revolution Party of Mexico, *Partido Revolucionario Democrático*
PRI	Institutional Revolutionary Party of Mexico, *Partido Revolucionario Institucional*
PROCAMPO	Programme for Direct Support to Rural Areas, *Programa de Apoyos Directos al Campo*
PRODERS	Rural Sustainable Development Programme, *Programa de Desarrollo Rural Sustentable*
RASA	Network for Sustainable and Self-managed Agriculturalists, *Red de Agricultores Sustentables Autogestivos*
SAGARPA	Ministry of Agriculture, Livestock, Rural Development, Fisheries and Nutrition, *Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación*
SCT	Ministry of Communications and Transport, *Secretaría de Comunicaciones y Transportes*
SEDESOL	Ministry of Social Development, *Secretaría de Desarrollo Social*
SEDER	Ministry of Rural Development, *Secretaría de Desarrollo Rural*
SEMARNAP	The Ministry of Environment, Natural Resources, and Fisheries, *Secretaría de Medio Ambiente, Recursos Naturales, y Pesca*
SEMARNAT	The Ministry of Environment and Natural Resources, *Secretaría de Medio Ambiento y Recursos Naturales*
SHCP	Ministry of Finance and Public Credit of Mexico, *Secretaía de Haciena y Crédito Público de México*
SINAP	National System of Protected Areas, *Sistema Nacional de Áreas Protegidas*
SMBR	Sierra de Manantlán Biosphere Reserve
SSS	Society of Social Solidarity, *Sociedad de Solidaridad Social*
TAC	Technical Advisory Committee, *Consejo Técnico Asesor*
UACI	The Organisation for Support to Indigenous Communities, *Unidad de Apoyo a Comunidades Indígenas*
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UPIM	Union of Indigenous Villages of Manantlán, *Unión de Pueblos Indígenas de Manantlán*
USAID	United Stated Agency for International Development
WWF	World Wildlife Foundation

* Please note that the acronyms used in this dissertation correspond to their original language, whether in English or Spanish.

1.1 INTRODUCTION

Environmentalism has traditionally been considered the antithesis of mainstream development, or at least this was the case until recent history. Over the past few decades, momentum has increased amongst researchers, multilateral organisations, and non-government organisations in the direction of reconciling the realms of environment and development. This momentum was sparked by important realizations in both development and conservation. On the one hand, the growing disillusionment with Western development agenda and its failure in poverty eradication prompted a search for an alternative development path, one that focused not on the narrow pursuit of economic growth, and based instead on social justice, meeting basic needs, empowerment, and a clean environment. On another hand, a realization was also made in conservation circles that the coercive and top-down model of biodiversity conservation was not only in violation with basic human rights, it was also not achieving desired conservation goals. The realizations of failed poverty eradication and continued environmental destruction begged the question of how to both use and conserve natural resources, fulfilling community development needs in developing countries while also conserving biodiversity. Many efforts have been made toward this end and some progress has been achieved. However, this daunting dilemma remains unresolved and represents one of the greatest challenges faced by global society.

The most popular concept put forth in the attempt to resolve this dilemma has been that of 'sustainable development.' 'Sustainable development' made its public debut in 1987 in the document, *Our Common Future* (also referred to as the Brundtland Report), published by the Brundtland Commission, and was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Development, 1987). Other aspects of the new trend to reconcile development and conservation have been the promotion of people-centred approaches that are bottom-up and place communities and their participation at the centre of the sustainable development process. One such concept and model is that if Biosphere Reserves.

In short, Biosphere Reserves are a progressive variation of a protected area, devised by the United Nation's Environment, Science, and Culture Organisations' (UNESCO) within the context of their Man and the Biosphere Programme (MAB) and put forth in 1976. They combine the objectives of sustainable resource use and conservation in the attempt to strike a balance between local development needs and international concerns for biodiversity conservation. By and large Biosphere Reserves were largely a reaction to the failures and social injustices caused by the traditional coercive, and top-down approach to nature conservation. Biosphere reserves gained nearly instant popularity, with 118 being decreed in the first two years of the programme (Hadley, 2002). The model has increasingly been regarded by developing countries as a 'win-win' model for addressing the community development needs while also achieving biodiversity conservation.

Mexico has embraced the concept of Biosphere Reserves as an alternative to the US National Park (Yellowstone) model as it is more suited to their highly populated rural areas that are resource rich, yet financially poor. Mexico is extremely important contributor to worldwide biodiversity, ranked forth amongst the most megadiverse countries in the world. However, this country also suffers from high level of poverty and marginalization in their rural areas. Over the last several decades, commitments to neoliberal policies have left a greater number of people than ever before living in poverty, despite overall increases in Gross Domestic Product (GDP). Biosphere Reserves have been regarded in Mexico as a means of achieving sustainable community development and biodiversity conservation, thus resolving their dilemma of alleviating conditions of poverty and environmental degradation in rural areas.

While Biosphere Reserves were innovative for their time, and progressive in theory, they have led to mixed results in their practical application. Since their inception, the conservation role has taken precedence over the goal of community development. As such, community participation has generally remained at the level of consultation or participation in projects organized in a top-down fashion, instead of at the decision-making level. Furthermore, community development initiatives have led to marginal improvements in the living conditions of poor rural populations, and in some cases have even caused further deterioration of livelihoods and the natural resource base

(Jeanrenaud, 1999). These factors have raised concern as to whether Biosphere Reserves are acting to continue the trend of community marginalization by placing greater priority on international biodiversity conservation.

Taking these factors into consideration, the purpose of this dissertation is to assess through empirical research the following problematic:

Mexico has attempted to alleviate conditions of rural poverty and environmental degradation through the establishment of Biosphere Reserves in various regions within the country in the context of their sustainable development objective. However, it remains unclear as to whether or not the creation and management of these Reserves have given adequate consideration to the present development needs of the communities living in these areas, most notably in comparison to the goal of biodiversity conservation. Furthermore, it is not clear that the communities have been systematically participating in decision-making processes both prior to and following Biosphere Reserve establishment. Thus, the question remains as to whether in our test case of Mexico, that the creation of Biosphere Reserves contribute to, or detract from, Mexico's sustainable development goals.

In order to address this problematic, this dissertation has separated the extremely broad sustainable development literature into three different perspectives: Mainstream Sustainable Development (MSD), Conservationist Sustainable Development (CSD), and Community- Based Sustainable Development (CBSD). While sharing a common vocabulary of 'community' and 'sustainable development', the assumptions that form their approaches are quite different and are revealed upon closer examination. Proponents of MSD remain committed to the current neoliberal regime of economic growth, believing it to be the best strategy for relieving world poverty, bringing 'development' to developing countries, and thus solving the environmental crisis. The 'conservationist perspective' is apolitical, relying mainly on protected area management strategies in the aim of safeguarding biodiversity. The community-based perspective believes in a bottom-up alternative to both global economic integration and biodiversity conservation, based on endogenous development with a focus on local resources. While each perspective is characterized by certain core elements, there exists a heterogeneity of opinion within each.

1.2 METHODOLOGY:

After completing an extensive literature review of sustainable development and Biosphere Reserves, I left for Guadalajara, Mexico in July 2002. In the months of July to December, I learned Spanish and became connected with researchers and organisations working in the area of sustainable community development in and around Guadalajara. During those months, I made two visits to the Sierrra de Manantlán Biosphere Reserve (SMBR), a transboundary Biosphere Reserve located in the states of Jalisco and Colima, Mexico. The objective of the first visit was to meet the director of the reserve and formalise the agreement for my permission to perform research at the SMBR. During a second visit, I attended two the Advisory Council (AC) meetings held by the management of the SMBR, one which took place in the state of Jalisco, and the other in the state of Colima. AC meetings take place annually bringing together the stakeholders of the SMBR, including community representatives, government officials, and academic researchers, to whom I was introduced. I also took advantage of my time in the region to accept an invitation from a community-based organisation working in the SMBR, to accompany them during a routine visit to the community Ayotitlán. Drawing from the separate perspectives the SMBR management and community organization of the UACI, I collected baseline data on general activities, opinions, and project structures.

A more concentrated stage of fieldwork and data collection began in January when I moved my home base to Autlán de Navarro, home of the management office of the SMBR situated just outside the north-western border of the reserve. In so doing, I slowly became integrated into the activities of the DRBSM, and even occupied my own desk for approximately two months. I soon caught on to the basic routine and dynamics of the office. Mondays, as I learned, were the day that the events and field trips were planned for the entire week. Therefore, even when I was working out of the office, I made sure to be present on Mondays to determine which activities I could finagle my way into attending. As such, I took part in vast array of activities as a participant observer, and became known amongst SMBR employees to miraculously appear in even the most remote of areas in the reserve where activities of interest were taking place.

The bulk of data collection was gathered between January and July. A series of participant observation that were completed included ten activities with the DRBSM and

two with community-based organisations working in the reserve. Notes were taken to record step by step processes, key comments, and general observations. Furthermore, a series of formal and informal interviews were held with the various interest groups working and living in the SMBR. The interest groups included community members, DRBSM employees, academic researchers, community-based organisations, cooperatives, and government representatives. Open-ended questions were asked throughout these interviews. Four of the semi-formal interviews were carried out with the four DRBSM staff members to gain a comprehensive review of the projects that were implemented in the reserve over the past year; these employees manage and implement development projects directly with the communities (a detailed list of participant observer activities can be found in Annexe A). This data was complemented by a number of research documents provided by academics from the University of Guadalajara's Manantlán Institute of Ecology and Biodiversity Conservation (IMECBIO) as well as national government officials. Information concerning the SMBR was also gathered through consultation of local newspapers and other public media.

The most extensive instance of participant observation was during the formulation and implementation of the project performed for the DRBSM. Inspired by the commitment to a more equal exchange between researcher and subject, I volunteered my time to a project deemed important by the DRBSM (who provided the bulk of institutional support throughout my research). The project chosen consisted of a study of the social and environmental problems of the Indigenous Community of Zacualpan, located just outside the southeastern border of the reserves. With the assistance of the Director of the DRBSM and other employees, I designed a survey aimed at collecting baseline data on the social and environmental problems of the community. The survey was combined with participatory mapping exercises as well as interviews with the local government and community members. Data was collected over an approximate period of two months between February and April. During this time, I boarded with a family located in the community. This experience enabled a clearer understanding of the to the operational structure of the DRBSM by acting as a participant observer to the daily and weekly activities of office and field excursions. By living in the community was I was

also able to gain a deeper understanding of the social, economic, cultural, and environmental realities and challenges of a community located in a Biosphere Reserve.

Toward the end of my yearlong stay in Mexico, I spent a week in Mexico City in the library of a major environmental consulting agency. Representatives of this consulting agency had been hired by the World Bank to perform the assessment of Mexico's Natural Protected Area Programme, and I met them during their three-day tour of activities in SMBR. I was invited by them to take advantage of the literature available in their library. Through conversation and the library, I gathered important information on how World Bank funds were administered and allocated within the context of the National System of Protected Areas During my stay I took advantage of the opportunity to interview two key individuals of the National Commission for Natural Protected Areas (CONANP): the Director of Social Participation, and the Coordinator of the Rural Sustainable Development Programme PRODERS.

Upon return to Canada, the literature was revisited to perform searches related to unanticipated issues that arose during fieldwork, and to review literature published during the field research period. The websites of various Mexican government agencies were also consulted, such as SEMARNAP, CONANP, INE as well as other additional Internet sources, to obtain information regarding specific laws, regulations, and other data. During the last phase of the methodology, emails were exchanged with several interviewees for further detail or clarification.

1.3 CHAPTER OUTLINE:

Chapter One, as we have seen, introduces the area of focus and problematic, outlining a summary of the main conclusions, and detailing the methodology that was used to collect the data. Chapter Two provides the landscape of the theoretical debates surrounding sustainable development and Biosphere Reserves.

In the first part of this chapter, three different perspectives are outlined, including their theoretical and historical roots. They are Mainstream Sustainable Development (MSD), Conservationist Sustainable Development (CSD) and Community-Based Sustainable Development (CBSD). The second part of the chapter outlines uses the three

perspectives to guide the main debates of sustainable development and Biosphere Reserves, and draws on examples from Mexican Biosphere Reserves.

We proceed in Chapter Three with a presentation of the results of the case study performed in the Sierra de Manantlán Biosphere Reserve (SMBR), Mexico. In the aim of orienting the reader to the broader social and political context political in which the case study is situated, the first section provides a brief account of modernization initiatives in Mexico. The following section outlines the national level administering of Biosphere Reserves. The remainder of this chapter provides a detailed account of the SMBR and its management.

Chapter Four is where theory meets reality in a discussion of how the findings of the SMBR case study sheds light on perspectives and debates presented in Chapter Two. The implementation and model of the Biosphere Reserve is assessed on the regional, national and international levels.

Lastly, Chapter Five presents the main conclusions drawn from the discussion that took place in Chapter Four. This chapter also provides a list of recommendations for the implementation of Biosphere Reserves in Mexico and abroad, as well as more specific recommendations that pertain to the management of the SMBR.

Main conclusions:

The case study analysis of the Sierra de Manantlán Biosphere Reserve, Mexico revealed that many genuine efforts are being made toward implementing the Biosphere Reserve objectives of biodiversity conservation, community development, and research in Mexican Biosphere Reserves. However, unless significant changes are made to both the model and implementation of Biosphere Reserves in Mexico, they will not achieve their national objective of achieving sustainable community development in the poor and biodiverse regions of Mexico. Two main reasons exist explain this. First, Biosphere Reserve efforts remain rooted in the mainstream Yellowstone model of biodiversity conservation at the international, national, and regional levels, despite the adoption of community development and community participation initiatives. Secondly, the Neoliberal policies undertaken by the national level government, such as the ratification of the North American Free Trade Agreement (NAFTA), are in direct conflict with the objectives of Biosphere Reserves and are impeding their success.

CHAPTER 2

Sustainable Development and Biosphere Reserves: At the crossroads of international and local efforts for 'Sustainable Development'

2.1 INTRODUCTION:

In the aftermath of World Word II, the United States embarked on a 'development' mission, bringing the great promises of modernity to the poor and 'underdeveloped' areas of the world involving capitalist economic growth, industrialization and democracy. By 1972, a study by the World Bank revealed that while the development project had achieved several decades of economic growth, it was not equitably reaching the poor; income disparity was at an all time high, and the poor were poorer than ever (Sachs, 1992). The environmental consequences of industrialization were also becoming hard to deny. Global environmental degradation was looming on the horizon. Acid rain, ozone depletion, deforestation, and overpopulation started making headlines. Before long, ecologists diagnosed planet Earth with a worldwide environmental (or ecological) crisis. Development practitioners and civil society at large began to seriously question the Western development path and its pursuit of global economic growth. Not only had the model proven ineffective in bringing prosperity to the poor, it was also socially unethical and environmentally destructive. These realizations prompted development practitioners, researchers, NGO's, and national governments to set out in search for alternative development formulas. Inspired by the pressure of this general climate, the now widely known 'Sustainable Development' initiative was put forth, bringing together two realms traditionally considered antagonistic: environment and development.

Largely ignored in development literature are the conservationist approaches to sustainable development. In bringing together the realms of environment and development, sustainable development also bridged the gap between conservation and development. Coincidently, the discipline of nature conservation had also experienced an awakening of sorts, similar to that of development. Recognizing the ethical implications

and ineffectiveness of a strict and coercive conservation strategy, particularly in developing countries, an alternative method was sought that would put people back into protected areas, integrating development strategies in a new community-based approach to conservation. Biosphere Reserves were the first initiative born out of this new thinking. They are both a concept and model. Biosphere Reserves have been embraced by many countries internationally in the attempt attain the global objective of striking a balance between alleviating poverty and maintaining biodiversity through community development, conservation, as well as research and education. In Mexico, Biosphere Reserves are implemented as a type of protected area, as well as a model for achieving rural sustainable development.

The overall objective of this chapter is to provide the landscape of the debate surrounding 'sustainable development' and biosphere reserves. Since the magnitude of use that 'sustainable development' has reached monstrous proportions, modified and adapted to serve the interests of a vast array of players, it is imperative to define sustainable development as employed within the context of the present dissertation. Given the focus of this dissertation on Biosphere Reserves, this chapter is based on the cross-section of 'sustainable development' literature that concerns **the reconciliation and integration of local community development needs with international goals of biodiversity conservation**. Literature from the disciplines of both development studies and conservation are relevant to our query, and are drawn on in this chapter. Particular attention is given to the Biosphere Reserve model and initiative. Given our case study of Mexico, we will mostly draw on examples from Mexico.

Due to the breadth of sustainable development literature that is encompassed in conservation and development studies, the literature has been broken down into three different perspectives in order to simplify discussion. These three perspectives are: Mainstream Sustainable Development (MSD)- the Neoliberal Perspective, Conservationist Sustainable Development (CSD)- the Ecological Perspective, and Community-Based Sustainable Development (CBSD)- the Grassroots Perspective. This particular grouping of 'sustainable development' literature was inspired by two main works; one is the thesis dissertation, *Environmental Degradation, Poverty, and Sustainable Development: A case study of rural Mexico and the Community of Ayotitlán*

by Darcy V. Tetreault; the other is *Advancing a Political Ecology of global environmental discourses* by W.N Adger, T.A.Benjaminsen, K.Brown, and H. Svarstad. Neither works, however, clearly define discourses rooted in Conservation. As such, CSD was developed by the author based on an extensive literature review of conservationist approaches to sustainable development. These three perspectives make up the theoretical framework of this dissertation. They will help guide the debate on sustainable development in the present chapter and subsequently serve as an analytical tool in the assessment of the case study of the Sierra de Manantlán Biosphere Reserve in Chapter 3.

Two main parts comprise the present chapter. The first part is a description of the three perspectives, including the influence of their theoretical and historical roots. The second part delves into the debates surrounding the integration of international goals biodiversity conservation and local needs for development.

2.1.1 What is a Biosphere Reserve?

A Biosphere Reserve is a variation on protected areas that was launched in 1976 by United Nation's Environment, Science, and Culture Organisation's (UNESCO) Man and the Biosphere Programme (MAB)[1]. MAB was initiated by a group of concerned scientists and researchers with the objective of pursuing an interdisciplinary approach to improving the relationship between humans and their environment. MAB's primary strategy for addressing the ecological, social, and economic causes of biodiversity loss was the establishment of the World Network of Biosphere Reserves (UNESCO, 1995). The initiative was innovative for its time, making explicit the need to incorporate local community development as part of their conservation strategy.

Unlike past conservation models which strictly prohibit human presence inside protected areas (apart from recreation purposes), Biosphere Reserves permitted local inhabitants to reside inside Biosphere Reserves and use natural resources (sustainably). In many respects, Biosphere Reserves represent an act of reconciliation, reconciling the coexistence of humans and nature, reconciling the simultaneous use and conservation of natural resources, as well as reconciling past conservation strategies that unjustly

[1] Additional information on the Man and the Biosphere Programme (MAB) and the World Network of Biosphere Reserves is available on MAB website at http://www.unesco.org/mab/wnbr.htm.

removed local communities from their land. The Biosphere Reserve concept has become regarded as a practical experiment in such reconciliation, acting as "laboratories" to test and demonstrate new methods for sustainable interactions between humans and nature (UNESCO, 2006).

Biosphere Reserves are intended to fulfill three complimentary functions within the overall objective of conservation and sustainable development. The first function is conservation, with the primary goal being to protect biodiversity at all levels including genes, species, ecosystems, and landscapes. The second function is development, where environment and development come together, fostering sustainable economic and human development that is compatible with the conservation function. Community participation is often discussed in conjunction with community development as a key element to making the latter fair, democratic, and functional. The third function is logistical support, which consists of activities that support the first two focus and consists of research, monitoring, environmental education and training, (Hadley, 2002). The function of community development in Biosphere Reserves serves three purposes: To prove or convince communities that conservation can be positive; to compensate the communities for decreased and limited access to natural resources; and to deter communities from encroaching on the reserve or breaking the rules of resource-use by supplementing income with other economic activities.

Physically, Biosphere Reserves are divided into three different types of zones where the Biosphere Reserve functions are carried out. First, one or more **core areas** are devoted to strict conservation. Surrounding the core area(s) is a **buffer zone** where cooperative activities compatible with conservation objectives are permitted. Extending beyond the buffer zone is a flexible **transition area** where local communities, scientists, cultural groups, NGO's, and other interest groups (or stakeholders) work together to sustainably manage and develop the area's natural resources. The core area(s) and buffer zone are clearly demarcated, while the transition area extends indefinitely outside the buffer zone (Laserre & Hadley, 1997; Phillips, 1996).

Every Biosphere Reserve represents an international effort toward sustainable development; they are viewed as a 'pact' between local communities and global society. These Reserves are also regarded as a partnership (von Droste, 1996), being most

effective when both social and natural scientists, conservation and development organizations, management authorities, and local communities are all brought together through the partnership (Laserre & Hadley, 1997).

In the evolution of the Biosphere Reserves, the strategy has become recognized internationally as a means to alleviate both rural poverty and environmental degradation by making sustainable development operational at local sites of high biodiversity. Mexico, in particular, has acted as a pioneer in the development and implementation of Biosphere Reserves as a means of fighting rural poverty and conserving local biodiversity (Gómez-Pompa & Kaus, 1999). In Africa, the New Partnership for Africa's Development (NEPAD) has selected Biosphere Reserves as a means to achieve sustainable development to combat poverty and implement the Action Plan of their Environment Initiative in a project sponsored by UNESCO and UNEP, (Europaworld, 2004).

Currently, 482 UNESCO approved Biosphere Reserves exist in 102 different countries (UNESCO, 2005). However, additional Biosphere Reserves exist outside of the UNESCO system in countries that have integrated Biosphere Reserves into their national systems of natural protected areas. For example, Mexico is home to 36 Biosphere Reserves that are recognised under federal law, only 16 of which are included in the UNESCO MAB Programme (CONANP, 2005). Cases of *Campesino* Reserves, such as the Chimalapas *Campesino* Biosphere Reserve, have even been reported in Oaxaca, Mexico (Barkin, 2001, 2004; Russell & Lassoie, 1998).

Some confusion has arisen over the years as to whether Biosphere Reserves are, or should, constitute a type of protected area (Phillips, 1996). The concern is sparked by the use of natural resources that occurs in the buffer zones and transition areas of Biosphere Reserves, which challenges strict conservation practices. However, according to Adrian Phillips, Chair of the IUCN World Commission on Protected Areas, Biosphere Reserves and protected areas are complimentary, and both need each other to complement the objectives of each (Phillips, 1996). Over the last decade, many conservation agencies have become less strict, having re-evaluated protected area management categories to include models that permit varying levels of human presence and natural resource-use. The IUCN, generally accepted as establishing the international

norms of conservation, modified their classification system in 1996 to include six types of protected areas defined according to levels of human intervention, ranging from strict scientific research for wilderness protection to human management for sustainable use of resources. Biosphere Reserves are not included as a category of protected area itself. However, all or part of a Biosphere can be officially part of a type of protected area. Generally speaking, the core area (or areas) of a Biosphere Reserve form an official protected area, while the buffer zone and transition area may or may not be designated as protected area that permits greater human intervention (Phillips, 1996). As stated above, Mexico is an exception to this rule, having incorporated Biosphere Reserves as an official category of protected area.

Since their inception, a disproportionate focus on conservation, however, has impeded the full success of Biosphere Reserves (Tangley, 1988). This is due in part to the lack of clarity and agreement amongst researchers on the central purpose of Biosphere Reserves. Especially in the earlier years of the programme, the conservation role, and to a lesser extent, the logistical role, were pursued while the development role was largely neglected (Hadley, 2002). This outcome is not very surprising given the nearly exclusive involvement of biologists and ecologists in the first stages of the project, both theoretically and practically. Even recently, the participation of social scientists in the management of Biosphere Reserves remains scant or even non-existent in some cases. Despite the strong initiative taken by Mexico in the establishment of Biosphere Reserves, Gómez-Pompa and Kaus (1999) contend that the underlying principles of Biosphere Reserves are not being translated into practice and are suffering from the same mismanagement associated with other types of protected areas.

The lack of attention on the human development element of Biosphere Reserves was brought to the fore as a main issue of concern during the International Conference for Biosphere Reserves held by UNESCO in 1995 in Seville, Spain. As a means of increasing the development priority, the concept and goals of sustainable development were incorporated into the new action plan for Biosphere Reserves that was drafted at the Conference; the action plan was called the Seville Strategy for Biosphere Reserves[2] (Furzy, De Lacy, & Birckhead, 1996; Laserre & Hadley, 1997). Biosphere Reserves

[2] To view a copy of the Seville Strategy, see http://www.unesco.org/mab/doc/Strategy.pdf

were thereafter to be reviewed in accordance with the sustainable development objectives of Agenda 21 as drawn up at UNCED in Rio de Janeiro in 1992 (Furzy et al., 1996), which are described in the following section on the emergence of the concept of sustainable development.

2.1.2 SUSTAINABLE DEVELOPMENT: An overview of its emergence on the international stage

The 1972 United Nation's Stockholm Conference on the Human Environment (UNCHE), also commonly referred to as the 'Biosphere Conference', is most widely acknowledged as the origin of sustainable development within development literature (Hadley, 2002). In this same year, the Club of Rome, a group of European scientists and economists, published a report titled *Limits to Growth.* However, its general thrust, being the threat of global environmental doom unless strict limits were placed on economic growth, was too dismal and hard to digest for development practitioners and the general public alike (Torgerson, 1995). Conservationist literature acknowledges that the earliest roots of sustainable development were set as early as the mid 1960's by the Man and the Biosphere programme and its Biosphere Reserve initiative. MAB combined the objectives of community development, conservation, and research, although no overarching term was coined to encompass its concepts.

UNCHE was the first international acknowledgement of global environmental problems, addressing the issue of human-induced environmental degradation. With environment and development long considered to be incompatible, a balancing act was required at the conference to achieve their integration. Developing countries viewed compromising their pursuit of development to compensate for the environmental destruction caused by the First World on their path to industrial development as unfair. Developed countries, having already reached the luxury of being an industrialized nations, were troubled with the increasingly pressing concern for the need to address environmental problems (Strong, 2000). This would also require developing nations to avoid the environmental pitfalls of the industrial development of developed countries. Working out a compromise between these concerns involved questions of social justice and equity in bearing the responsibility of the environmental problems. By the end of

UNCHE, the environment- development dilemma found resolve in the notion 'sustainable development' (*Sustainable Development Timeline*, 1997). At UNCHE, an agreement was made that industrialized countries would help developing countries offset their environmental commitment in a more 'sustainable development' with funding and technology transfer.

The term 'sustainable development' did not really become well known as a concept, however, until the publication of *Our Common Future*[3] in 1987 by the United Nation's World Commission on Environment and Development. In the report, sustainable development was defined as "**development that meets the needs of the present without compromising the ability of future generations to meet their own needs.**" In contrast to the dismal conditions of poverty and environmental degradation caused by industrialised nations presented by *Limits to Growth* (Alexander et al., 2002), sustainable development denoted an upbeat and positive concept of hope, focusing not simply on development but a development that would lead to a more socially just and environmentally sustainable future. The concept provided "win-win" solutions to the problem of poverty and environmental degradation. These characteristics gave sustainable development the staying power it needed for international acceptance.

The concept and goals of sustainable development were later strengthened during the 1992 United Nation's Conference on Environment and Development (UNCED), held in Rio de Janeiro, where the representatives of 172 different nations came together to discuss the most imminent environmental, social and economic issues in the first international Earth Summit. During the Earth Summit, a major action plan for achieving sustainable development in the 21st Century was formulated, known as Agenda 21. UNCED also produced two sets of principles that included the Rio Declaration (the principles of sustainable development) and Forest Principles (on reducing deforestation), as well as the Conventions on Biological Diversity and Climate Change (Strong, 2000). The general agreement reached by the end of the conference was that industrialised countries would be responsible for taking the first steps in reducing environmental

[3] *Our Common Future* is also known as the 'Brundtland Report', named after Gro Harlem Bruntdland who was head of the Commission at that time.

degradation, providing lessons learned, technology transfers and financial assistance to less resource-rich developing nations (Sachs, 2001).

Marking ten years after the Rio Summit, the *Rio +10* second Earth Summit took place in Johannesburg, South Africa, in 2002. The goal of the summit was to assess progress made since the Rio. The Summit focused on more specific objectives than the first, setting out targets for increasing the number of people with safe drinking water, reducing the amount of people living with poor sanitation, increasing the use of alternative and sustainable energy, and restoring fish stocks (Doyle & MacDonald, 2002). However, the conference was subject to a barrage of criticism based on the very lack of progress made since the first summit. Despite its shortcomings, sustainable development is still the main catch phrase used amongst most anyone involved in development and environment issues, whether at the level of government, business, or grassroots.

The broad definition of sustainable development made the concept easily digestible for all walks of academic, government, and business life. The upside of this was that it enabled a common playing ground for traditionally opposing points of view; the downside was that by using a common terminology, sustainable development lost all sense of clear definition. As Sachs describes:

> While developers and environmentalists had opposed each other for decades, the concept forced them onto one common terrain. Shell together with Green Peace, the World Bank together with the anti-dam movement invoke "sustainable development"; few outrightly deny the concept. On the contrary, the idea works like an all-purpose cement, gluing everybody together, friends and foes alike"... the price paid for this consensus was clarity" (2002, The Jo'Burg Memo, p.12).

Furthermore, the Brundtland definition of sustainable development does not define what are considered to be "needs" (as opposed to wants), leaving the term open to numerous interpretations, defining it "self-servingly" (Baird Callicott, Crowder, & Mumford, 1999) and even concealing of hidden agendas (Barcena & Payne, 1995). To some, sustainable development means sustaining biodiversity, sustaining development, or the highly controversial 'sustaining economic growth.' The popular language that followed suit with sustainable development such as 'community participation,' 'sustainable livelihoods' and 'community development' facilitated the co-optation of 'sustainable

development' to strengthen arguments for economic growth without addressing the contradictions between the mainstream approach economic growth and issues of environment and inequality (Alexander et al., 2002). Sustainable development jargon has even attached to development projects for its political pang, potentially disguising even the most lethal of development projects and economic reforms. Proponents of Neoliberalism, particularly the World Bank (WB) and the International Monetary Fund (IMF), have been strongly criticized for using this tactic (Cleaver, 1997; Shiva et al., 1991).

Although no one, clear definition of sustainable development exists, several notions weave a common thread through most writings on the subject, such as economic sustainability, environmental sustainability, social justice, equity, and empowerment. The defining differences between the different perspectives on sustainable development are what element(s) is (are) prioritized, and *how* sustainable should be achieved. These differences are what command the need to distinguish between the three perspectives on sustainable development presented in this chapter.

2.2 UNCOVERING THE ROOTS OF MSD, CSD, AND CBSD

We turn our focus now to the three perspectives on sustainable development that make up the theoretical framework of this dissertation. A general description of each perspective is given in this first section to orient the reader before proceeding with the remainder of the chapter.

2.2.1 Mainstream Sustainable Development: The Neoliberal Perspective

Stated in the simplest terms, Mainstream Sustainable Development (MSD) is Mainstream Development, though modified to appease the outcries for solutions to worldwide problems of poverty and environmental degradation. This approach to 'sustainable development' is essentially that which emerged on the international scene and outlined in the Brundtland report. This neoliberal-slanted interpretation of

sustainable development continues to dominate dialogue and discourse at international level conferences and meetings on both development and environment.

The MSD perspective is employed by a variety of groups and organisations such as the United Nations, World Bank, Earth Council, United States Agency for International Development (USAID), a number of international NGO's, and many current government administrations both North and South. MSD strategies are implemented in a top-down and centralized fashion. That is, decision-making involving policy and projects is concentrated at the level of international banks and institutions (donors) where they are formulated and generally administered, and passed down through developing country governments and/or NGO's, with the community-level acting as recipient beneficiaries (Barcena & Payne, 1995). The strategies pursued by MSD include holding international conferences (such as the Earth Summits), international agreements (ex. NAFTA), the establishment of international funds (ex. Global Environment Facility), structural adjustment programmes (SAP's), policy reform, debt-for-nature swaps, technology transfer, carbon credits, bioprospecting, payment for environmental services, and the decentralisation of natural resource management (Leach, Mearns, & Scoones, 1999).

Like Mainstream Development, the central objective of MSD is capitalist economic growth achieved within a Neoliberal model. Neoliberalism is a renewed version of neo-classical economics comprised of the goals of decentralisation, privatization, deregulation and liberalisation (free-trade). As defined by MSD, the global environmental crisis is caused by the existence of poverty in developing countries, which in turn drives them to despoil natural resources. Accordingly, the solution to the environmental crisis proposed by MSD is the pursuit of economic growth through global economic integration, which is presumed to alleviate world poverty and in turn resolve the environmental crisis (CITE). An explicit assumption that helps justify this solution is that there exist no limits to economic growth; any obstacles that may present themselves, such as natural resource scarcity or depletion, are surmountable through technological innovation, which is also fuelled by continued economic growth. The thrust of the argument claims that all world problems can and will be resolved with continued economic growth. The concentrated focus on economic models and technological solutions, often dubbed 'technocratic,' is also part of the Western version of

Neoliberalism and its attempt to remain apolitical (de Campos Mello, 2000; Scholte, 2002).

Despite the rhetorical commitment to social justice and environmental sustainability issues, neoliberal policies have continued to take precedence when it comes down to policy making and practice.

2.2.2 Conservationist Sustainable Development: The Ecological Perspective

Prompted by a growing recognition of the social injustices and general lack of success of Western style conservation practices, the tradition of nature conservation sought new beginnings in a more humanistic form of conservation. The purpose was to reconcile humans and nature by seeking a 'people-centred' approach to conservation. Generally known as 'New Conservation' or 'Community Conservation,' many have called this a new ideology in conservation thinking. Over the last decade or so, community conservation has become the dominant discourse in contemporary conservation circles. As its title suggests, integral components of this new approach are the promotion of community development and community participation. This strategy is used by the most prominent international non-government organisations (NGO's) such as the World Conservation Union (IUCN), the World Wildlife Fund (WWF), and Conservation International (CI), as well as government agencies or departments involved in natural resource management, protected areas, and environment.

Despite the fact that Conservation Sustainable Development (CSD) has incorporated 'community' and 'development' into their strategies, the end objective of CSD is more similar to the strict conservation that preceded it: biodiversity conservation. Community development and participation strategies are generally employed as a means of achieving the goal of biodiversity conservation. The environmental crisis is viewed as being a direct result of industrialization and over-development. As such, the solution proposed and sought in CSD is to designate areas not unduly modified by humans as protected under law while limiting development in and around these areas through sound management. The overall objective is to protect a worldwide network of areas representative of all ecosystems on Earth. The general consensus of CSD is that natural

systems have an innate value and that the responsibility lies within humans to recognize and protect them.

Similar to MSD, CSD's method of implementation is top-down and centralized. Furthermore, the scope of CSD is global, being most concerned with the conservation of global diversity. Since 'sustainable development' is approached from a conservationist point of view, the strategies applied are predominantly scientific or technical, and by default remain apolitical. The majority of the strategies involve some variation of a protected area (or strategies to be pursued in protected areas) that incorporate five basic elements: biodiversity conservation, the management natural resource-use, local participation, the reinforcement or provision of sustainable livelihoods, and the protection of cultural values. Biosphere Reserves were the first model put forth in this vein, acting as a pioneer in community conservation (Furzy et al., 1996). Other strategies that have since emerged, include buffer zones (Martino, 2001; Wells, Brandon, & Hannah, 1992); extractive reserves and sustainable resource-use (Pinzón Rueda & Lima Feitosa, 1999); community wildlife management (Jeanrenaud, 1999); bioregional management (Miller, 1996); collaborative management and partnerships (McNeely, 1995); integrated conservation and development projects (ICDP's) (Kremen, Merenlender, & Murphy, 1994); and ecotourism (Healey, 1997). Much intermingling amongst the above strategies has taken place, many concepts fitting under broader concepts such as ICDP's, and being 'reabsorbed' into even other strategies such as Biosphere Reserves (Phillips, 1996).

CSD have adopted many concepts centred on community development. However, it is important to distinguish that the goal of community is regarded as a *means* to achieving their central objective of biodiversity conservation, as opposed to being an end in and of itself.

2.2.3 Community-Based Sustainable Development: The Grassroots Perspective

Community-Based Sustainable Development (CBSD) is an alternative to the mainstream development and conservation perspectives described above. The CBSD perspective encompasses two main counter-discourses that correspond to MSD and CSD. This alternative perspective advocates a bottom-up and diversified approach to

sustainable development, unlike the centralized and top-down approaches implemented in MSD and CSD.

According to CBSD, the problems of poverty and environmental degradation are a result of the marginalization of developing countries and the communities within them from the process of global economic integration and exploitation. As such, the development of *local* or *community* level projects are used as a means confront marginalization, promote local economic growth through the sustainable use of natural resources, and maintain cultural integrity. 'Community' is considered the only effective unit of change. CBSD believe in community development that is defined at the bottom and comes from within, instead of from above and the outside.

CBSD is explicitly political in that the central objective is in direct opposition to the dominant economic and social systems of global integration that have marginalized local communities, particularly indigenous people and woman. Given the diversity of cultures, socio-economic, and environmental conditions that exist in the world, CBSD embraces a diversity of paths to local development.

Sustainability is understood from both an environmental and livelihoods perspective. Ecological sustainability is not considered to be a means or an end, but an inherent part of the development process. Social participation is an integral component of CBSD, as a means of achieving self-determination and empowerment. Participation also makes possible the 'ownership' of development projects, also regarded as a requisite element in achieving community development. Another facet of CBSD is that development technology be based on locally available resources, whether improving already existing local technology or developing new ones. Local control of natural resources is crucial in ensuring

Some of the strategies pursued in CBSD are community-based environmental conservation (Ghai & Vivian, 1992), small-scale projects, joint management schemes-including community forestry (Bray et al., 2003; Wily, 1999), the use of local technology, the revival of rural communal values and cultural practices, *campesino* reserves, and direct action.

2.3 THEORETICAL ROOTS OF THE THREE PERSPECTIVES: MSD, CSD, and CBSD

Each perspective is rooted in theories of development and conservation. Digging down to unearth these roots is key gaining a deeper understanding of the core assumptions that underlie each perspective. The purpose of this section is to uncover how these theoretical roots have shaped the current pursuits and approaches of each perspective on sustainable development.

2.3.1 THEORETICAL ROOTS OF MSD

2.3.1.1 Mainstream Development and Modernization

The beginning of the Mainstream Development project took place after the Second World War when United States President Harry Truman announced during his 1949 inaugural speech that the U. S. would embark on a mission to alleviate poverty and suffering in the *underdeveloped* areas of the world. He stated that these areas would benefit from the scientific advances and industrial growth of the United States, leading to the "improvement and growth" of such areas. Truman's speech marked the first time in history that all marginalized areas of the world were lumped under one single title and identified as suffering a common prevailing ailment: underdevelopment[4] (Sachs, 1993). By doing so, he placed the whole of global society on the same race to development, a race where the Western world was leading and the rest striving to catch up. As Sachs writes,

> That Truman coined a new term was not a matter of accident but the precise expression of a world-view: for him all the people of the world were moving along the same track, some faster, some slower, but all in the same direction.... Consequently, it was the objective of development policy to bring all nations into the arena and enable them to run in the race (1993, p.4).

Coincidently, Truman's speech also celebrated the victory of capitalism over communism. It is a generally accepted truth that the new development agenda was motivated by the desire to encourage capitalism around the world and counter the communist force of the Soviet Union. 'Underdeveloped' areas were enticed by the

[4] A complete transcript of President Harry Truman's 1949 inauguration speech is available online at http://www.bartleby.com/124/pres53.html

promised fruits capitalism: economic growth and Western democracy through the adoption of industrialization and modernization.

Mainstream Development is essentially the present-day version of modernization theory, generally considered a paradigm in its own right. Modernization also refers to a much broader societal paradigm shift that involved an overall break from the traditional in the arts, architecture as well as other elements of culture, politics, and economics. However, within the context of this dissertation, modernization is used in reference to development theory. Three basic assumptions comprise modernization theory. First, all societies will go through the same stages of development, where Western countries are the most advanced, and the rest of the world is catching up. Secondly, all societies move from a state of 'traditional' to 'developed'. Lastly, the role of the Western world is to help 'underdeveloped' countries become developed. Furthermore, there was an expectation that 'underdeveloped' nations would reach development quicker than Western countries and Europe had during the Industrialism Revolution as they were being provided with financial aid and technical expertise to restructure their economies.

These assumptions were manifested in several economic growth models devised to help with the restructuring of economies and to spark growth. Keynesian economics (named after its primary contributor, Maynard Keynes), being the economics of the day post Second World War, dominated the economic thinking behind these early models. Unlike the classical economics that preceded it that advocated free trade and export-led growth, Keynesian economics promoted strategic state intervention, import-substitution industrialization and protectionism of industries. We need not go into the details of specific models for the purpose as they all abided by a general theme. Every model was based on the assumption that all societies of the world would go through the same linear stages of growth. Although strategic state intervention and investment were required in the early stages, once the initial inertia was overcome, the economic system would propel itself and end in mass consumption. The accumulation of wealth would occur in the upper class and eventually *trickle-down* to the middle and lower classes. This theory was put forth by Kuznet who displayed his rationale with a U-shaped curve that indicated an increase in poverty in the early stages of development before trickling down to the lower classes (Blomstrom & Hettne, 1984; Martinussen, 1997).

The objective of mainstream development is the industrialization and modernization of traditional societies. In order to attain this objective, development theorists realized that the simple use of economic models would not suffice. If a society was to become truly 'modern' and achieve capital investment, traditional values would have to be abandoned and be replaced with Western values, aspirations, culture, and technology (Dunning, 2003; Rahman, 1993). These included the aspiration of social justice and attainment of democracy, based on the universal ideas of individualism, freedom, reason, and equality, values that can be traced back to the Enlightenment ideas of the 18th Century (Veltmeyer, 2001). The communal traditions and values of 'underdeveloped' countries, particularly indigenous societies and rural peasants, were regarded as 'backwards' and unproductive and thus impediments to 'progress'. This view dates back to the time of colonialism when Europeans arrived upon Indian populations and vast amounts of undeveloped land. The Indians were regarded as wasteful, lazy, and even stupid, as they 'underused' both human labour and natural resources, thus feeling justified in taking over Indian land for more productive use (Cronon, 1983). While the purpose of the development project was not to take over land, the European/Western view of indigenous permitted them to disregard the entire diversity of knowledge and culture that existed in the 'underdeveloped' world.

In the 1970's, there was a realization that despite a 'golden age' of growth in the post-war period, the Western development agenda was not reaching its greatest promise: poverty alleviation. Kuznet's curve had justified this predicament in the early stages of development. However, the realization that four decades of development efforts had led to increased poverty rates was alarming. By this time, the Keynesian model was losing steam as economic stagnation was setting in. Soon, Keynesian state intervention was abandoned and replaced with neo-classical economics based on free trade, specializing the means of production, export-oriented growth, and privatization. Evidently, the progress of a country was measured by economic performance; the Gross Domestic Product (GDP) was devised for this purpose, measuring the total value of good and services provided in a given year.

A second realization came to fore with several studies that indicated Mainstream Development strategies were increasing poverty in developing countries, and was subject

to much ethical criticism. In the *Human Development Report,* published by the UNDP in 1992, it was estimated that 20 per cent of the world's population residing in developed countries accounted for 82.7 per cent of total world income. The poorest 20 per cent of those living in developing countries received a total of 1.4 per cent, a mere sliver of global income (Khor, 2001). Structural Adjustment Programmes also became high hit with criticism, and are now renown for their devastating effects on developing countries.

Despite these realizations, Mainstream Development and its modernization objective remain intact; today it takes the form of Neoliberalism. This economic model dominates the current world economic order, using strategies such as privatization, liberalization, deregulation, and decentralisation (Scholte, 2002; Veltmeyer, 2001). Neoliberalism tends to treat economics in isolation from other dimensions of social relations. In particular, the doctrine supposes that economic policies toward globalization can be a culturally and politically neutral matter of technical expertise. (Scholte, 2002). .

2.3.1.2 Another Development

Another Development (AD) marked a paradigm shift in development theory that took place in the 1980's, one that began to seriously question the fundamental elements of mainstream development. Sustainable Development emerged out of this search for another development. Although MSD was inevitably influenced by AD, it is not rooted in AD. However, it is mentioned here due to its peripheral, but key, influence on the MSD perspective. MSD adopted many of the notions of AD, such as community, participation, gender equity, and indigenous rights, without questioning the core assumptions of Mainstream Development (namely, that economic growth, on its own, will solve both poverty and the environmental crisis). For example the International Labour Office (ILO) adopted a "redistribution with growth" concept in 1972, and the World Bank formulated the principle of meeting "basic needs." MSD has however generally not gone beyond rhetoric in incorporating of these concepts into their strategies. AD will be outlined in more detail in the section on CBSD, the Grassroots Perspective, as one of its core elements.

2.3.1.3 The Environmental Movement

Inevitably, the social environmental movements that began to stir both North and South in and around the 1960's also contributed to the incorporation of environmental and sustainability objectives into Mainstream Development. In the North, this movement marked a change in the view of nature from being an eternal absorbent of industrial offences, to a vulnerable entity with limits to be respected (Barrow, 2003; Sachs, 1995). The northern and southern environmental movements differed in their focus. In the North, the concern was over the 'environment' and on the rights of 'nature'. The concern in the South was focused on 'social justice' and humans rights to land, natural resources, and traditional livelihoods, rights usurped by the elite for the purpose of economic development (Sachs, 1995). These movements were key in raising awareness about the environmental and social consequences of industrialism and the push for a more 'sustainable' form of development, both in terms of the environment and international social justice. The Southern Environmental movement is discussed in further detail in the section on CBSD.

2.3.2 Theoretical Roots of CSD

2.3.2.1 Ecology and Biodiversity Conservation

The concept of Ecology first surfaced in the mid nineteenth century with the publication of *Man and Nature* in1864 by George Perkins Marsh (Worster, 1977). Ecology was established as a discipline that studied nature, its elements, and interactions between these elements. Two important notions dominated early Ecology. The first was that nature was considered to be in a static state; left alone, nature was in harmony, tending toward balance and ecosystem health. This view of nature is often referred to as the *Eden* view or the *pristine myth* of nature (Denevan, 1992). Early Western conservation ideologies were dominated by this assumption. As Furze and De Lacy (1996, p.54) express,

> 'Pristine nature' is a fine myth carrying with it satisfying images of an idealized natural area which has not yet been disturbed by the pernicious effects of humanity. Conservationists have sought to convert this myth into reality by establishing so-called 'wilderness areas.'

The second assumption was that nature could only remain in static equilibrium in the absence of human interference, as the 'natural' human tendency is to modify nature

for their benefit. This assumption is apparent in the present day conservation notion that biodiversity is highest in areas where humans are absent (Erdos, 1998; Escobar, 1998; Leach et al., 1999). In other words, it was assumed that humans were bad for nature's Eden, and must be kept separate from nature. Inherent to the latter assumption is an even deeper assumption, that humans and nature are separate.

The conceptual separation between humans can be traced back to the time of the Enlightenment (Negi & Nautiyal, 2003). Prior to the Enlightenment, the human perception of life was based on metaphysical belief systems dominated by myth, superstition, and the divine intervention of God, who controlled everything from daily happenstance to the weather and disease (Barrow, 2003). The perception of the world changed drastically during the Enlightenment, when humans separated the individual from the rest of the universe to become an objective observer of natural and human behaviour. All was regarded as behaving according to predictable outcomes, which eventually became recognized as indisputable (gravity, for example) (Hallman, 1992).

Hugely influential was Descartes theory of *reductionism*, which states that a system can be understood by simply breaking it into its constituent parts (in contrast to *holism* which states that the whole is more important that the sum of its parts). August Comte's philosophical system of *positivism* also emerged during this time, which only recognizes phenomena that are observable and non-metaphysical (Barber, 2001). Having been previously at the whims of the ravages of nature, the Enlightenment also provided the means by which people could finally subdue the ravages of nature: science and reason (Korten, 1999). This was preceded by the surge in technology used to actually control nature (Benton, 1994). Though today we are still subject to the ravages of nature's hurricanes, tsunamis, and diseases, technology remains the primary method by which to control nature. The assumptions presented above represent the foundation on which biodiversity conservation was built.

The concept of 'biological diversity', or 'biodiversity', was conceived within the science of Ecology, along with several other conservation concepts such as biological integrity, ecological restoration, ecosystem health, ecosystem management, adaptive management, and sustainable development (Baird Callicott et al., 1999). The concept of 'biodiversity' was however preferred over the rest, becoming the "*summum bonum*" of

conservation biology (Baird Callicott et al., 1999). Although many definitions exist, they can be summed as the variability of genes, organisms, species, ecosystems and biomes found within any given area (Escobar, 1998; O'Riordan & Stoll-Kleemann, 2002). Biodiversity has been identified as crucial to ecological processes such as evolution and the ability to adapt to changing conditions (both natural and anthropogenic), as well as for its utility to human advancement (for example, for medicinal purposes or the improvement of modern food production systems) (Schücking & Anderson, 1991). Therefore the objective of 'biodiversity conservation' is to safeguard sufficient biodiversity as to maintain the integrity of the Earth's natural systems, both locally and globally; this is accomplished through the strategic selection of sites to be brought under protection- a practice known as protected area management (O'Riordan & Stoll-Kleemann, 2002).

These notions are being increasingly recognized as being false (Agrawal & Gibson, 1999; Denevan, 1992; Escobar, 1998). "Dynamic Ecology" has been put forth in recognition that humans have modified and influenced nature for millennia (Agrawal & Gibson, 1999). As is discussed in the last part of this section, the basis of 'New Conservation' surrounds finding a renewed compatibility between humans and nature and treating nature and ecosystem health as dynamic.

2.3.2.2 Mainstream Conservation

Conservation originally emerged in the United States as a reaction to the environmental destruction caused by industrialisation in the mid 1800's. At this point in history, a vast proportion of North America's landscape had already been drastically transformed into urban concrete and wasteland from the expansion of industrialization and urbanization. As a means of protecting parts of what remained of 'nature,' conservationists, together with federal and state level governments, decided to select areas of the 'natural' landscape that needed to be preserved. In order to accomplish this, pieces of 'natural' environment were set aside for the purposes of conservation, recreation and enjoyment (Pimbert & Pretty, 1995). The first protected area created in North America was 'Yosemite Lands', established in 1864. 'Yosemite Lands' was cared for at the state level (in California) since federal resources were still limited at that time.

The idea of establishing a system National Parks emerged only later in 1872, beginning with creation of Yellowstone National Park (Rabold, 2005).

National Parks attempted to preserve nature in its 'natural' state by excluding humans and human activity and using strict regulations. This meant that even the original inhabitants, the indigenous, were forced out of National Parks. In the case of Yosemite National Park, the Miwok Indians were forced off their land several waves; first by the army in1851 and 1906, then 1929 and 1969 by the Park Service (Keller & Turek, 1998). Furthermore, the Cro and Shoshone Native Americans were also forced off their land after the creation of Yellowstone National Park (Keller & Turek, 1998; Pimbert & Pretty, 1995; Stevens, 1997a).

The 'Yellowstone' model travels worldwide...

When one thinks of National Parks and protected areas, images of pristine preserved land probably come to mind, a quiet place to escape the hustle and bustle of city life and enjoy the tranquility and beauty of 'nature.' However, for many people around the world, the establishment of a national parks system translated instead into further marginalization, poverty, and a disregard for their human rights. Similar to the colonial model of development, the Western approach to conservation was uprooted from North America (and parts of Europe) and transplanted in various areas around the world (Negi & Nautiyal, 2003; Stevens, 1997a). This occurred especially in developing countries during the time of colonialism, where national parks were used as an instrument of colonial rule (Stevens, 1997a). Just as early development thinkers could fathom only one path to development, early conservationists implemented only one conservation model and treated it as a blueprint for the entire world. As Furzy, De Lacy and Birckhead state, "With the twentieth century being one of especially American dominated ideas, it is not surprising that the US national parks concept spread internationally" (p.54, 1996). This method of conservation has become known as the 'Yellowstone Model' of conservation, evidently taking its name from the first U.S. national park (Pimbert & Pretty, 1995; Stevens, 1997a).

The Yellowstone Model had severe implications for local and indigenous populations. National parks and other types of protected reserves were created without consultation or even notification to local resident populations. Indigenous and local

populations around the world were subject to land displacements that were forced, and at times, violent. Having been moved off their traditional lands and denied access to natural resources used to sustain their livelihoods, indigenous and local populations suffered reduced food security and self-sufficiently, and increased impoverishment (Adams & McShane, 1996; Colchester, 2001). One villager explained, "We have no more fish in this village because the only way we can get them is to go to the river. That is now in the park, and it is forbidden for us to fish there" (Kemf, 1993). The view of indigenous populations during the time of colonialism (and thereafter) helped justify such coercive conservation strategies. Indigenous people were viewed to be more akin to nature, being wild, savage and primitive, rather than part of the civilized human race. As explained above, these views of humans can be traced back to Western views of nature and conservation.

The implementation of management strategies was top-down and coercive, using fines or jail time as deterrents to encroachment (Kemf, 1993). However, without an alternative means for sustaining their livelihoods, local populations 'encroached' on their former grounds in search of food, timber, water, and medicinal plants (Adams & McShane, 1996; Pimbert & Pretty, 1995). The use of such coercive methods of implementation and reinforcement often incited purposeful destruction of wildlife and natural resources on behalf of local residents (Pimbert & Pretty, 1995). Since the presence of animals was understood as the reason for park creation, without them there was hope they would regain access to their land. In the *Crooked Tree Wildlife Sanctuary* of Belize, local people who rely on water fowl and wild game for protein began hunting protected and endangered species as an expression their discontent (Steinberg, 1993). Strict restrictions on natural resource has caused grave tensions between local people and park authorities that have escalated to violent confrontations and even death (Adams & McShane, 1996; Negi & Nautiyal, 2003; Pimbert & Pretty, 1995). Having instigated poverty, political and social instability, violence, and encroachment, conservationists' interests also suffered through continued habitat destruction and biodiversity loss (Elford, 2002).

The Yellowstone Model also proved to be ineffective in conserving biodiversity for yet another reason. The protection of such large expanses of land is resource

intensive, and with a high associated monetary cost. Post-independence, many developing countries simply did not have the resources necessary for this kind of protective management (Brown & Mitchell, 1999; Klooster, 2000). Occasionally, parks were also established more as a political gesture of appearing environmentally responsible to attract foreign grants, particularly in developing countries. The declared creation of protected areas on paper, yet void of physical protection, has become known as the 'Paper Parks' syndrome (Dudley, Hockings, & Stolton, 1999).

Although the 'Yellowstone Model' referred specifically to the National Park model, the term has evolved to mean any kind of protected area that excludes humans and uses coercive management schemes. Other terms that have been coined to describe this model of conservation are "fines and fences approach" (Leader-Williams, Kayera, & Overton, 1996; Wells et al., 1992), "neo-colonial fortress conservation" (Hulme & Murphree, 1999), or simply "colonial conservation" (Colchester, 2004).

2.3.2.3 New Ideology of Conservation- 'Community Conservation'

In the 1970's, coinciding with the paradigm shift in development thinking, conservationists began taking a serious look at their conservation principles and their implications in terms of human rights violations. While not doubting the importance of conservation, the means of achieving conservation were acknowledged as being inappropriate, unjust, and largely ineffective, in developing countries especially. Conservationists began to seek alternative conservation strategies that were community-based and participatory. The notion of conservation was re-conceptualised from one of strict preservation, to a more flexible one that reconciled people and nature by combining the goals of biodiversity conservation and community development. This approach has been acknowledged as a new ideology in conservation thinking, dubbed 'New Conservation' (Hulme & Murphree, 1999), 'community-based conservation'(Leader-Williams et al., 1996), or 'people-oriented conservation' (Jeanrenaud, 1999). T hese terms will be used interchangeably.

In almost every respect, New Conservation' is about righting the wrongs of the past committed by the 'Yellowstone Model' of mainstream conservation described above. New Conservation is human centred, community-based, participatory, and

holistic in approach (Pimbert and Pretty, 1995; Neumann, 1997; Jones, 1999; Ide and Adams, 2000). In contrast to past strategies to conservation, the new ideology of conservation recognises the need to meet the development needs of the local community for biodiversity conservation to occur. Though protected area management remains at the forefront of conservation efforts, the role of local communities and indigenous people shifted from being degraders of the environment to becoming key participants in the conservation process, and even championed for their tendencies toward nature conservation (Dovie, 2003).

An integral part of New Conservation is the preservation of local culture. Although the rights of local people to preserve their culture is recognized is important in itself, of particular interest to CSD are the cultural norms and traditional resource-use practices that are embedded with 'natural' conservation practices. The preservation of culture also ties into the rights of local populations to their traditional livelihoods. 'Empowerment' is a popular concept used in relation to this element. Also part of community conservation is the provision of alternative sources of livelihood as compensation for restrictions in resource use, such as ecotourism. Encouraging community participation and bottom-up development activities that are in tune with environmental sustainability is regarded as being key in achieving greater conservation success (Jeanrenaud, 1999; Wells et al., 1992).

It is also increasingly acknowledged that protected area management must to be compatible with the cultural and social characteristics of communities that exist within and outside the area, in addition to the ecological considerations (Furzy et al., 1996; Pimbert & Pretty, 1995). The social sciences are also given increasing importance in protected area planning and management, such as anthropologists, educationalists, and sociologists. Furthermore, protected area managers are being encouraged to be more holistic and interdisciplinary in their approaches, working *with* local people instead of imposing ideas from 'above' (Stolton & Dudley, 1999). Managers are also being increasingly called upon as agents of change in the 'sustainable' development of rural areas.

A different spatial approach is taken in New Conservation. The traditional view of only protecting nature within the set boundaries of a park led to a phenomenon often

referred to as 'islands,' where nature is protected within a 'sea' or 'desert' of environmental degradation (Laserre & Hadley, 1997; von Droste, 1996). Hence, a more regional approach is taken to protected area management using methods such as bioregional planning and the establishment of buffer zones that extend protection beyond park boundaries. Furthermore, as opposed to the positivist science that was characteristic of conventional conservation, this new approach is regarded as experimentation, where no one definition of sustainability is believed to exist (Hulme and Murphree, 1999). The MAB and their Biosphere Reserve initiative spearheaded this change of thinking in the 1960's, being the first strategy to incorporate community development to conservation. However, New Conservation only became the dominant ideology of conservation in the 1980's. The adoption of Wildland policies by both the World Wildlife Fund (WWF) and the World Bank in the mid 1980's served to landmark this change. A formal recognition of indigenous rights in conservation was also made when both the WWF and World Conservation Congress (IUCN) official statements were published listing the rights of indigenous people to their land and natural resources (Colchester, 2004). The following year, IUCN issued a resource guide entitled *Beyond Fences*.

Biosphere Reserves have also evolved according to ongoing research devoted to New Conservation. Several of the modifications and additions made to the Biosphere Reserve action plan, the *Seville Strategy*, devised during the Seville Conference in 1998, reflect many key aspects of New Conservation. The *Seville Strategy* promotes methodologies for involving stakeholders in decision-making and resolving conflict, regional-based strategies, partnerships, developing alternative means of livelihood in zones where resource use is prohibited or restricted, the equitable sharing of benefits, and also re-emphasizes the human dimensions of Biosphere Reserves (i.e. culture and traditional knowledge). A point worth highlighting is that the first of the three main objectives of Biosphere Reserves, biodiversity conservation, was broadened to include the conservation of *cultural diversity* as well. However, other areas of the plan more closely reflect the conservationist tradition, placing high importance on the use of sound science and complying to the objectives set out in international agreements such as Agenda 21 and the Convention on Biological Diversity (UNESCO, 1995).

2.3.3 The Theoretical Roots of CBSD

2.3.3.1 Another Development: Post-modernism and Dependency Theory

As previously mentioned, a new paradigm shift in development theory began to take shape in the 1970's. This was sparked by the economic failure of the Western development agenda of economic growth, as well as the limits placed by global environmental degradation. As such, a quest began in search of an alternative development path. The array of different approaches taken in this vein were grouped under the term Another Development (AD), popularized by the Dag Hammarskjöld Foundation in their publication *Development Dialogue* (Hettne, 1990(Hettne, 1990; Veltmeyer, 2001). AD embraces a diversity of development paths defined according to local needs and cultures, instead of the carbon copy model of mainstream development. According to Hettne (1990), Another Development is composed of five main dimensions: the fulfilment of basic needs, endogenous development, self-reliance, the environment, and structural change that enables self-management and participation.

AD was influenced by two main theories: Post-modernism and Dependency Theory. The post-modernist school of thought, especially since the 1980's, has acted as a main leader in calling into question what are referred to as the Grand Narratives of the Enlightenment, which form the basis of Mainstream Development. The Grand Narratives refer to the pursuit of modernization with the aspirations of limitless progress through economic growth, industrialization, and the promise of the fruits of capitalism and democracy. Much of post-modernization literature is centred on deconstructing the modernization discourses (which are essentially the same as the Grand Narratives of the Enlightenment). In development theory, post-modernism takes the name 'post-development,' which lobbies for the abolishment of the Western development agenda. According to post-development theorists, the development agenda is beyond reform since the very narratives on which it is based must be rejected if development is to become something positive for developing countries.

Dependency theory is often contrasted to Modernization theory. Whereas modernization theory called for the integration of Third World countries into the world

economy to end poverty, dependency theorists stated that the accumulation of wealth in industrialized countries was the cause of poverty in marginalized areas of the world. The theory was depicted with a model of a centre and periphery, representing the First World and Third World respectively; raw materials and cheap labour are siphoned from the periphery to the centre, where they are modified into goods, and then resold to the periphery. The net result is the accumulation of wealth in the centre, and a dependency by the periphery on the centre for processed goods, leading to a decrease in wealth in the periphery. Both post-modernism and dependency theory influenced AD by calling into question the fundamental aspects of modernization and mainstream development.

Since AD embraces a diversity of approaches to development, AD is by definition a heterogeneous approach. However, a common thread of principles can be drawn out of the majority of contributions to AD. AD is bottom-up and decentralized, unlike the top-down and centralized approach of mainstream development. Also unlike the 'trickle-down' theory of modernization, AD calls for policies and projects that directly target the poor (Brohman, 1996). Instead of development success being measured in terms of aggregate economic growth indices such as GNP, AD advocated for more people-oriented measures of development success, such as the provision of tangible basic needs (food, shelter, clean water, sanitation), as well as social equity, the enhancement of creative capacities, and ability of local communities in achieving their own development goals (Brohman, 1996).

The local level, or level of community, plays a fundamental role in AD, defining and participating in development projects that are endogenous and that respond to local needs. The integration of marginalized groups of developing society was also targeted so as to increase their participation in development processes and achieve a more socially equitable development; these groups include women, the indigenous, and children. This is in great contrast to the view of local people and the indigenous as impediments and lags to progress. The preservation and revival of local culture, having been previously targeted for replacement with more 'modern' values, are respected and valued in AD. The adoption of a local perspective of AD is purposeful, rejecting any form of global-scale thinking (Esteva & Prakash, 1997).

2.3.3.2 Political Ecology and Post-Ecologist Politics

Political Ecology studies the relationship between humans and nature, focusing particularly on environmental change and the politics used to address such changes (Adger, Benjaminsen, Brown, & Svarstad, 2001; Blühdorn, 2000). Blaickie and Brookfield state the principles of Political Ecology in this widely cited quote: "The phrase "Political Ecology" combines the concerns of Ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself" (1987, p.17). A Marxist influence is also apparent in Political Ecology in its explicit consideration of class analysis in relation to environmental conflict, access to natural resources, and the unequal distributional effects of environmental problems.

Unlike the assumption of early Ecology that humans and nature are separate, Political Ecology rests on the assumption that humans and nature are indisputably interconnected. As Alain Lipietz states (1992),

> ... the task of Political Ecology is even...to remind people of what they have purely and simply forgotten. People are already 'ideologically' ecologist when they remember that human beings and nature are a single whole, that humans are part of nature, that nature is being irresistibly altered and humanized, sometimes for the better, but for the worse if one ceases to be aware of it. (p.49).

Nature is acknowledged as having been modified by humans since the Neolithic period, and the notion of the 'virgin' or 'pristine' nature on which early Ecology was based is rejected.

Political ecologists are highly critical of the managerial and technocratic nature of global environmental discourses. The policy prescriptions defined within these discourses are argued as being inappropriate in relation to local realities (Adger et al., 2001). Arturo Escobar (1998) has even suggested an alternative Political Ecology of social movements. Dealing specifically with the issue of biodiversity, Escobar argues that if biodiversity was defined in the terms of social movements, namely territorial control, alternative development, intellectual property rights, genetic resources, local knowledge, and conservation. He notes that issues of biodiversity conservation could not be reduced to prescriptions based on better management and market incentives (Escobar, 1998). The managerial and technocratic discourses of environmental issues have been

referred to by a group of mostly German authors as 'ecological modernization,' and formulated according to 'ecological modernization theory' (Spaargaren, Mol, & Buttel, 2000). As a counter-discourse to ecological modernization, Ingolfur Blühdorn suggests a 'theory of post-ecologist politics;' stated succinctly, post-ecologist politics is the post-modernism of the environmental world. Just as development theories are deconstructed in post-modernism, post-ecologist politics (and Political Ecology for that matter) deconstruct the global environmental discourses that flowed out of the very same *modernization* principles and 'myths' on which the dominant models of development are based.

2.3.3.3 The Environmental Movement of the South

Throughout the Southern areas of the globe in the 1960's and 70's, regional-based environmental movements took form, though quite unlike its northern counterpart. This southern movement is more of a rural land-based struggle and fight to defend right of local people over natural resources. Also a social movement, it is centred on issues of human rights, social justice, ethnicity, and distributive justice, representing more of a class conflict rather than mere concern for the preservation of nature. As Guha and Martinez-Allier (1997) express, the movement emerged as a reaction to the "lopsided, iniquitous, and environmentally destructive process of development" (p.17). Frustrated by often centuries of natural resource exploitation by industry and state government, local people became organized to confront such forces to stop large development projects, such as the building of dams and resource exploitation. One of the best-known environmental movements of the South is that of the Chipko movement of India in the early 1970's where rural subsistence farmers used the Ghandian method of non-violent resistance, tying themselves to trees to prevent bulldozers from felling the forests that are the source of their livelihoods and communities. Now that the roots of the perspectives MSD, CSD, and CBSD have been outlined, the second part of this chapter will focus on the debates surrounding sustainable development and the role of Biosphere Reserves in reconciling community development and international biodiversity conservation.

SUMMARY

As may have become apparent with the description of the three perspectives, Biosphere Reserves were inspired within conservationist ideology and are based primarily in the CSD perspective. However, the picture is not this simple. As mentioned above, Biosphere Reserves are, more and more, being treated as a practical and theoretical tool for achieving rural and sustainable community development. Biosphere Reserves are receiving ever-increasing attention from community-based organizations and NGO's for their community development potential, thus attracting individuals and groups from the entire spectrum of perspectives on sustainable development. Furthermore, Biosphere Reserves technically involve the participation of all stakeholders through their management partnerships. This means is that although Biosphere Reserves mostly resemble the CSD approach, the strategy also applies to the CBSD perspective in its promotion of community-based participation and development; Biosphere Reserves teeter into the grey area between CSD and CBSD, represented in Table 2.1 below that summarizes the main aspects of MSD, CBD, and CBSD. Biosphere Reserves have also become of interest to MSD as a means of preserving biodiversity for future research and development. As a result, a high diversity of opinions converges around the theory and practice of sustainable development and Biosphere Reserves. We will now turn our attention to a discussion of these debates.

Table 2.1: ***Summary of 'Sustainable Development' Perspectives***

Basic Tenets	"Mainstream Sustainable Development"	"Conservationist Sustainable Development"	"Community-Based Sustainable Development"
Theoretical Roots	Modernization theory, Northern environmentalism	Ecological Science, mainstream conservation, community-based conservation	Another Development, Political Ecology, Southern environmentalism
Principal change agents	Multilateral development agencies (ex. World Bank) USAID government agencies	international NGO's (IUCN, WWF, Conservation International),	Communities, popular organizations, local NGOs
Primary Goal	Economic growth	Biodiversity Conservation (community development is a means to this end)	Community development (conservation is inherent to the development process)
Strategies	**Top-down**: international conferences, agreements and reports; establishment of international funds (ex. Global Environment Facility); policy reform; Debt-for-nature swaps; carbon credits; payment for environmental services	**Top-down**: protected areas, international agreements and conventions, bioregionalism, preserving traditional, ICDP's, land use systems, collaborative management schemes and partnerships, community wildlife management.	**Bottom-up**: local level projects using Community-based Resource Management (agroforestry, soil conservation, ecological reserves); local cooperatives (fair-trade organic coffee and other grains, etc.); environmental action; benefit-sharing
Primary level of focus Intended Benefits	Global	Local focus of community development, as well as global focus for biodiversity conservation	Local
Main cause(s) of environmenta l degradation	Poverty	Industrialisation and poverty	Economic, political and social structures that continue to push economic growth
Relationship to Nature	Humans are separate from nature; natural resources are to be exploited for economic gain	Humans are separate from nature; nature is to be conserved	Nature and humans are inextricably linked; nature is the source for sustaining livelihoods
Form of Participation	Decentralisation, participation in projects	Participation in projects, consultation.	Ownership and autonomy; common-property natural resource management
Use of Technology	Western/Northern, transfer from North to South.	Building on local technology and resources with Western technology	Traditional and/or small-scale locally adapted technology
Orientation of production	Specialized and oriented towards the world market	A mix local production to meet need of local community, and integration into the global market	Diversified and oriented towards the needs of the community
Key Publications	Brundtland report, Agenda 21	Convention on Biological Diversity, Convention on the International Trade of CITES, Jeffrey A, McNeely,	
Key Authors and/or Organisations	Word Bank, UNESCO, National Governments	World Conservation Union (IUCN), World Wildlife Fund, Conservation International, Jeffrey McNeeley,	Vandana Shiva, David Barkin, David Korten, J. Friedmann, Arturo Escobar, Gustavo Esteva, Arun Agarwal, Marcus Colcherster,

2.4 DEBATES SURROUNDING SUSTAINABLE DEVELOPMENT IN BIOSPHERE RESERVES

Three main questions we are addressed in this section:

1. How does each perspective, MSD, CSD, CBSD regard the reconciliation of international biodiversity conservation and community development?
2. Are communities benefiting from Biosphere Reserves and sustainable development efforts, or are they continuing to be marginalized by economic and conservation interests?
3. Are communities systematically participating in Biosphere Reserves and other community-based conservation and development efforts?

2.4.1 Defining Sustainable Development

There are as many definitions of sustainable development as there are interests it is used to serve. As with the entirety of this thesis, the cross-section of sustainable development that is being investigated is the integration and reconciliation of local needs for community development with international goals of biodiversity conservation. As a reminder, Biosphere Reserves attempt to achieve sustainable development by simultaneously merging biodiversity conservation and community development and reconciling the simultaneous use and conservation of natural resources. We begin this section by distinguishing what are the underlying *means* and *ends* to sustainable development, as understood within each perspective. We then proceed with a discussion of what the implications of these distinctions are for the local sustainable development of communities.

According to the MSD perspective, poverty is the root cause of environmental degradation; therefore, economic growth is treated as the solution to the ecological crisis. Given the Neoliberal focus of economic growth models of today, free trade, the elimination of tariffs and government subsidies, as well as privatization, are all regarded as appropriate means to sustainable development. Privatization of protected areas and other lands of high biodiversity is regarded as ideal for achieving biodiversity protection

as there exists a direct incentive to protect yet untapped natural resources that are potentially lucrative (for medicinal properties or sustainable harvesting). As Roberto Salinas-León, director of the Research Institute on Free Enterprise, explains, "In principle the economic goals of NAFTA are consistent with the promise to promote a healthy environment. The logic is simple: more trade generates economic growth, which stimulates the demand for a healthier environment and thus leads to sustainable development"(Salinas-León). From the MSD perspective, development through **trade-driven economic growth** based within a model of Neoliberalism is both the *end* objective and *means* of achieving sustainable development, and poverty and environmental issues are considered to be resolved along with this process.

By contrast, the conservationist perspective considers industrial development and inappropriate technology to be the cause of the environmental crisis. Therefore, it is believed that development should be limited and that biodiversity requires protection. Thus, as viewed by CSD, the *end* objective of sustainable development is **biodiversity conservation** through the sound management of protected areas. Community development is treated as a *means* of improving conservation success by creating buffer zones around protected areas and providing alternative means of livelihoods; this deters encroachment and entices people to become actively involved in conservation efforts. The involvement of people in conservation through community development initiatives is regarded as a positive shift from the less ethical 'fortress'-style conservation, though only if the primary objective remains the restoration and/or maintenance of ecosystem health (O'Riordan & Stoll-Kleemann, 2002).

According to a community-based perspective, the dominant economic model of Neoliberalism promoted in MSD has involved the exploitation and marginalization of local communities throughout the world, and is the cause of worsening conditions of poverty and environmental degradation. A precursor to achieving sustainable development is therefore to break away from the assimilation of local communities into the global economy game where some players have advantages over others and power is not shared equally. The goal of CBSD is to achieve conditions that will permit people and communities to be the makers of their own development path and sustain their

livelihoods locally. **Community-based development** is, therefore, the *end* objective of CBSD and conservation is an inherent *means* of achieving local sustainability.

According to CBSD, conservation is defined not in its traditional sense of biodiversity protection, but the conservation of *biocultural* diversity, that is, biological diversity, cultural diversity, and the interdependent relationship between them (Elford, 2002). CBSD also promotes a process of conservation through *self-determination*, defined in the International Pact of Human and Civil Rights as "a people's right to their own political, social, economic, and cultural development" (Carlsen, 2002). Gómez-Pompa and Kaus suggest an alternative interpretation of sustainable development in relation to conservation, one that promotes "those actions which provide environmental and biological safeguards for future generations without compromising the needs of present ones" (1999, p. 1). From the CBSD perspective, local people and communities have a right to sustainable development, and is a precursor to the existence of biodiverse ecosystems. Local development and a biodiverse environment are considered to be interdependent. As David Barkin writes, "The concern for biodiversity, in its broadest sense, encompasses not only threatened flora and fauna, but also the survivability of these communities...as stewards of the natural environment and as producers"(Barkin). To treat conservation and community development as two separate objectives is actually an impediment to achieving sustainable development since there is no separation between humans and nature; conservation and community development are, therefore, inextricably linked. Proponents of the CBSD perspective suggest the use of strict, non-use preservation only as part of a broader and long-term livelihood strategy.

2.4.2 The Dominance of Science and Technology

Given the end objective of biodiversity conservation in CSD, and the end objective of economic growth in MSD, one can deduce that community development initiatives are falling along the sidelines of these goals. In fact, the literature reveals that despite the rhetoric of community development and participation used by MSD and CSD, economic and conservation interests have dominated those of communities for local sustainable development (Guha & Martinez-Allier, 1997; Pimbert & Pretty, 1995; Sachs, 1995; Shiva et al., 1994). Several factors have been put forth to explain this discrepancy.

One simple, yet important, observation is the economic interests of the MSD perspective and conservation interests of the CSD perspective, dominate positions of power the within the global mainstream economic and conservationist systems respectively, and the institutions within them (i.e. international banks and international conservation organizations). Therefore, the outcome is quite simply that MSD and CSD objectives are pursued more actively. When it comes to economic interests, other aspects of government generally granted less importance. As Scholte states:

> Within states pursuing neoliberal policies, ministries of finance, industry and trade have generally gained ascendance over departments of foreign relations, military affairs and social questions. In civil society across the world, business associations and economic research institutes have usually exercised far more influence than human rights advocates and religious groups (2002, p.8).

Conservation interests in charismatic species also have a history of sidelining the needs of local communities, a tradition that continues to be true even today. In the case of the Mariposa Monarca Biosphere Reserve (MMBR), Mexico, the monarch butterflies have received international conservation attention and publicity. Meanwhile, the *campesinos* living in the reserve expressed feeling as though *they* were the endangered species left unprotected, their livelihoods threatened by the poverty leading them to cut down their forests. In the MMBR, initiatives have been put forth to provide alternative livelihoods to lumber, yet the socio-political conditions and history of the region is complex and have impeded the success of such initiatives. This brings us to the next point.

When analyzing the situation more closely, it is revealed that part of the problem is that MSD and CSD are both technical and scientific in their approaches, dealing as little as possible with the slippery nature of social issues. MSD and CSD prefer a clear-cut and scientifically supported argument that deals more with numbers rather than the intricate complexities of social and cultural problems.

As explained in Part I, Ecology is rooted in science, positivism, and reductionism, in turn born out of the Enlightenment. The irony is that Ecology resorted to the same tools to fight the environmental crisis as the ones that led to the environmental problems in the first place: science and reason (and technology by default). Ecology acted to transform the environmental movement, originally a social movement against the industrial development/economic progress ideology, into a science that could be absorbed

by this same ideology. While the advantage was that the objectivity of science made environmental problems an undeniable reality to those of the economic growth ideology, the disadvantage (perhaps a compromise) was it permitted ecological science to be absorbed into the economic growth model (Mainstream Development) without abandoning or questioning the notion of progress, the accompanying mechanisms used to achieve it, and increasing discrepancy between rich and poor (Gudynas, 1993). As Gudynas states succinctly, "This is where sustainable development becomes sustainable economic growth, where a new ecological wisdom becomes the tool to open a new era of welfare and growth" (1993, p.176). What this amounts to is that ecological science, while serving as proof of the need for conservation, is void of socio-political or economic analysis.

Due to the focus on scientific and technical data with CSD and MSD, the broader social, political and cultural aspects of integrated conservation and development projects (ICDP's) have not been adequately addressed. According to Smith: (1995)

> Even the fledgling discipline of Conservation Biology, a self-acknowledged mission-orientated 'crisis science' which has sprung up in the last three decades to 'straddle the frontier between these worlds' (the 'real' world versus that of scientific theory), has been more concerned with Ecology, biogeography, systematics and genetics rather than with examining the human-environment interface (1995, p.377).

Part of the new conservation ideology is to expand biodiversity conservation and sustainability initiatives beyond islands of protection in a sea of environmental degradation. However, there are still a great many who continue to treat such areas as islands void of social, political and economic instability and unrest. Adrian G. Davey (1996) suggests that the biggest threats to conservation exist outside of protected areas, and failure to connect conservation initiatives to such societal factors will also fail to resolve the fundamental causes of environmental degradation. According to Robert Daniels and Thomas J. Bassett (Daniels & Bassett, 2002), ICDP's continue to fail to acknowledge the broader socio-economic and political problems that transcend the geographical boundaries of projects and protected areas. In a case study performed by in the Lake Nakuru National Park, Kenya, Daniels and Basett (2002) showed that the politically motivated violence taking place in the entire Rift Valley was undermining the conservation efforts of the WWF in the park. Due to the violence and social unrest in the

area, the park's residents were distrustful and reluctant to participate in their conservation projects. The success of the WWF's project was undermined by a lack of understanding of the social conflict taking place in the park and the inability to adapt their project to such factors. While this is but one example, it is safe to say that social, political, and economic factors in any geographic space will influence patterns of natural resource-use. Any ICDP that does not take these conditions into account ignores the root causes of environmental degradation. In Daniels and Basset's words, "political-economic processes–whether they take the form of politically motivated violence, low commodity prices on the world markets, or structural adjustment policies that deepen rural poverty–can and will influence how natural resources are managed" (2002, p.489).

The scientific inclination in Ecology and biodiversity conservation has also led to a phenomena coined by Robert Chambers as 'normal professionalism,' a term which refers to specialization within and discipline or profession, as opposed to the diversification of ideas, values, methods, and behaviours within a discipline or profession (McGrath, Marinova, & Newman, 2005). In conservation and protected area management, biologists and natural scientists have dominated the area of study and practice, with little or no involvement of social scientists. As a result, the criteria used to select protected areas are based on technical ecological value, with little weight being given to social or political factors (Colchester, 2000). Peter Gerritsen notes that 'Normal professionalism' is a problem in the Sierra de Manantlán Biosphere Reserve in Mexico (our case study), where no social scientists comprise permanent staff. He claims that problem assessment and the subsequent designing of intervention programmes have consequently been performed solely by natural scientists and technicians (Gerritsen, 1998). Furthermore, in the Montes Azules Biosphere Reserve of Mexico, the original president of the Advisory Council (AC), a council meant to increase the participation of stakeholders in the reserve, was a member of the U.S. based international conservation NGO, Conservation International (Weinberg, 2003). While the participation of a U.S. based international conservation NGO on an AC is justified, occupying the role of president is likely to prioritized Western conservation goals.

Contrary to concern that conservation interests are sidelining community development, others fear that the attention placed on communities and their development

has been at the expense of biodiversity conservation and is threatening conservation success. As J.R. Barborak expresses in the following statement:

> One of my biggest concerns is that with all the talk about buffer zones, extractive reserves, sustainable development, and the need to improve the lot of local peoples in regions surrounding protected areas, the institutions involved in the management might loose sight of their core mission, which in the case of strictly protected areas is to protect resources for the long term and produce a sustainable flow of wildland services for a nation (1995, p.34).

Some conservationists have been even more forthright with the opinion that since biodiversity loss continues to be a problem under the new sustainable-use/community approach, that the authoritarian preservationist approach to biological conservation approach should be reinstated (Brechin, Wilshusen, Fortwangler, and West, 2002).[5] Even bolder preservationist opinions have been stated with conviction. Clive Spinage believes that 'CBSD' and 'new conservation' ideas, which he refers to as "being cloaked in Marxist and neo-populist dogma, and philosophical discourse," will only undermine the goal of biodiversity conservation (Spinage, 1998). He argues that conservation has had limited success not because of a lack of community development and conservation, but because of population increase, technology (weapons and veterinary technology that have increased hunting and livestock respectively), and the desire for money. While the factors given by Spinage are perhaps adversely affecting conservation initiatives within protected areas, these are not the only reasons, nor do they justify the use of coercive strategies that violate the basic human rights of indigenous and local populations; there must be equal consideration and respect for the natural environment and the people who inhabit it.

The success of Biosphere Reserves has been impacted by the discrepancies discussed above. Generally, the management of Biosphere Reserves is based more on ecological and technical data. The very broad, logistic support function of the Biosphere

---

[5] Brechin, Wilhusen, Forwangler and West form their arguments with reference to four books: *Requiem for Nature* by John Terborgh(1999), *Myth and Reality in the Rain Forest* by John F. Oates (1999), *The Last Stand: Protected Areas and the Defense of Tropical Biodiversity*, edited by Randall Kramer, Carel van Schaik, and Julie Johnson (1997), and *Parks in Peril: People, Politics and Protected Areas*, edited by Katrina Brandon, Kent Redford, and Steven Sanderson (1998).

Reserve, as outlined by the MAB, consists of demonstration projects, environmental education and training, research, and monitoring (Hadley, 2002), and not on social issues or conflict resolution. Furthermore, studies have revealed that in Biosphere Reserves of Mexico and Central America, central-state governments, outside scientists, and international environmental NGO's, have dominated the formulation and design of management procedures for the conservation and sustainable use of natural resources (Young, 1999).

As Phillips explains with reference to Biosphere Reserves, "...conservation is not necessarily a function of all parts of a Biosphere Reserve. Indeed, conservation may be absent altogether as an objective within the transition zone, where the emphasis will be on the sustainable use of natural resources- a highly desirable end but not the same as biodiversity protection" (p.8, Phillips, 1996). Biodiversity conservation is implemented in areas of the Biosphere Reserve that are of highest ecological value

2.4.3 The 'Global' versus the 'Local':

Environmental problems reached undeniable global proportions when issues such as ozone depletion, acid rain, deforestation, and biodiversity loss started to make headlines in North American press. Having been defined in global terms, the solutions devised to mitigate the environmental crisis were also defined in global terms (the global scale of environmental degradation is what deemed the qualification 'crisis'). The global method of choice in alleviating the environmental crisis has become that of environmental management. International conventions, agreements, plans of action, and global funds, such as the Convention on the International Trade of Endangered Species (CITES), the Convention on Biological Diversity, the Rio Declaration, and the Global Environment Facility (GEF, a fund that finances developing countries in initiatives that help protect the global environment and local sustainable livelihoods (GEF, 2006), as well as the International Network of Biosphere Reserves are all representative of the global environmental management approach. Notably, the MAB International Network of Biosphere Reserves is an international strategy for biodiversity conservation and was revised in 1995 with the Seville strategy to comply with international conservation agreements (UNESCO, 1995). Global environmental management draws on the

ecological science of Global Ecology, which has developed over the last 20 to 30 years, prior to which environmental problems were only considered local or regional in scale (Leis & Viola, 1995). Global Ecology is the study of global ecological systems, purporting such theories as global carrying capacity (ie. there is a limit to the number of people the Earth can sustain), with the purpose of providing global environmental management with the best possible scientific data on which to base decisions. These are the terms in which the MSD and CSD perspectives have defined the environmental crisis.

The CBSD view the global strategy of environmental management in a different light. By defining the environmental crisis in global terms, they argue that solutions can only stem from the global. Since the North occupies financial capital and technology, the North dictates what solutions are put forth (Shiva et al., 1994). In their view, the global discourse of Global Ecology has facilitated further domination of the South and their natural resources, and has sidelined the potential of local level change. Originally a language of resistance to the forces of environmental degradation, the Global Ecology discourse has been co-opted, redefined, and diluted by proponents of Neoliberalism to justify yet further domination of the South and their natural resources, as well as the marginalization of their communities (Gudynas, 1993; Shiva et al., 1994). Shiva et al. (1994) refer to this phenomenon as the *global reach of environmentalism*, whereby defining the environmental and biodiversity crises in global terms, the North can then legitimate dictating to the South, on the do's and don'ts of natural resource use and conservation. This is part of an ongoing historical trend where the issues arising out of southern social movements, such as poverty, underdevelopment, and marginalization have been co-opted by international institutions (such as the World Bank and the IMF) and political leaders, and also applies to such discourses as 'sustainable development' and 'participation' (Scholte, 2002; Shiva et al., 1994); the unfortunate outcome is the dilution of clarity and potential for significant change (Scholte, 2002).

The notion of the *global commons* has been particularly powerful tool in permitting the domination of the South, as well as diverting attention away from environmental problems in the North. By defining a local resource as a global commons, suddenly international donors and organizations gain the right to dictate how this local resource is managed, thus increasing the global reach from North to South. However,

from the perspective of the South, a local resource can only exist in the local since they have no access to the South. Taking the example of biodiversity, all attention as been placed on the South, where biodiversity is highest, and even more so in Latin America. By being defined as a global commons, the North has gained access to biodiversity in the South through mechanisms such as the Biodiversity Convention and GEF (of the World Bank). However, as the CBSD perspective points out, the biodiversity crisis was actually created by donor organizations such as World Bank who fund transnational corporations that have destroyed natural habitats to create mines, dams, cattle-ranches, and the implementation of green revolution monoculture technology (Shiva, 1993). With redefining local environmental degradation as a global commons, the World Bank, along with several international NGO's, have funnelled substantial financial resources and programmes into the biodiverse region of Latin America (Castillo & Toledo, 2000; Gallopin & Winograd, 1995) and redefined themselves as part of the solution rather than part of the problem (Sachs, 1993).

The concern is the 'global' focus has sidelined the importance of local level, bottom-up action. CBSD believe that only local level action can bring about sustainability because the 'local' is in fact everywhere, whereas the global exists in a very confined space- that is, the offices of the World Bank, the IMF, multinational corporations, and bureaucrats (Shiva, 1993). As opposed to the marginalization of local people caused by the imposition of Mainstream Development, local community action brings about empowerment of people in choosing their own development path. In India, the local level has been very active in protecting one of life's most precious entities: the seed. While monocrops of genetically-modified patented seeds, chemical fertilizers, and pesticides are promoted in developing countries by the 'global' powers in the fight against poverty, local farmers are taking initiatives to protect their seed diversities and resisting the monopolization of their food sources (Shiva et al., 1994). Schücking and Anderson that "A " Aglobal" biodiversity program must state clearly and forcibly that the concept of a global heritage works both ways"(Schücking & Anderson, 1991). They call for "structural ecological adjustment" in the North and beyond, as well as efforts in the South to halt the biodiversity crisis.

A counter movement has developed in the South that is turning the finger back at G-8 countries, putting the pressure on them for the environmental damage caused by the industrialisation of developed countries (Escobar, 1998). The developed world is accused of consuming beyond the means of the planet, causing overharvested fish stocks, deforestation of the Boreal forest, and polluting the air, earth, and water (Gudynas, 1993; Sibanda & A.K, 1996). Meanwhile, Western conservationists, politicians, and 'development' workers are dictating to the developing world what they must do to save our global common heritage, though the developed world has no say in the continued environmental destruction of the 'developed' world in the name of profit. In response to the Rio Declaration of 1992, the prime minister of Malaysia made the following statement:

> The North should begin to clean up its own back yard and stop scapegoating the South for the ecological sins it committed on the way to prosperity. The North should resist the temptation to lock up the tropical forests and other natural resources, which are critical for our development, in the name of a "common heritage." Eco-imperialism should be brought to an end once and for all (Mahathir and Lutzenberger, 1992, p.1).

As apparent from the above statement, environmental imperialism, or 'eco-imperialism,' has also emerged as a concept to identify this new context of Southern domination. Eco-imperialism refers to a type of cultural imperialism where the international goal of biodiversity conservation takes precedence over local needs for community development (Hulme & Murphree, 1999). Unlike the 'global reach of environmentalism' that is more a critique of the mainstream development model (MSD), eco-imperialism criticizes strict conservationists, particularly believers of Wildlife Thinking and its offspring, Deep Ecology (Apffel Marglin & Chandra Mishra, 1993). CBSD are in strong disagreement with Deep Ecologists' belief that humans are incompatible with nature, and that development and conservation cannot coexist in the same space (which notably also rules out rural and peasant livelihoods).

While New Conservation has become the dominant discourse of conservation, the new rhetoric of community and participation may be camouflaging the true colours of some conservationists who still believe in the traditional 'fines and fences' conservation (Spinage, 1998). The fact that some conservationists are so open about their beliefs in colonial-style conservation (Wildlife Thinking), despite its being politically incorrect, is

this any indication that many others are harbouring similar sentiments but not expressing them? For example, David Janzen, acclaimed by fellow workers as the 'dean of tropical ecologist's,' urged his peers to raise money to purchase land in Costa Rica for research; his urgings were successful, establishing the Guananaste National Park. In so doing, he took over ownership of local land and displaced a local farmer, justifying his actions with the following statement:

> Today virtually all of the present-day occupants of the Western Mesoamerican pastures, fields and degraded forests are deaf, blind and mute to the fragments of the rich biological and cultural heritage [the global common cultural heritage of biodiversity, not native culture] that still occupies the shelves of the unused and unappreciated library in which they reside (Guha and Martinez-Allier, 1997, p.95).

Janzen's statement clearly exposes disregard for local belief systems, a bias for the superiority of a scientific knowledge over that of local knowledge, and outright prejudice toward local people themselves. This view is culturally bound to the colonialist conservation attitudes of the unproductive and unintelligent local/indigenous person, discussed in Section I; it falsely helps rid the mind of guilty conscience and justifies actions, such as the displacement of indigenous and local peoples for biodiversity conservation.

Janzen's comment incited the following comment by Guha and Martinez-Allier who had the following to say:

> This frankly imperialist manifesto highlights the multiple dangers of the preoccupation with wilderness preservation that is characteristic of deep ecology. As I have suggested, it seriously compounds the neglect by the American movement of far more pressing environmental problems in the Third World. But perhaps more importantly, and in some insidious fashion, it also provides an impetus to the imperialist yearning of Western biologists and their financial sponsors, organisations such as the WWF and the IUCN. The wholesale transfer of a movement culturally rooted in American conservation history can only result in the social uprooting of human populations in other parts of the globe (1997, p. 96).

According to (Colchester, 2004), the acceptance of 'colonial conservation' was due to wide scale prejudice against indigenous peoples prevalent during the time in which conservation policies emerged. Janzen proposes that the user rights of local and indigenous people be usurped by non-use or strict protectionist regimes of conservation.

The preoccupation with seeking conservation at all costs, including the disregard of basic human rights, breaches conditions of social justice. In this sense, conservation is acting more as a global force, inspired by Western cultures preoccupation with technology and science, and limiting livelihood activities in regions of high biodiversity, and thus high interest (Colchester, 1994).

As we have seen, two major sources of southern domination in exist in the name of the environment. First, those of the MSD perspective, the elites worldwide, who are "shaken [...] by the prospects of global warming and depletion of biodiversity and ozone", and fear the limits of environmental degradation on global development and are controlling natural resource-use in poor communities (Lohmann, 1993, p.294). Secondly, adamant advocates of the conservationist perspective seek control of biodiversity protection at nearly any cost, without taking into account the effects on local populations. Both use a discourse of 'community,' 'participation,' 'livelihoods,' and 'empowerment;' incidentally, both have also been referred to as new brand of colonialism or imperialism (Colchester, 2004; Neumann, 1997; Shiva, 1993). A clear imbalance of power between developed and developing nations appears, where sustainable development is still administered in a top-down fashion.

CSD and MSD often join forces in their domination of the South. As Neumann (1997) claims, the largest obstacle to community conservation is the increasing role of international conservation agencies (CSD), funded by bi-lateral and multi-lateral donors such as the World Bank and the European Community (MSD). These partnerships gain access to communities through the states of developing countries. Southern governments often agree to such arrangements for lack of other means of funding and being faced with the necessity of taking environmental initiatives to prove themselves as capable of joining First World ranks. Nietschmann (1997) states this is one of the reasons colonialist conservation has persisted in Third World countries. In Nicaragua, USAID-funded Nature Conservancy, together with WWF-USA, are imposing the Río Plátano Biosphere Reserve on Miskito Indian land appropriated against their will (Nietschmann, 1997). According to Nietschmann, USAID-backed colonialist conservation organizations have become a bigger threat to Miskito management of Miskito sea resources and sea territory than are the lobster pirates, drug traffickers, and industrial fishing fleets (1997, p.218). In

Mexico, the government is suspected of using Conservation International's opinion (a U.S based international NGO), that indigenous poverty is leading rampant deforestation of the Lacondon Rainforest, to justify the displacement of 32 communities living inside the Montes Azules Biosphere Reserve (Paulson, 2000). Many of the communities are resisting eviction, arguing they have replaced slash and burn agriculture with a more ecological rotation system; they also accuse the government of wanting their displacement to facilitate corporate interests in exploiting the jungle's biodiversity. A coalition of Mayan healers was successful in blocking at least one bioprospecting project that would have exploited herbal remedies for pharmaceutical profit with little benefit to the communities. However, communities remain fearful of the connections between a flora and fauna research station located inside the reserve (and partially funded by Conservation International) and the Grupo Pulsar, a Mexican agri-business giant involved in the development of genetically-modified crops (Weinberg, 2003). The recent surge in community conservation rhetoric can be used to conceal corporate interests. As Young writes, "conservation efforts that pay lip service to the notion of integrating the needs of local people may provide a convenient wall behind which politicians and bureaucrats hide while powerful private economic interests dominate debate over future access to and use of protected-area resources" (1999, p.385).

The Biosphere Reserve strategy itself is a global initiative for biodiversity conservation, administered by an international agency (UNESCO) with the intention of inducing benefits for development at the local level. However, as demonstrated through the examples of the Río Plátano and Montes Azules Biosphere Reserves, the costs of international biodiversity conservation are often borne on the local level, while the benefits are enjoyed globally (Larson, 2002; Sayer, 1999; Shiva et al., 1994). Local people have often been forced to sacrifice economic development and natural resource use in the name of global biodiversity, without being provided with alternatives. This aspect of biodiversity conservation and Biosphere Reserves incites opposition from the community-based perspective.

2.4.4 The Indigenous Focus

As was discussed in Section I, with New Conservation and community-based development, the view of indigenous people has drastically shifted from being 'ignorant destroyers' or 'degraders' of the environment to 'natural stewards' of the environment. Suddenly, indigenous mythology, culture, and customs were recognized for their built-in conservationist traditions (Erdos, 1998; Stevens, 1997a). Preserving indigenous culture became important to conservationists as a way of preserving inherent conservationists values, and as a new strategy for conservation. From a community development standpoint, the discovery of the conservation values of the indigenous served as proof that, when given the opportunity, indigenous peoples have every capability to manage and protect their natural resources (Furzy et al., 1996); they are even more suited for the task than trained ecologist as they have a wealth of traditional ecological/indigenous knowledge passed down countless generations (Barkin, not available; Nietschmann, 1997; Sibanda & A.K, 1996). As Erdos has pointed out, "Where there are indigenous people with a homeland there are still biologically-rich environments" (1998, p.1)

While the shift in understanding of the indigenous was a positive step, there has been a tendency to romanticize the notion of the 'good native' as traditional and un-modernized, living harmoniously and happily with nature. Consequently, since the indigenous are now *expected* to be good conservationists, they are placed in a position where they must prove themselves capable of living 'harmoniously' with nature, or otherwise are displaced from their land or subjected to strict conservation regulations. Roderick P. Neumann (1997) refers to these phenomena as the 'sustainability test.' As Stearman explains, (in Neumann, 1997, p.566):

> ...there is a growing danger that indigenous peoples must demonstrate their stewardship qualities in order to "qualify" for land entitlements from their respective governments. Their lifestyles must allow them to do what immigrants and, significantly Westerners, cannot – produce and reproduce in an ecologically benign way.

Though indigenous people may have done far better than their Western counterparts, many pressures are now penetrating indigenous communities, such as global economic integration, the use of modern technology, and acculturation; these pressures are causing changes in cultural values as well as natural resource-use (Schücking & Anderson, 1991). From the conservationist point of view, indigenous

culture must be preserved to counter the infiltration of Western values that are threatening biodiversity conservation through the erosion of cultural inheritance (Rakotonindrina, 1998). Unlike CSD, CBSD interest in preserving indigenous culture is concerned with promoting the intrinsic rights of indigenous people and contributing to their empowerment (Jeanrenaud, 1999). This is part of the fight against the superiority of Western culture, and the long history of prejudice toward the indigenous since colonialism. Indigenous people with a sense of pride in their origin and identity will, in turn, take pride in preserving their culture and the natural environmental to which it is inherently linked. As for MSD, the promotion of indigenous culture is promoted while simultaneously and counter-intuitively promoting market-based and free trade approaches to economic development that both erode indigenous culture and lead to environmental destruction. The influence of each perspective evidently leaves indigenous peoples being pulled in many different directions: to be modern, to be indigenous, and to conserve.

A further danger that has been voiced with regards to preserving indigenous culture for traditional patterns of natural land use is the tendency to block the development of indigenous populations and keep them locked into 'primitive' forms of resource use. However, there is no reason indigenous culture must be locked in to underdevelopment to preserve conservation values. As Stan Stevens asserts:

> Power tools and pickup trucks, jeans, running shoes, Western music and houses, English, Spanish, or Chinese are not incompatible with cultural continuity, indigenous identity, or respect for the earth and nonhuman life. Nor to they necessarily undermine the cultural, spiritual, and subsistence importance of homelands. To overlook this is to deny a vital basis for new directions in human consciousness and global conservation (1997, p. 25).

Stevens goes on to say that culture is as dynamic as in indigenous cultures as in non indigenous ones. Cultures are as dynamic as ecosystems. CSD promote the preservation of 'fortress'-style conservation values with the singular interest of biodiversity conservation, and, therefore, may be more likely to try to convince people to maintain traditional resource-use patterns that limit development and increased incomes; to do so is arrogant and self-serving.

Traditional views of conservation, indigenous/local people, and development continue to be very powerful. They continue to influence government departments responsible for protected areas and/or natural resources (Stevens, 1997a, 1997b). Many

conservationists remain reluctant to form alliances with indigenous peoples or to permit indigenous settlements inside protected areas (Stevens, 1997a, 1997b). When the Tawahka Indians of Honduras approached the government about establishing a nature reserve, according to Stevens (1997), government officials were more interested in protecting nature than protecting the natives. Unfortunately, within the current institutional international and national structures of conservation, the decision of whether indigenous people can conserve their resources remains a decision of Western conservationists. In this way, biodiversity conservation is given inherent priority over the livelihood means of local indigenous populations.

Indigenous peoples are, however, increasingly, seeing protected areas and conservation in general as a means of asserting territorial autonomy (Nietschmann, 1997). In areas affected by natural resource exploitation by external forces, and land take over through colonization and other factors, indigenous populations have turned to the establishment of nature reserves to protect their land from outside interests. In Honduras, the Tawahka proposed the creation of a semiautonomous ecological reserve to legally block the continued colonization and exploitation of their land; since no such category existed, they settled for the Biosphere Reserve model, creating the Tawahka Asangi Biosphere Reserve (Stevens, 1997b). In Mexico, the indigenous groups in the Chimalapas mountains bordering the states of Oaxaca and Chiapas, a *campesino* (peasant) ecological reserve has also been proposed in the aim of ending the centuries of land conflicts. Despite the commitment of the communities, the government has refused to recognize a *campesino* owned and managed ecological reserve, instead proposing the creation of a Biosphere Reserve (Moncada, 1999). The communities refuse to settle for a Biosphere Reserve and have forged ahead with their own proposal for the Chimalapas Ecological Campesino Reserve (Gómez, 2002).

2.4.5 Defining community

Given the surge of popularity 'community development' has experienced in political, academic, and social discourses at all levels (local, national and international), especially in the last decade, there is concern over the need to clarify what actually constitutes 'community', and the underlying assumptions of how community is

perceived. Traditionally, 'community' has been viewed as a group of people sharing the same cultural values, social norms, and geographic space, forming a peaceful and cohesive unit (Agrawal & Gibson, 1999). As Craig (1998) has brought to point, 'community' has been used by both the political right and left to further their respective causes. On the right, those who believe in the rolling back of the state, like MSD, use 'community' to place a greater onus on family and social networks to compensate for the cutting of social spending and welfare programmes. However, the political left promotes 'community' as a means of empowerment and route to freedom. It is argued that because 'community' is so ill-defined, the relationship of the community to the larger political and economic framework is also ill-defined, making already marginalized communities even more vulnerable (Veltmeyer, 2001). That being said, 'community' is used then in contradictory contexts, depending on who is using it.

The use of the term 'community' has also been deemed problematic for obscuring the diversity of members that constitute a community. Under the heading 'community', Marxists emphasize that class divisions go unaccounted for (Veltmeyer, 2001), as though all members of a society shared the same standard of living and level of political power. Eco-feminists further contend that the unique situations of women, the most marginalized members of communities, are lost under the overarching label 'community' (Guijit & Shah, 1998). They complain that the general literature dealing with the issues of *community* and *participation* fails to address the fact that women, men, and children often possess different statuses in the community, which directly affect their roles in access to natural resources (Guijit and Shah, 1998), thus, their abilities to participate. Proponents of Women in Development (WID) argue that by not addressing this issue, women and children are not being effectively integrated into development projects, which only serves to further increase their marginalization and impede sustainable development practices (Li, 1993).

Community development and conservation have often carried out projects under the assumption that *community* is a homogeneous, unified, stable, and closed unit of society (Agrawal & Gibson, 1999; Blackburn & Holland, 1998; Guijit & Shah, 1998; Jeanrenaud, 1999). Basing community development strategies on these assumptions is akin to entire economic models being built according to 'perfect market conditions', the

problem being, they do no reflect reality. The reality of the situation is that communities are more often than not characterized by social tension, resource conflicts, and with kinship relations extending beyond apparent geographical boundaries (Young, 1999). Proponents of a CSD, have also been criticized for placing community at the forefront of their strategy, though failing to analyze the concept 'community' or understand what role 'community' will play out to achieve its wanted outcomes (Agrawal & Gibson, 1999).

On the other side of the spectrum, CBSD consider the community to be the basic unit of change. As expressed by O'Malley 'community' should be used "as a clear centre of reference for a politics of resistance and opposition to the dominant model of capitalist development and as an alternative development path" (2001, p.). More moderate CBSD thinkers acknowledge, however, that the community is often too small and isolated a unit to achieve change on its own (Bray, 1997). In other words, the community is necessary but often not sufficient in bringing about institutional and structural change (Agrawal & Gibson, 1999; Veltmeyer & O'Malley, 2001). To summarize in O'Malley's words:

> ...communities are generally surrounded and penetrated by macroeconomic policies and institutionalized practices that create conditions they cannot control but that need to be taken into account- and resisted collectively. In order to bring about development at the level of community, and to broaden it into a nation- and regionwide process, what is required is a radical change in the institutionalized structure of the dominant system and its neoliberal model of macro-economic policies (2001, p.217).

Gibson and Agrawal (1999) point out that, over history, 'community' has gone in and out of fashion and warn against accepting 'community' as a panacea to natural resource conservation. Instead, they suggest more attention be applied to three critical aspects of communities: "the multiple actors with multiple interests that make up communities, the processes through which these actors interrelate, and, especially, the institutional arrangements that structure their interactions" (p.636).

2.4.6 Community Participation:

The notion of community participation has existed since at least the 1960's, though more recently the concept has become part of the dominant paradigm in development (Gow & Vansant, 1983; Leeuwis, 2000) and conservation initiatives (Jeanrenaud, 1999). Stated in very general terms, community participation refers to the

involvement of community members in projects or programmes initiated within or outside a community.

The issue of community participation is perhaps the most complex aspect of any joint community development and conservation initiative. Despite a strong theoretical commitment to community participation, a lack of local community participation in the formulation, design, and implementation of sustainable development and conservation projects has been stated to be the single most determining factor for project failure (Wells and Brandon, 1992; Veit, 1992; Pimbert and Pretty, 1995; Adams and McShane, 1996). "Despite its beguiling attractiveness, therefore, the 'people-inclusive' approach is by no means easy to achieve" (O'Riordan & Stoll-Kleemann, 2002).

In this section we will attempt to answer the following questions: starting with the basics, how is participation defined and why is community participation pursued? Why is participation so popular yet not achieved in practice? What are the obstacles to achieving community participation? What can be done to improve the benefits of participation, particularly within the context of Biosphere Reserves and protected areas?

2.4.6.1 Different levels of Community Participation

We begin this section with a brief breakdown of the different levels of community participation. Arnstein (1969) was one of the first writers on participation, and is popular for breaking down participation into progressive steps like "rungs is a ladder," beginning on the bottom with non-participation, followed upwards by manipulation, therapy, informing, consultation, placation, partnership, delegated power, and ending at the top with full citizen control. More recently, J.N Pretty (1994) separated participation into seven different forms as follows:

1) **Passive participation**: People are informed of a change that will affect them, such as restrictions in resource use, or a project that will be carried out in their municipality, etc. Participants however are not able to influence procedures or outcomes.
2) **Participation in information giving**: Community members participate by answering questions and providing information to external actors (researchers,

project implementers, government, etc). Participants, however, are still not able to influence procedures or outcomes.

3) **Participation by consultation**: External agent solicits opinions and advice of the community; problem analysis and solutions remain defined by external agents.
4) **Participation for material incentives**: Community members participate in exchange for money, food, or other material benefits. Once the material benefit is given, the incentive to continue the activity ends.
5) **Functional participation**: Participation is sought by the external agent as a means to fulfill specific predetermined objectives. Participation often takes the hform of (cheap) labour with the purpose of decreasing the cost of a given project.
6) **Interactive participation**: Community members participate in a joint analysis, in the development of an action plan, and by strengthening or creating local community groups or institutions. A diversity of perspectives is sought from the people and groups. Organized groups determine together how resources are allocated.
7) **Self-mobilization**: Community members or groups undertake an independent initiative, that is, one not solicited by an external agent. They form relationships with external agents, seeking technical advice or other required support, but maintain control of decision-making and all aspects of the initiative.

2.4.6.2 Why community participation? The view of each perspective

Although several reasons exist for why development practitioners and conservationists alike have turned to community participation, the application of participation, like the understanding of sustainable development, can be distinguished between whether participation serves as a '*means*' or '*ends.*' According to Sally Jeanrenaud (1999), to treat participation as 'means' is to use it as a tool, which is inevitably manipulative, for improving the likelihood of achieving a desired outcome that is determined by an external entity. When treated as an 'ends,' participation is more facilitative, being viewed instead as an ethical right to influence the decisions that will have a direct impact on their lives (Jeanrenaud, 1999). Christian Kull (2002) states the same idea in different terms. In relation sustainable community development literature,

he contests that interests with community participation are either based on effectiveness as when treated as a 'means' to improve project outcomes, or on issues of equity, as when treated as an 'end' for the satisfaction of basic human rights (Kull, 2002).

In theory at least, a strong commitment to community participation in MSD, CSD, and CBSD is present. However, as illustrated above, many different forms of community participation exist, and each differs in the ones they abide by, and why. Within both the CSD and MSD perspectives, participation is mainly treated as a *means* to inform 'participants of a 'ready-to-go' project or reducing the costs of a project (sometimes with a the an added material incentive). The highest level of community participation that is sought does not go beyond functional participation, and inevitably always implemented from the top-down. This means that projects are devised and formulated by centralized units external to the community such as the government, multilateral institutions (the World Bank) or NGO's (especially internationally based ones). Adams and McShane (1996) testify that while local people have gradually been handed the responsibility of carrying out the practical elements of conservation programmes, rarely are they provided the opportunity to participate in the designing of such efforts (Adams and McShane, 1996). Furthermore, those who have been granted such responsibilities are usually trained in Western countries or according to Western conservation ideologies, perpetuating the aforementioned issue of conventional conservation values and methods dominating ICDP's, including Biosphere Reserves (Adams and McShane, 1996).

On the other hand, CBSD have 'self-mobilization' as their *end* objective, though often resort to 'interactive participation' to stimulate participation in projects, particularly in cases where community initiative is lacking. CBSD's concern is with the right of local people to participate in the decisions that affect them, and the right to empowerment through the process of participation. As Shiva declares, "The roots of the ecological crisis at the institutional level lie in the alienation of the rights of local communities to actively participate in environmental decisions" (1993, p.156). From this point of view, the exclusion of local people in participation has led to the environmental crisis; therefore their participation is crucial as a remedy. Empowerment and self-determination are achieved only when people or communities are able to determine their own actions, projects, and futures. From this perspective, community participation as empowerment

as self-determination is only achieved when communities have full ownership of their land and control over their natural resources (Colchester, 2000; Elford, 2002; Jones & Wersch, 1990; Murombedzi, 1999; Sibanda & A.K, 1996). In terms of protected area management, CBSD takes the standpoint that communities should be involved in the planning, implementation, and management of natural resources in natural areas.

Many conservationists are reluctant to devolve full decision-making power to local people, especially when dealing with natural resources of national or international importance, for fear of jeopardising their conservation (Barborak, 1995). Using this fear to justify using top-down strategies to conservation is unacceptable. However, for state-level natural resource management to suddenly be decentralized to the local level is irresponsible and can be very problematic for conservation and community alike. According to CBSD, the objective is to aim for local autonomy in resource management, dedicating the time and energy to ensure the proper conditions are first in place. Furzy and De Lacy (1996) explain that several interim steps may be necessary before the proper institutional framework is in place, and power can be safely devolved to the local level.

2.4.6.3 Obstacles to achieving community participation

A great many obstacles stand in the way to achieving participation in practice that have been put forth in the literature, far more than can be addressed here. As such, we will focus here on those that are most relevant to the discussion of community development in biodiversity conservation.

1) Confusion about what constitutes community, participation, and empowerment:

As discussed in the section on 'defining community,' false assumptions have often been made about the homogeneity and cohesiveness of communities. Not taking into account the diversity between and within the cultures, customs, and conditions of local communities has acted to impede social participation. For example, in the Mamirauá Sustainable Development Reserve (MSDR) of Brazil, though an organizational structure was established for local participation in natural resource management, several cultural and historical elements posed problems for achieving participation. The culture and societal conditions of the indigenous *ribeirhinos* of the

MSDR, led their decisions to be based on patronage and social ties, rather than complying with the rules set out with MSDR.

The presence of conflict in protected areas is gaining recognition as an impediment to conservation success and community development (Russell & Lassoie, 1998). The source of conflict in areas of high biodiversity is often attributed to industrial demand for natural resources that affect power dynamics and divide communities. In the MBBR, demand for wood is behind deforestation as well as community conflict over the concentration of benefits and wealth, which leads to even more deforestation (IDRC). In the El Vizcaino Biosphere Reserve, Mexico, local participation in natural resource management has been severely impeded by the division and conflict present in the communities of the reserve (Young, 1999). Conflicts and problems at the community level can also arise by participants acting out of self-interest, the tendency of local leaders to take over project, and ensuing corruption. In South Africa, Lyons, Smuts, and Stephens (2001) found that, even when project participation had been free of conflict, once funds were received, participants were strongly inclined to act self-servingly. As they testify, "This problem, in its many forms, was so ubiquitous that, in every project we visited, direct management of funds has been removed from the hands of the communities" (p.1246). Such factors unfortunately have the effect o disenchanting participants about participation in resource management, causing participants to become further marginalized by the structures meant to empower them. Using the same case study of the SMBR that is presented in Chapter 3, Gerritsen and Forster suggest that managers of protected areas should incorporate conflict management strategies into their sustainable development approaches to help bridge the connection between the conservation and political aspects of nature resource access and use (Gerritsen & Forster, 1999).

Much confusion has arisen around how participation and empowerment are defined, and how they are linked to the long-term viability of development projects (Kolawole, 1982; Lyons, Smuts, & Stephens, 2001). Lyons, Smuts, and Stephens (2001) found that while training in transferable skills lead to empowerment at the personal, project, and community levels, the most influential factors for project success were local politics and community structure. As they affirm, "Where local political structures are

not transparent and accountable, and where there is little social mobility possible within the community, intervention at the organizational level is likely to entrench existing power structures" (p. 1249, 2001). Christian Kull (2002) suggests that, to ensure community-based management does not serve to increase the power of local elites, projects must factor in accountability; that is, having a mechanism by which people can be held accountable for their actions (Kull, 2002).

2) Power dynamics:

An oft-neglected aspect of mechanisms that bring communities together with other 'stakeholders' is that of unequal power dynamics. The World Bank promotes the 'stakeholder analysis' approach, a process that involves bringing together all stakeholders (those who have a 'stake' in the matter at hand) so that all interests are identified and considered. This process, however, fails to account for the fact that not all stakeholders hold the same power to participate in this process because of differing degrees of knowledge, ease of speaking out in unfamiliar settings (Jeanrenaud, 1999). A core element of the Biosphere Reserve strategy is to create partnerships and bring stakeholders together to cooperate in defining objectives and devising practical solutions (Laserre & Hadley, 1997). However, nowhere is the issue addressed as to how unequal power dynamics play out when community members are brought together with government agencies and international organizations.

3) Weak Participation:

Token participation, or 'tokenism,' refers to the inclusion of participation in projects merely to satisfy the call for participation is rhetoric, and do not actually give any power to participants. Tokenism is criticized for being technocratic and paternalistic, and treating people as cheap labour in self-help projects designed by external agents (Smith, 1998). Reduced cost can be an added benefit, however, if community participation is sought merely for this purpose, then this cannot be deemed participation that is beneficial to the participant. Consultation can also be misused with the intention indoctrinating participants with project ideals as a means of ensuring public endorsement. Furthermore, consultation does not place any obligation on actually making changes based on the comments of participants. Weak participation can also take the form of justification in the rolling back of the state and cutting social spending.

In many Latin American countries, the problem of paternalism has also led to weak community initiative, and hence weak participation. Paternalism refers to the excessive use of government financial aid. Post Independence in Mexico, poor communities received a number of government give-aways as the state, and in some cases NGO's, attempted to compensate for the long history of exploitation and mistreatment endured. Communities became treated as mere benefactors of grants and programmes, and became accustomed to receiving such gratuities, leading to a predicament of prevailing paternalism and a lack of community incentive. The trend is being further entrenched by continuing to treat communities as mere targets for project implementation and presenting communities with fully developed projects in which they can 'participate.' In Quebec, where government programmes of natural resource management were weak, local institutions for wildlife management were strong and effective, whereas the opposite was true in adjacent Ontario.

Despite the wide acceptance of community participation as crucial to community conservation and development, informational meetings with communities are generally held only after the policy formulation and management decisions are already made (Stevens, 1997b). Biosphere Reserves have been criticized for using only weak forms of participation, rarely involving communities in the decision to create Biosphere Reserves. In fact, they even fall short of consultation or even notification prior to Biosphere Reserve creation; this gives rise to the common predicament in which unbeknownst to the communities, their resource-use activities become clandestine overnight. According to Pedro Figueroa (personal communication, 04/06/2003), a professor in the department of Community Development at CUCSUR, Biosphere Reserve creation should be made after consent has been reached from the communities affected, not after. In the case of the El Vizcaino Biosphere Reserve, Mexico, Young (Young, 1999) found that only 45 percent of her interviewees were aware they lived within a Biosphere Reserve, 93 percent of which suggested that the purpose of the reserve was to restrict human resource-use in order to preserve wildlife conservation. One exception is the Mapimi Biosphere Reserve, Mexico, where local residents participated in the decision-making processes from its inception, and even decided the location and boundaries of the reserve; this avoided

problems associated with communities feeling threatened by the imposition of conservation programmes in unsuitable areas (Furzy et al., 1996).

In the conclusion on the proceedings of the Workshop on Biosphere Reserves of the World Conservation Congress, three key factors were identified as key to achieving more effective participation of local people in Biosphere Reserves: the need to demonstrate the direct benefits of the Biosphere Reserve; the need to manage the reserve to be linked to local conditions; and the need for the local communities to have more than a mere token participation input in decision-making of the Biosphere Reserve (IUCN, 1998).

4) Centralized Structures:

CBSD argue that the centralized structures that act as the vectors of participation for MSD and CSD actually impede the participation of communities in the decisions that affect their access to natural resources. Marshall Murphree refers to the top-down management in ICDP's as the ultimate 'paradox' of community-based conservation (Young, 1999). In Mexico, Young (1999) contends that despite the adoption of community-based conservation as a management principle of the El Vizcaino Biosphere Reserve, because of the centralized infrastructures of conservation at the national level, the inhabitants of the Reserve were further marginalized by the process meant to integrate them. Centralized management, and the concomitant lack of community participation, has also led to increased biodiversity loss and social conflict in protected areas; this due to dissatisfaction on behalf of residents with false promises of community involvement, or a lack of cohesiveness between participatory processes and local traditions and livelihoods (Larson, 2002; Young, 1999). In a more recent study performed by Martha Rosas (Rosas-Hernandez, 2001) on the local Advisory Councils used in Mexico's protected areas for community participation, she found that part of the reason this mechanism was found to be ineffective is because of World Bank pressure to meet timelines that forced the creation of these councils before the necessary conditions were in place. This clearly demonstrates a lack of understanding of the local context on behalf of the World Bank.

Unfortunately, most development agencies came into being long before 'local participation' became part of the dominant development paradigm. Such agencies were

designed more for the more centralized, service-oriented approach, and their structures, systems, and norms pose important barriers to effective local participation (Gow & Vansant, 1983). The United Nations agencies, the World Bank, and international conservation institutions all purport community participation without having the proper institutional structure to accommodate such participation. The importance of institutional changes is being increasingly recognized as necessary in facilitating community participation and empowerment (Jeanrenaud, 1999).

2.4.6.4. Decentralization

Decentralization has been one method used in the attempt to increase local participation in natural resource management. According to Sally (Jeanrenaud, 1999), the decentralisation of natural resource management has taken place in many national governments throughout Latin America, such as Mexico, Bolivia, Guatemala, and Honduras (Larson, 2002). According to Cristian Kull, decentralisation, can lead to two possible outcomes: either the mere expansion of state power when "local levels gain responsibilities, and no or few rights", or conversely empowerment when "local levels gain rights commensurate with their responsibilities (Kull, 2002). From the CBSD perspective, decentralisation is not an effective means of community participation, as it generally leads to former case rather than the latter. Under these circumstances, responsibilities are devolved to the local elite, and cause greater divisions of power between local strongmen who take advantage of their positions (Larson, 2002; McDermott Hughes, 2001; Murombedzi, 1999; Neumann, 1997; Sibanda & A.K, 1996).

The CSD perspective argues that government has an important part to play in regulating a national system of protected areas, and downsizing the government's role could have devastating effects. Instead, Sayer (1999) suggests that protected areas have a type of shared management scheme since areas of high biodiversity are often characterized by overlapping interests and values that range from the local to the global.

Sibanda and.Omwega (1996) argue that, at least in the case of Africa, the only method possible to reverse the conditions of open-access created during colonialism (when control was placed in the hands of the state) is to give ownership back to the people and the traditional conditions of common-property management can be reinstated.

Because the state was not able to police every corner of wildlife and other natural resources, the original common property land management scheme was transformed into one of open-access since resources became non-excludable, indirectly encouraging local communities to extract resources to sell on the market. By gaining full control over resources, communities would be able to regain full benefits from local natural resource-use, thus providing the necessary incentive to conserve them (Sibanda and Omwega, 1996). This situation is very different in Mexico where agrarian reform, especially in the first half of last century, has placed 80 per cent of land under communal ownership. Furthermore, as already noted, land ownership does not change with the creation of Biosphere Reserves in Mexico, thus avoiding the problems associated with the involuntary conditions open-access.

2.5 Striking a balance between conservation and development

Although strategies surrounding sustainable development are often sold as 'win-win' solutions to environmental degradation and poverty alleviation, there is inevitably a trade-off between biodiversity conservation and the use of natural resources for development (Sayer, 1999). Achieving an appropriate balance in this trade-off is a delicate endeavour. This is particularly complex when considering that every community has different needs, and community development initiatives must be tailored to the particular needs of each community (Jeanrenaud, 1999).

Different kinds of alternative livelihood strategies/alternative income opportunities are being experimented with in different communities in the attempt to alleviate poverty, while also preserving biodiversity. Examples include sustainable community forestry, agroforestry, and the local commercialization of Non-Timber Forest Products (NTFP's). However, by and large, ecotourism is the most widely used community development strategy, particularly in protected areas, since ecotourism is a service and theoretically does not involve the use of natural resources. Ecotourism is designed to profit from areas of natural beauty that have not been significantly altered by humans. However, when too successful, ecotourism can be potentially devastating by drawing large amounts of people to an area and compromising ecological integrity. For example, in the Monarch Butterfly Biosphere Reserve (MBBR), Mexico, due to

international recognition and its proximity to Mexico City, thousands of people visit the reserve yearly, and are threatening its sustainability (IUCN, 2002). In a study conducted by Ludger Brenner of the MBBR, ecotourism has failed to achieve both regional development and natural resource protection (Brenner, 2006).

Mexico's attempt at striking a balance between biodiversity conservation and development has been manifested through the implementation of Biosphere Reserves. This is part of Mexico's national level policy of conservation that is based on a mainly Western conservation style. As Gómez-Pompa and Kaus (1998) explains, two distinct groups of society emerged in Mexico after Independence, which he refers to as the "two Mexicos." A colonial Mexico, comprised of the Spaniards, were a dominant minority among the rural poor of mainly indigenous descent. Both groups have intermingled, yet a dominant colonial minority prevails, that lives according to the aspirations of Western culture. This 'modern' Mexico has adopted a Western approach to conservation. Embracing the Biosphere Reserve approach has pushed the envelope of a traditional top-down style of conservation. Nevertheless, as has been demonstrated through the examples presented in this chapter, Biosphere Reserves in Mexico continue to be implemented primarily according to the mainstream top-down approach to conservation. As Gómez-Pompa and Kaus (1998) concede, local approaches based on traditional natural resource management systems also has its drawbacks; they are site-specific, were developed under environmental conditions and population densities different than exist today, and are subject to the external effects of global demand for natural resources and free-market policies. They suggest instead a conservation strategy that integrates local and state level efforts through vertical partnerships and mutual accountability. As they explain:

> Local levels have the detailed knowledge of a particular site, while national levels have a larger vision and stronger authority. Local communities need to have the ability to hold the nation accountable to their rights, including the decisions over their resources, but the nation needs to retain the responsibility to watch over the use of critical resources, habitats, and ecosystems (1998, p. 6).

2.6 CONCLUSION:

Despite the rhetoric of sustainable development shared by all MSD, CSD, and CBSD, they can be distinguished, primarily, by their central objective. For MSD, the central end objective is economic development though the implementation of Neoliberalism, while CSD's central objective is international biodiversity conservation. However, several similarities exist between MSD and CSD. Both operate from a top-down perspective and are managerial and technical in their approaches. By contrast, the CBSD approach is strictly bottom-up and stems from within. CBSD is based on the strong belief that community is the only effective unit of change. The CBSD objective is community-based development, with environmental sustainability regarded as an inherent part of community development and maintaining livelihoods. This perspective is centred on social justice, fighting the oppressive practices of mainstream development and biodiversity conservation, which are the roots of MSD and CSD respectively

When taking a closer look, it becomes clear that the similarities between MSD and CSD are not coincidental. Although the objectives of development and conservation are traditionally opposed, tracing back to the roots of these two perspectives reveals a crucial similarity. That is, both view of humans and nature as separate entities, a notion that stems from the Age of Enlightenment when humans perceptually removed themselves from their surrounding environment to study nature, as well as relinquish a long-standing desire to gain control over nature. This separation of humans and nature made possible the development of science, technology, and the notion of progress, which culminated in industrial development- the root objective of MSD. CSD reacted to the environmental destruction caused by industrial development, which can bee seen as the symptom of industrial development. Without questioning the conceptual separation of humans and nature, Western conservationists made the assumption that humans could not live harmoniously in 'nature', and decided to cordon off selected natural areas to protect them from humans.

Taking this route of analysis reveals that the roots of MSD and CSD stem from the very same assumption of a human/nature separation. As such, MSD and CSD take similar approaches to achieving their central objectives; both rely on science, technology, and the concept of management that is void of social or cultural analysis (for this reason

they have been able to find common ground in seeking their separate objectives in areas of high biodiversity in the South). The resultant system has been one where industrialization, development, and human habitation occur in unprotected spaces, and separate protected spaces are devoted to nature, safe from the destruction of humans. However, as CBSD argues, this system is not culturally appropriate or physically feasible for the entire globe.

In a world of 'globalized' economic systems, global environmental crises, and increased discrepancy between the rich and poor, strategies such as Biosphere Reserves have been put forth in the attempt to alleviate local development needs and achieve international conservation, particularly in developing countries where the incidences of both poverty and biodiversity are high. Mexico has embraced the Biosphere Reserve strategy for this very purpose. Notwithstanding, as has been presented throughout this chapter, Biosphere Reserves have led to mixed results. Several positive initiatives have been taken in the quest to reconcile biodiversity conservation with local development needs in Biosphere Reserves. On the other hand, the goal of international biodiversity conservation appears to be taking precedence over the development needs of local populations; projects remain based more ecological science and without adequate consideration of social, cultural, and political contexts; local populations continue to be displaced; Biosphere Reserves continue to be established without prior community consent; communities have not systematically participated in the decision-making processes following Biosphere Reserve establishment; and environmental degradation continues. These factors lead to the inquiry as to, whether in our test case of Mexico, that the creation of Biosphere Reserves contribute to, or detract from, Mexico's sustainable development goals.

In the next chapter we turn our focus to Mexico and the case study of the Sierra de Manantlán Biosphere Reserve located in the states of Jalisco and Colima, Mexico. Questions to keep in mind during the Case Study of the Sierra de Manantlán Biosphere Reserve (SMBR) are: Are Biosphere Reserves, as currently implemented in Mexico, compromising the present needs of the rural poor in the name of biodiversity conservation and 'greater good' of global society? Does the management of the Sierra de Manantlán Biosphere Reserve (SMBR) reveal a conservation bias compared to

community development? Are the indigenous and local communities systematically participating in the management decisions of the Biosphere Reserve? Are Biosphere Reserves yet another means by which international agencies and transnational corporations are gaining control over access to natural resources in rural communities?

CHAPTER 3

A Case Study of the Sierra de Manantlán Biosphere Reserve (SMBR), Mexico.

3.1 INTRODUCTION

With the conceptual framework outlined, we will now proceed with the case study of Mexico and the Sierra de Manantlán Biosphere Reserve (SMBR). The purpose of the first two sections is to orient the reader in terms of the broader context in which our case study is situated. The first section focuses on modernization initiatives taken in Mexico, and is proceeded by a description of the evolution of Biosphere Reserves and sustainable development in Mexico. The following section begins with an account of SMBR case study. Firstly, a description is provided of the ecological, historical, cultural, and socio-economic contexts of the SMBR, as well as a short account of the two most problematic issues present in the SMBR: agrarian conflict and environmental degradation. The next section outlines the events that led to the creation of the SMBR, as well as the first phase of the management, prior to the creation of an official government agency dedicated to the management of the SMBR. The fourth section describes the current institutional structure of the SMBR, which actually consists of two institutions: the Directorship of the Sierra de Manantlán Biosphere Reserve (DRBSM) and the Manantlán Institute of Ecology and Biodiversity Conservation (IMECBIO). The topics covered in this section include the role each institution plays in management, the projects and activities they implement, as well as the coordination between both institutions. The work of other groups present in the SMBR involved in sustainable community development initiatives is described, as well as the interactions between and amongst these groups and the SMBR. The chapter ends with a more in depth analysis of the largest one of the largest community-based project to take place in the SMBR: the Cooperative of Ayotitlán.

The data for this chapter was collected over a period of months, during which a close relationship was formed with the management office of the Biosphere Reserve (DRBSM), the researchers working with the academic institute (IMECBIO) affiliated

with the SMBR, as well as the community-based organizations and other groups working on sustainable development issues in the communities of the SMBR. Three months were devoted to carrying out a project for the DRBSM divided between work in the DRBSM office, and location in a specific community of the SMBR where the project was conducted. I also travelled into a dozen different communities of the Reserve for various workshops and meetings where I had the opportunity to speak directly with many reserve residents. I also travelled to Mexico City, where I interviewed two government employees working on social participation and sustainable development in Mexico's protected areas. (A full account of my methodology is provided in introductory chapter of this dissertation).

Please note that for reasons of anonymity, certain individuals whose comments are referenced in this dissertation are not named.

3.2 MODERNIZATION AND THE RURAL SECTOR OF MEXICO

It is beyond our interest here to overview the entire history of modernization in Mexico. Presented here however, is a brief account of the history of Mexican modernization policies, and the pertinence to the rural sector. These aspects include the amendment of Article 27 of the Agrarian Law, the North American Free Trade Agreement (NAFTA), as well as particular social programmes directed at the poorest segments of rural society. The purpose of this section is to provide the reader with an understanding of the broader socio-economic context within which our case study is situated.

Since the Mexican Revolution (1910-1920), Mexico has undergone a wave of modernization. During the period from 1950-1970, a development strategy based on Import Substitution Industrialisation (ISI) was pursued in Mexico. ISI used protectionist policies to increase the growth of the national industry and domestic markets (Manning, 1996). However, this strategy came to a halt in the 1980's when foreign debt and a high budget deficit, partially attributable to the massive foreign loans taken to finance the petroleum industry, proved to be economically unsustainable. Oil prices crashed in 1982, bringing about the harshest economic crisis in Mexican history up until that time (Manning, 1996). A package of austere policy prescriptions for neoliberal reform

provided by the International Monetary Fund (IMF) was implemented through a series of Structural Adjustment Programmes (SAP's). These neoliberal policies entailed drastic cutbacks in government spending, privatization of the public sector, trade liberalisation, and deregulation of foreign investment. The Mexican development strategy therefore moved from one based on strict protectionism to one of an open, export-led economy, competing on the international market (Manning, 1996; Otero, 2000). This shift in development strategies was land marked by Mexico's entry to the General Agreement on Tariffs and Trade (GATT) (Manning, 1996). The trend of Neoliberal policies has continued with zeal under the current Fox administration, as exemplified by the ratification of the 1994 North American Free Trade Agreement (NAFTA).

Taking the same path as Western Nations, Mexico has pursued industrialisation as part its commitment to modernization, particularly in the rural agricultural sector. The aim has been to specialize and intensify agricultural activities in rural areas to convert this sector into a more productive unit of society. This has sparked a backlash by rural peasants who are fighting for their right to maintain a subsistence livelihood. Peasants also resisted the introduction of Green Revolution technologies that took place in the 1970's, which included increased mechanization and the use of mono-crops. While Green Revolution technology increased yields in the agricultural sector, it also had the effect of further marginalizing the majority of Mexico's rural poor; only medium-scale farmers possessed the minimum capital requirements, and poorer farmers were left with a decreased share of the market. These technologies also caused severe environmental degradation from the use of chemical fertilizers and pesticides, the intensive use of the land, land erosion, water contamination, and air pollution.

Part of the Mexico's attempt at modernizing the rural economy and stimulating growth was the inclusion of Mexico's staple grain, corn, as part of NAFTA. The logic argued by the government of Mexico was that since corn could be produced more efficiently and cheaply in the USA, the country could decrease their costs by buying corn from across the border at a cheaper price, which would also lead to a decrease in the cost of tortillas. Mexican corn production yields an average of 2 tons/hectare, whereas USA production averages 10-12 tons/hectare. However, the price of corn in Mexico fell by more than 70% by 2000, six years after NAFTA was instated (Bensinger, 2003). Part of

the problem can be attributed to the way in which NAFTA was implemented. Due to the importance of corn production in the Mexican economy, a Tariff-Rate Quote System (TQS) regime was used to gradually bring the domestic price of corn to meet that of the international market. The TQS was to take place gradually over a 15-year period. However, Mexico did not respect this timetable, and instead compressed the 15 years into approximately three months (Nadal, 2000). For reasons that remain unclear, the cost of tortillas has actually increased. Overall, the inclusion of corn in NAFTA increased poverty in the rural sector due to the fall in value of corn, as well as in urban areas where the poor were forced to pay a higher price for tortillas. NAFTA has also brought about a drastic decrease in the diversity of corn varieties due to the introduction of improved varieties purchased from the United States. The end effect of NAFTA has been diminished purchasing capacity of subsistence farmers, a fall in the value of corn, an usaincrease in the price of tortillas, and a loss of national autonomy. The World Bank reports that for Mexico, "one of the indisputable outcomes of NAFTA is the increased reliance on the U.S. economy" (Giugale, Lafourcade, & Nguyen, 2001)

An earlier strategy directed at modernizing the rural sector was carried out under the president Carlos Salinas in 1992, and has sparked widespread debate in Mexico. Salinas passed the amendment of Article 27linas in 1992, has been the focus of much debate. The amendment of article 27 permitted the privatization of *ejidos*, which meant they could now be bought and sold. *Ejidos* were created as part of Mexican land reform after Independence that redistributed land to rural peasants. Those communities that were able to prove original land occupation were granted *Indigenous Community* land status; otherwise, land was granted in the form of an *ejido*. *Ejido*s were granted as communal-land titles but remained government property, which meant that they could not be purchased or sold (Gil-García, not available). Over half of the land in Mexico is in the form of *ejidos* (Otero, 2000). Although the amendment of Article 27 was promoted to the *campesinos* as a way for them to finally achieve ownership of their land, it is generally accepted that the alternate intention was to free up these lands, by enabling sale and purchase, so they could be used to increase agricultural production, and move unproductive peasants to the cities where they could engage in wage-labour (Gil-García, not available; Otero, 2000). Statistics suggest that the objective was fulfilled (the direct

causal relationship, however, cannot be confirmed); between 1910 and 1992, the number of people living in the countryside decreased from 70% to 28%, and agriculture, livestock farming, and fishing decreased from 27.7 % to 7.5 % of GNP (Gil-García, not available).

Three other social programmes directed at the rural poor instated under the Salinas administration between 1988 and 1994 have also been accused of leading to poverty and marginalization. These programmes are PROCAMPO, *Allianza para el Campo*, and PROCEDE. PROCAMPO was introduced in 1993 to offset the effects of NAFTA and encourage *campesinos* to move from subsistence farming to producing fruits and vegetables destined for export (Otero, 2000). The programme has reached 3 million producers and covered 90 percent of Mexico's agricultural land (Giugale et al., 2001). However, the benefits have not been felt equitably, since programme assistance is awarded on the basis of land area, and not on the basis of need (Otero, 2000); this means that those with little land receive small benefits, while those who already have a lot of land receive bigger benefits. Another programme, *Allianza para el Campo*, was established in 1997 to match grants given to *campesinos*. It is aimed at increasing production of the agricultural sector through mechanization, the use of improved seed varieties and fertilizers, as well as irrigation and pasture improvement. Not only has this programme not been effective in reducing poverty levels (Giugale et al., 2001), it has led to increased environmental degradation. A third programme, PROCEDE was created in 1992 to implement the revision of the aforementioned Article 27. The programme has led to mixed results. In a survey conducted by the World Bank, two thirds of participants responded that the programme had not changed conditions such as access to credit, land tenure, or social conflicts, whereas, amongst the other third, a majority replied that the effects had been positive (Giugale et al., 2001). Anecdotal evidence suggests that both PROCAMPO and PROCEDE have also led to biodiversity degradation through land use change (Giugale et al., 2001).

Mexicans voted for change in 2000 when Vicente Fox was elected as the head of National Action Party (PAN), ending the 70-year one party rule of the Independent Revolutionary Party (PRI). However, the continued persistence of neoliberal policies, the plummeting price of corn and other crops such as coffee and beans, and subsequent ecological destruction, have led much of the Mexican countryside to suffer from a

common ailment of interrelated conditions: decreased value of corn and other crops, intensification or land clearing, decreased land fertility, land scarcity, abandonment of traditional land management systems (i.e. use endemic crop varieties, crop rotation, etc.), increased use of fertilizers, mono-cropping, increased financial input, decreased output, and emigration to urban areas and the United States in search for employment in order to sustain the cost of agriculture.

3.3 SUSTAINABLE DEVELOPMENT AND PROTECTED AREAS IN MEXICO

Paralleling the modernization policies promoted by a succession of Mexican presidents until now, conservation initiatives have also been part of government policy since before the turn of last Century. Mexico's first protected area, Desierto de Leones, was established in Mexico in 1876 (though it only became officially designated a national park after the Mexican Constitution was written in 1917) (Simonian, 1995). While many other protected areas were subsequently created in Mexico, none were effective in achieving conservation goals, since neither financial nor human resources were allocated for their protection. Until recently, Mexico suffered the common 'Paper Park' syndrome where the protected area did not materialise beyond the paper stating its declaration.

In the last two decades, Mexico has undergone a definite upward trend in terms of environmental commitment. Mexico has also recognized the need to engage in a more integrated approach to tackling the problem of ecological degradation, integrating ecological and social factors in attempting to achieve biodiversity conservation. The first inclusive environmental law, the General Law of Ecological Equilibrium and Environmental Protection (LGEEPA) was enacted in 1988. Amendments were made to LGEEPA in 1994 to broaden the scope of its objective and to include the concept of 'sustainable development'. Social justice has also become an integral part of environmental commitment, with many efforts aimed at areas characterized by a combination of biological diversity, cultural heritage and high levels of poverty and marginalization.

In 1995, the first cabinet-level environmental ministry in Mexico, The Ministry of Environment and Natural Resources (SEMARNAP), was created. SEMARNAP served to consolidate environmental policies by bringing together under the same ministry the

disparate environmentally related agencies, namely, the National Institute of Ecology (INE), the National Water Board (CONAGUA), the National Fisheries Institute (INP) and the Federal Environment Office (PROFEPA). Prior to this time, environmental matters had either been treated as health, economic, or urban issues. The head of this new ministry was Julia Carabias, as, an individual who has a reputation in Mexico's conservation community as being genuinely and strongly committed to sustainable community development and social participation issues in Mexico. When Vicente Fox was elected in 2000, administrative restructuring removed fisheries from SEMARNAP (which became the Ministry of Environment and Natural Resources, SEMARNAT), added it to the agriculture ministry, creating what is now the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Nutrition (SAGARPA). SEMARNAT is the current ministry in responsible for all matters regarding the environment and natural resources, including the management of protected areas.

This phase of restructuring also led to the creation of the first government body allocated strictly to the management of protected areas: The National Commission of Natural Protected Areas (CONANP), a decentralised unit of SEMARNAT. CONANP's mission is to "conserve the natural heritage of Mexico through Natural Protected Areas and Sustainable Regional Development Programmes in the Priority Regions for Conservation" (translation mine). As this mission statement indicates, CONANP manages two main programmes: the System of Natural Protected Areas (SINAP) and the Rural Sustainable Development Programme (PRODERS).

SINAP was initiated with the support of a 25-million dollar grant provided by the World Bank's Global Environment Facility (GEF), a fund created with the aim of implementing the objectives set out in Agenda 21 of the Earth Summit that took place in 1992. Unlike most other foreign funds that restrict spending to projects, the GEF allocated money for employee salaries. This permitted for the first time Mexican history for the physical presence of an institutional body in protected areas that were responsible for carrying out their management. In its first phase of SINAP (SINAP I), ten protected areas were chosen for funding (including the Sierra de Manantlán Biosphere Reserve). As part of the conditions for receiving the grant, the protected areas were required to form a Technical Advisory Committee (TAC), a committee composed of representatives

from all local stakeholder groups. The main objective of the TAC is to approve an also mandatory Annual Operating Plan (AOP), which defines a clear set of programme objectives and strategies to be carried out over a specific timeline, as well as the indicators that are used to assess said objectives. This mechanism was mandated by the World Bank to ensure social participation in the protected areas it funded. A separate fund, the *Fondo Mexicano para la Conservación de la Naturaleza* (FMCN) was initiated to generate ongoing funding, thereby providing economic sustainability for the project (*Mexico- Consolidation of the Protected Areas System Project (GEF)*, 2002).

Six different categories of protected areas exist in Mexico: Biosphere Reserves, National Parks, Natural Monuments, Natural Resource Protection Areas, Flora and Fauna Protection Areas, and Sanctuaries. As of 2003, 148 protected areas in Mexico covered 17,303,133 hectares of land. Ninety-six of these protected areas, totalling 15.4 million hectares, were decreed between1980 and 2003, bringing the total area of protected National Territory to 6.99%.

Biosphere Reserves are the most important of the protected areas in Mexico, representing over 60 percent of the total 17,303,133 hectares of protected land (see Table 3.1 below). Mexico prides itself as being a pioneer in the concept and implementation of Biosphere Reserves through the work of Gonzalo Halffter, who was a member of the original UNEP MAB programme task force.

Table 3.1: *Categories of Protected Areas and Surface Area Cover in Mexico in 2003**

CATEGORY	NUMBER	SURFACE AREA (HECTARES)	PER CENT RELATIVE TO TOTAL NUMBER OF PROTECTED AREA'S	PER CENT RELATIVE TO TOTAL SURFACE AREA
Biosphere Reserves	34	10,479,534	22.97	60.56
National Parks	65	1,397,163	43.92	8.07
Natural Monuments	4	14,093	2.70	0.08
Natural Resource Protection Areas	2	39,724	1.35	0.23
Flora and Fauna Protection Areas	26	5,371,930	17.57	31.05
Sanctuaries	17	689	11.49	< 0.01
Total	**148**	**17,303,133**	**100.00**	**100.00**

*information derived from the CONANP website at http://conanp.gob.mx/anp/anp.php

Rural Sustainable Development Programme (PRODERS)

PRODERS is a national development programme aimed at Priority Regions, characterized by high in biodiversity, socio-economic marginalization, and an education institution with which collaboration can be sought. There are currently twenty-four Priority Regions in Mexico. The programme was initiated by Julia Carabias and Carlos Toledo, academic researchers of the Autonomous National University of Mexico (UNAM). When PRODERS was first created, it was administered by SEMARNAP. However, when restructuring of government bodies caused the change of SEMARNAP to SEMARNAT, PRODERS was transferred to the new SEMARNAT. Because SEMARNAT no longer dealt with fisheries, PRODERS also had to discontinue projects related to fisheries. However, after yet another wave of restructuring prompted the creation of CONANP (dealing with protected areas), PRODERS was transferred to CONANP, the commission of protected areas. Because of marine protected areas, PRODERS was permitted once more to deal with projects related to fisheries.

Information regarding PRODERS was derived from an interview conducted with José Juan Arriola Arroyo, Sub Director of Design and Programme Operations of PRODERS-CONANP, who had been working on the PRODERS project since 1996.

According to Mr. Arriola Arroyo, the change of administrative offices from SEMARNAT to CONANP was accompanied by a number of ramifications, most of which were negative. The one positive change he stated was that they were able to manage fisheries projects again. However, the PRODERS budget decreased from thirty-three million pesos to sixteen million pesos. In the case of the Sierra de Manantlán Biosphere Reserve, this meant that the budget was decreased by half. The number of PRODERS regions also increased to include all protected areas, only thirteen of which were part of the original twenty-four regions. Furthermore, not all protected areas are highly marginalized, such as the one located in Cancún. Therefore, the overall result of this change of administration left PRODERS with nearly half their original budget to be spread inequitably to an additional 11 protected areas (personal communication, 17/06/03).

While acting as a participant observer during an evaluation excursion of the SMBR with an environmental consultancy hired by the World Bank, I had the opportunity to speak with one of the employees of the agency who has worked closely with CONANP. This individual remarked that social scientists were poorly represented within CONANP, and that Director of Social Participation, trained in the social sciences, was essentially alone amongst the many biologists in this office (personal communication, 15/05/03). To verify the validity of this remark, the CONANP website was accessed to find a list of employees. Since the individuals in Mexico attach their academic discipline and status as a title to their name (for example, Biolog. Miguel Martinez), the academic backgrounds of the employees were distinguished and summed. This analysis revealed that just over four percent of CONANP employees were trained in the social sciences (including anthropology, archaeology, ethnology, and psychology) whereas more than 35 percent were trained in biology or ecology. When only Biosphere Reserve Directors were considered, a total of 76 percent were found to trained in hard sciences, of which 52 percent were biologists or ecologists and 24 percent were engineers (please refer to Figure 3.1). In addition, an academic researcher of the SMBR commented that CONANP directors have complained that the DRBSM management has placed too strong a focus on community development rather than on conservation (personal communication, 01/07/03). These factors suggest that a scientific bias exists in

the CONANP, and lacks proper consideration of the social issues regarding protected area management. In addition, an anthropologist working with IUCN-Mexico mentioned during an informal conversation that social researchers were used as a last resort in Mexico, only after conflict had arisen in a protected area since social research takes longer to perform and is more costly than ecological research (personal communication, 19/06/03).

Figure 3.1: *The Educational Training of CONANP Employees*

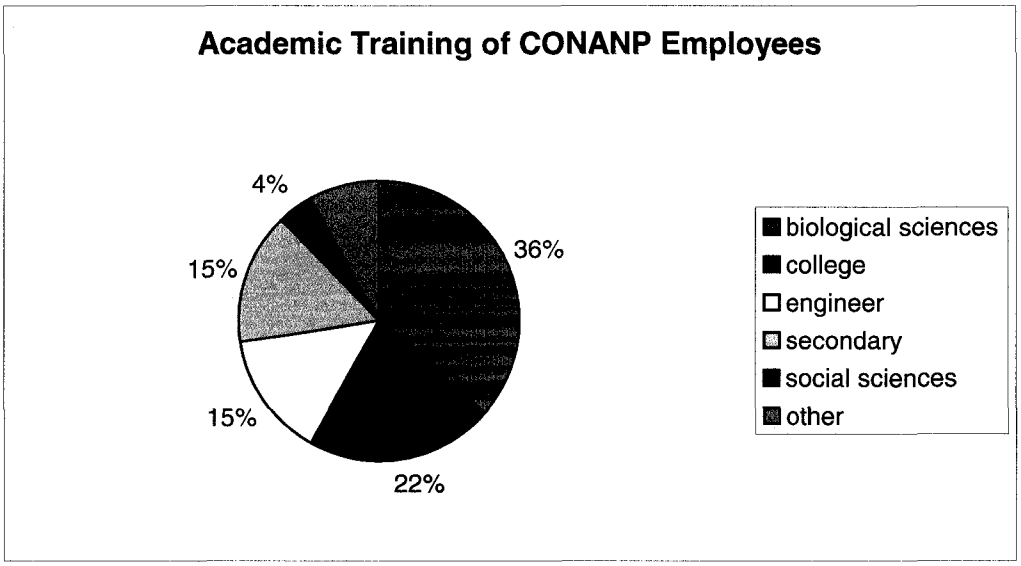
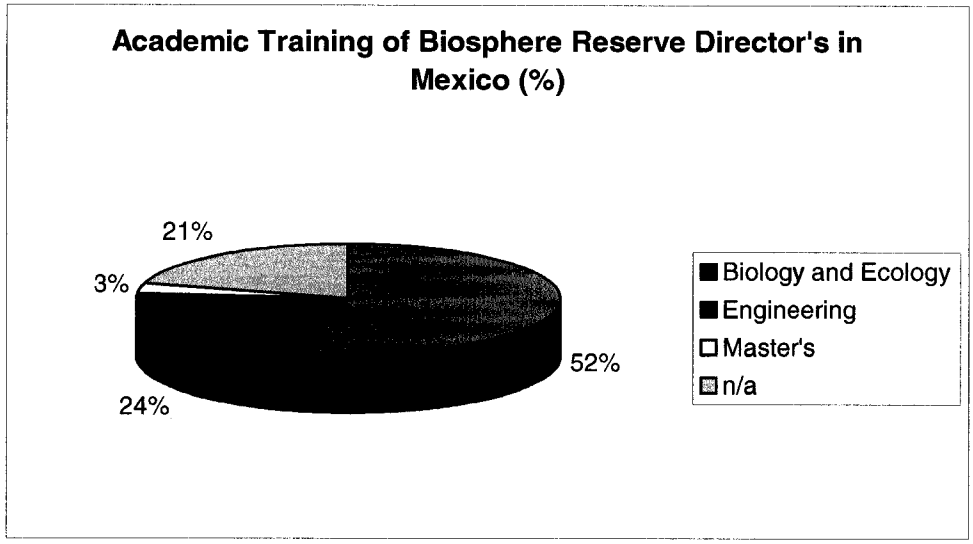


Figure 3.2: *The Educational Training of Biosphere Reserve Directors in Mexico*



3.4 THE SIERRA DE MANANTLÁN BIOSPHERE RESERVE (SMBR)

The Sierra de Manantlán Biosphere Reserve (SMBR), is located in the central western states of Jalisco and Colima, covering a total of 139,577 hectares of land, and is recognized as being one of the most successful Biosphere Reserves in Mexico (Graf Montero & Justo, 2001; personal communication, 23/06/03). This area forms part of the Sierra Madre mountain range, one of the most ecologically diverse mountain ranges of Mexico (see Figure 3.3). The SMBR was declared by presidential degree in March 1987, following the discovery of an ancient relative of corn, *Zea diploperennis*, in the *ejido* Ayotitlán. The presence of this plant drew attention to the rich biological diversity of the area and attracted international interest in its conservation. One year later, the SMBR became the sixth protected area in Mexico to attain international conservation recognition when it joined UNESCO's Man and the Biosphere Programme International Network of Biosphere Reserves. In 1998, the SMBR was selected by the International Union for the Conservation of Nature (IUCN) as a priority area for the study and conservation of flora and fauna. This research provided key contributions to the development of the official Management Programme of the SMBR (personal communication, 09/06/03).

The ecological diversity of the SMBR is extensive, due in part to the vast range in elevation of the area, extending from 400 to 2,860 metres above sea level (Jardel Peláez, Graf Montero, & Gómez García., 2002). As such, the physiography of the region is

complex, and is characterized by an array of ecosystems and landscapes, summarised by Jardel Peláez and Graf Montero and Gómez García (2002) as follows:

- coniferous, oak and broadleaved forests in the humid and temperate plateaux of the higher altitudes (more than 2000 metres);
- pine and oak wood forests in the sub-humid conditions of the precipitous terrains and steep mountain slopes at mid-latitudes (between 1000-2000 metres);
- broadleaved forests in valleys and ravines (tropical montane cloud forests above 1000-1500 metres and tropical subdeciduous forests below this altitude);
- tropical subdeciduous forests on the mountainside at altitudes below 1000 metres in hot subhumid climates; and
- a complex mosaic of agricultural terrain, secondary vegetation, and fragmented forests located at the base of the mountains, and in some of the higher plateaux.

The area is home to 2,900 species of identified vascular plant species, 110 mammal species (26 per cent of the total for Mexico), 560 vertebrate species, 336 bird (33 percent of the species of Mexico), 85 reptile and amphibian species, 238 families of insects, and 7 orders of arachnids (Jardel Peláez et al., 2002; SEMARNAT, 2000). Furthermore, 17 of these species are endemic to the area, including various perennial "teocintles", ancient strains of corn such as *Zea diploperennis*.

The SMBR contains three core areas (El Tigre, Las Joyas, and Cerro Grande), which are surrounded by a buffer zone. Figure 3.4 below provides a map of the SMBR polygon; the blue zones are the three core areas, which are surrounded by the delineated buffer zone. The black dashed line represents the border between the states of Jalisco (to the left) and Colima (to the right). The buffer zone is itself surrounded by a loosely defined transition zone. In Mexico, only the core area and buffer zones are included under legislation, and published in the Federation's Official Daily Publication (and thus the official components of the protected area). The core areas comprise 30 per cent of the total territory, and the buffer zone makes up the remaining 70 percent (Jardel Peláez, 1998; Jardel Peláez et al., 2002). While Las Joyas is a core area of the SMBR, it is also the location of the Las Joyas Scientific Research Station ECLJ, run by the University of Guadalajara.

It is important to note that, unlike most other types of protected areas where land becomes state-owned, land tenure does not change under the decree of a Biosphere Reserve in Mexico. However, since Biosphere Reserves (and all other types of protected areas) are under federal jurisdiction, the use of natural resources is subjected to a different set of laws and restrictions, as outlined in the General Law of Ecological Balance and Environmental Protection (LGEEPA). The restrictions vary according to the area of the Biosphere Reserve. Buffer zones are areas where sustainable development initiatives are implemented. The core areas are subject to the strictest laws and are managed much like traditional national parks due to their ecological importance and fragility. Natural resource extraction is not permitted in these areas, and human settlements cannot be established. These laws, however, are not retroactive. In other words, if a community was located in a core area prior to the establishment of the Biosphere Reserve, that community cannot be forced to move, and are able to maintain the productive use agricultural land in production at the time of the decree. However, they are not permitted to farm any land that was not in production at the time of the decree (including any land that is part of a crop rotation cycle), nor are they able to construct new houses, extract natural resources, or introduce exotic species (personal communication, Martín Gómez García, 29/06/04). Rincón de Manantlán is the only community located in a core area of the SMBR. However, its livelihood is greatly limited by the strict regulations of core areas. This community can neither expand nor intensify their agricultural systems, nor use the trees to repair their houses or to build fences. This is also the only community of the SMBR whose land title requests have been formally and definitively rejected by agrarian authorities (personal communication Martín Gómez García, 03/07/04), which raises some suspicions regarding the possible motive of the agrarian authority to make living conditions so harsh as to force the community to leave.

Figure 3.3: *Location of the Sierra de Manantlán Biosphere Reserve in Western Mexico*

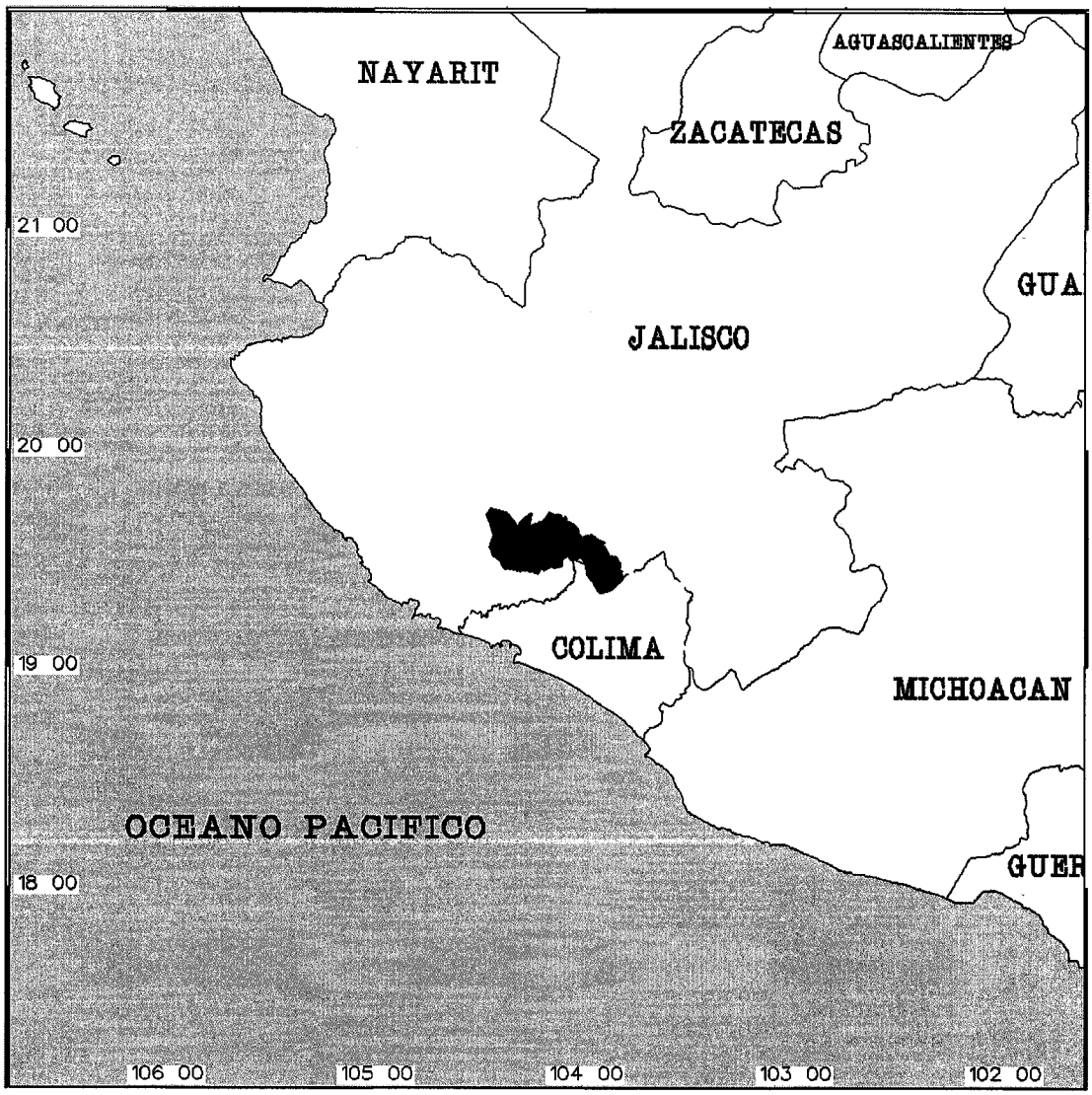
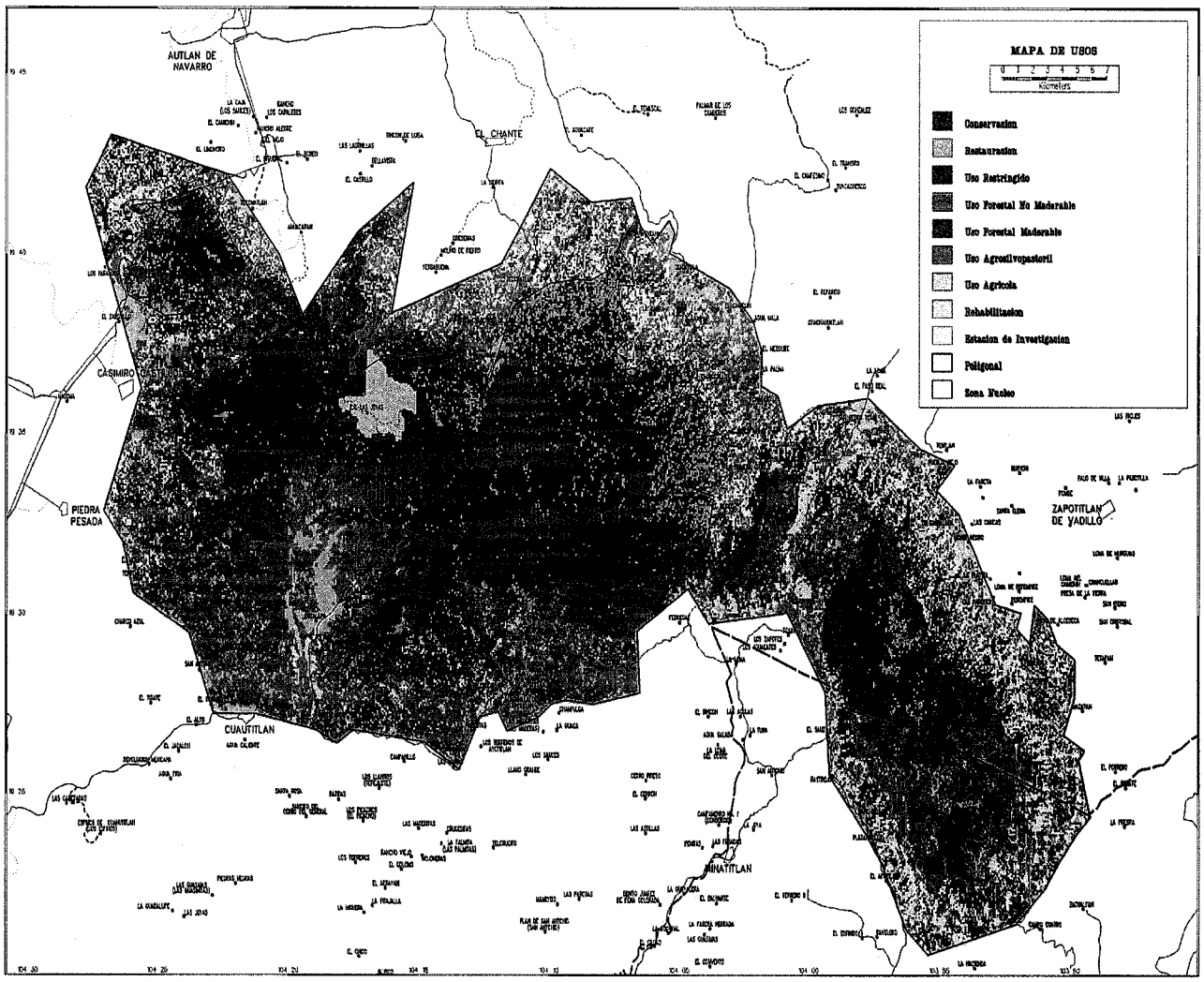


Figure 3.4: *The Polygon of the Sierra de Manantlán Biosphere Reserve*



3.4.1 The Historical Context

The Sierra de Manantlán is characterized by long history human presence. Archaeological evidence indicates that a robust indigenous population inhabited the Sierra de Manantlán region at the beginning of the 16th century (Jardel Peláez, 1998). However, 95% of the indigenous population was extirpated after the arrival of the Spanish during the period known as the Conquest. The Conquest inevitably caused the disintegration of indigenous systems of governance and land use (Jardel Peláez, in press).

At the end of the 18th century (after Independence), the government promoted land privatization, which facilitated the expansion Spanish haciendas (farming estates) and the consequent invasion of indigenous communities (Jardel Peláez, in press). After the Revolution (1910-1920), the government began distributing land to their citizens in the form of Indigenous Communities or *Ejidos*, both of which are communal land tenure systems. However, the fulfillment of land requests was often very drawn out, taking as long as 52 years in some cases, and were usually only partially met. Furthermore, the highest quality land was granted to social elites, leaving only the poorest land to the peasants (Jardel Peláez, in press). In addition, government interests in metal and forest resources is said to have interfered with land redistribution processes. According to Jardel Peláez, private company interests (especially lumber) interfered with many of the land requests, stalling the process of land redistributing. The tactic was used to take advantage of the uncertainty prevailing during the period of time in which land titles were not clearly defined, in order to extract lumber. Since the main objective was to extract the maximum amount of lumber in as little time possible, the forests were clear-cut, causing serious degradation of the forest ecosystem.

Two periods of extensive forest exploitation took place in the southeastern portion of the Sierra de Manantlán. The first was between 1906 and 1914, when the North American Company, Colima Lumber, constructed an extensive network of train tracks for the commercial exploitation of wood. After 1914, the exploitation was abruptly interrupted by the armed conflicts of the Mexican Revolution, the Guerra Cristera and their aftermaths. It was not until 1940 that the commercial exploitation began anew by private logging companies. This second period continued until the creation of the SMBR in 1987 (Jardel Peláez et al., 2002).

Land claim issues in the Sierra de Manantlán are deeply rooted in a long and complex history of agrarian conflict and violent struggles, and many remain unresolved today. In the SMBR region, many hectares of land that were granted in paper have yet to be signed over. Of the twenty-nine communities located in core areas and buffer zone of the SMBR, only three have no apparent unresolved land claims. Conflicts in the SMBR are common; there are conflicts between different agrarian communities (border conflicts), between agrarian communities and private landowners, between different

communities, as well as within communities. An example of the latter case afflicts the Indigenous Community of Zacualpan. Two different groups claim possession of the official documents stating the correct list of communal owners and appropriate land borders, one of which excludes more than half of the current residents (personal communication, 14/05/03).

3.4.2 The Socio-Economic Context

The SMBR extends over the territories of 32 agrarian communities, with 45 localities found inside the limits of the actual reserve listed in Table 3.2 below. Approximately 9,000 people reside within the perimeter of the reserve. However, when considering all those who own territories located inside the SMBR (though did not necessarily live inside the SMBR), the number of actual resources users of the protected areas is 30,000 (Jardel Peláez et al., 2002). The number rises to more than 690,000 when including the people who are located in the transition zone; many of these people benefit directly from the ecosystem functions provided by the area such as watershed protection which supplies water to outlying communities of Jalisco and Colima. Approximately 66 percent of the land is under communal tenure, 33 percent is private ownership, and the remaining one percent is state property.

Subsistence farming (predominantly corn) is the dominant livelihood activity and source of income for the communities. Animal husbandry is a common subsistence activity. These occupations are complemented by seasonal wage labour, and the harvesting of fruits, vegetables, sugarcane, and other crops (SEMARNAT, 2000). Cattle ranching is another common activity, though only practiced by wealthier families. After the harvest, farmers who do not have cattle will often rent their land to cattle owners for grazing as an additional source of income. A significant source of income is also derived from family members who have obtained temporary employment in the United States. Forestry is an additional economic activity of the SMBR. The ejido El Terrero has a community forestry company, which provides income to the community. Ecotourism is also being promoted in the area, but has yet to provide communities with measurable income.

While the communities of the SMBR are generally characterized by poverty, marginalization, land tenure conflicts and environmental degradation, a significant

amount of diversity exists amongst the them in terms of social, economic, political, cultural, and environmental conditions (Jardel Peláez, 1998; Jardel Peláez et al., 2002). For example, the Indigenous Community of Zacualpan is populated by more than 1700 people of indigenous decent (of the Nahuatl group), located 45 minutes away from the city of Colima where many people travel to for paid work; the houses have indoor plumbing, electricity, and even telephones lines, and corn cultivation remains the most significant subsistence activity. In contrast, the ejido El Terrero is occupied by no more than 260 people who are mestizo, and is a community free of internal agrarian conflicts. They are remotely located in the upper parts of the Cerro Grande, without indoor plumbing or telephone lines. Livelihoods are derived from the community-owned sustainable forestry company (that abides by a sustainable-use policy), in addition to the traditional agricultural practice of growing corn.

The majority of the communities are also plagued by social problems, such as alcoholism and domestic violence. The presence of these factors was confirmed by a survey that was conducted in the Indigenous Community of Zacualpan during February to April 2003. A total of 63 surveys were completed of which 82.5 % were answered by women, 14.5 % by men, and 3 % were answered by both together. In this survey, all but one individual stated that alcoholism was a problem in their community and 60 percent of the participants responded that alcoholism was a problem in their own families. A total of 42 percent of respondents claimed that domestic violence was a problem in their community, and 8 percent said that it was a problem in their own homes. Those who indicated that domestic violence was a problem in their family also noted that alcohol consumption often sparked aggressive behaviour. Given the sensitivity of the issue and the fact that the participants responded face to face with the surveyor, it is likely that the actual number is higher.

Low education levels are also characteristic of the SMBR. Absenteeism (on behalf of both students and teachers), slow learning rates, and high dropout rates are all contributing factors. In the ejido Ayotitlán, 41% of the population is illiterate, while 47% are illiterate in El Rodeo, 37% in Mesquites, 31% in Zenzontla, and 29% in El Parotal (SEMARNAT, 2000).

Medical services have improved since the creation of the Biosphere Reserve and ensuing government attention. Most communities now have their own small medical clinics that are sponsored through a specialized government programme. However, they still remain insufficient in providing necessary services to their respective populations. For example, the ejido Ayotitlán has two small clinics for a total of 35 localities. Prolific anecdotal evidence suggests that these facilities are poorly run and inefficient (this statement is based on comments received by several Mexican individuals during informal conversations). The doctors have a reputation of being under-qualified, and treatment generally consists of little more than being given an assortment of the free medications provided by the government (personal communication, 25/06/03). Cases of diarrhoea, influenza, parasites, infectious diseases, respiratory problems, anaemia, and insect bites remain high amongst the causes of illness and death (SEMARNAT, 2000). The presence of the clinics has had the effect of decreasing the use of traditional medicine as people have become more reliant on the substitutes offered by conventional medication, commonly referred to as 'pastillas' (pills) in Mexico. Based on my experiences living in the communities of the SMBR, I personally observed that a combination of traditional and Western medicine is common practice.

3.4.3 Cultural Context

Despite the near extirpation of indigenous populations in the Sierra de Manantlán, some populations persisted, with the remaining parts composed of *mestizo* populations which arose from the mix between Spanish and Indigenous populations. While the term 'indigenous' may evoke images of people dressed in traditional clothing, speaking their native language, and performing indigenous ceremonies, the indigenous people of the Sierra de Manantlán do not fit this stereotype. According to D. Tetreault (2001), several decades of harsh discrimination against "indigenous" ways caused shame associated with being indigenous resulting in loss of language and traditions. Indigenous communities in this region are now composed of people who speak Spanish exclusively, wear casual Western-style clothing (jeans, skirts and t-shirts), and practice Catholicism.

However, indigenous heritage and knowledge persists in the diversity and use of flora, fauna and soils, and is in part reflected in the civic-religious practices of this region today (Jardel Peláez, in press). For example, in the Indigenous Community of Zacualpan,

it is common knowledge what procedure must be undertaken to build a house that will last several decades: trees must be cut during the dry season, at noon, and at full moon, otherwise the wood will rot and decompose within a few years (participant observation, 08/04/03). Many of their daily activities are also influenced by myths and legends. In many parts of the Sierra de Manantlán, *duendes* (elves or gnomes) are believed to exist. In the ejido Ayotitlán, people believe that failure to remove your hat as a gesture of respect to the *duendes* as you cross the bridge and ask for permission to pass, you will get lost in the forest on the other side. In the Indigenous Community of Zacualpan, one woman told me that many of the elders of the community used to see the *duendes* playing at the water source, once a very beautifully vegetated area of their community. However, as the state began redirecting the water to the city of Colima for drinking water, the vegetation has died back and *duende* sightings have decreased; when they are seen, they are said to appear sad and apathetic.

Since pre-hispanic times, human influence associated with agricultural practices, the use of forest resources, and hunting have influenced the ecosystems of the Sierra de Manantlán (Jardel Peláez, 1998). This influence was fundamental to the survival of important species plant species as pitayas (*Stenocereus queretaroensis*), teocintles (such as *Zea diploperennis*) and the "tomatillo" (*Physalis philadelphica*).

Many *campesinos* are unfamiliar with the words *medio ambiente* (environment) and *naturaleza* (nature). Instead, they use the word 'el monte', which loosely translates to "mountain, forest, and scrub"; it refers to the complete entity that is the mountainous landscape including everything 'natural', from rocks and dirt to animals and the forest. 'El monte' is the source their traditional source of livelihood, such as wood for fuel and building houses, seasonal fruits for subsistence consumption or for sale at the market, and soil to make crops grow. However, during my various interactions with *comisariados* (land owners) that have become involved in the TAC and SMBR projects, I was impressed by the technical language of conservation and sustainability they had learned from through their relationship with the DRBSM.

The influence of modernization on the culture of the SMBR communities is apparent in even the most remote areas of the reserve. Many food items, such as candy and packaged food, are sold in local stores or brought in from town. Even in the poorest

and most remote areas of the Biosphere Reserve, one can find a group of children huddled around a television on the dirt floor of a straw-roofed house watching cartoons and movies.

3.4.4 Environmental Degradation

While natural beauty and biodiversity are prominent attributes of the Sierra de Manantlán, the region has also suffered a long history of natural resource exploitation and environmental degradation that continues to pose a threat to the entire region, both socially and ecologically. The sources of environmental degradation are both extensive and complex, including deforestation, soil erosion, loss of soil fertility, biodiversity loss, and overpopulation.

1) Agricultural systems:

Agricultural systems have been influenced by many changes in the last decades. There has been a change in traditional systems from the introduction of improved strains of corn through government programmes, the increase in use of chemical fertilizers, herbicides, and pesticides and the decrease or omission of a fallow period. These changes have led to a loss of soil fertility, due in part to increased soil runoff (which also causes siltation in streams and rivers). Other pressures include overpopulation and the increase of cattle ranching. Furthermore, decreased fertility and a demand for land has prompted the clearing and use of more remote areas, which are even more susceptible to degradation (Jardel Peláez, in press) A resident of the Indigenous Community of Zacualpan commented that when she was younger, available land was so extensive they could not fathom possibly using all of it; now however, the community is suffering from land shortage and many young families are landless (personal communication, 06/03/03)

Rural communities in Mexico did not start off with the very fertile land to begin with. During the land reforms of Mexico, rural communities were given the poorest quality land. Furthermore, within the communities themselves, land is not equally distributed both in terms of quantity and quality. Needless to say, the majority of the population has struggled with poor and unproductive soil, while a small portion has enjoyed the benefits of more productive land (SEMARNAT, 2000).

2) Deforestation:

Deforestation is the most significant threat to forests of the SMBR, caused primarily from forest fires. Between the years 1995 and 2003, a total of 327 fires were recorded, which brought the area of burned forest are to 61664.8 hectares since 1970. The average loss of forested area was 5.6 percent per year between 1995 and 2003. (Jardel Peláez, Ramírez-Villeda, Castillo-Navarro, & Balcázar M.). The majority of the forest fires, a total of 33.5 percent, are attributed to agricultural burning that is part to the 'slash and burn' tradition used by *campesinos* to clean the land of debris using fire before seeding. The other sources of burning are illegal crop cultivation (11.8 percent), intentional fires (11.9), and the presence of visitors (3.2 percent) while a total of 32.4 percent of fires were undetermined (Jardel Peláez et al.). Though there are strict regulations as to when and how burning is permitted, these regulations are not always respected. Fire can be hard to control, and as is commonly said in the sierra, "the fire got away on him". Other sources of deforestation include clearing for agricultural expansion or cattle ranching (SEMARNAT, 2000).

Another significant source of deforestation was caused by forest exploitation by private and clandestine lumber and mining companies and *caciques* (local strongmen) that started at the beginning of the century. The trunk width of the lumber that was extracted from the forest at that time could be two metres or more; today, the average diameter of trees is less than 0.5 metres (Jardel Peláez, 1998). While uncontrolled timber extraction has been curbed significantly, there are still reports of clandestine activities in the reserve. Forest exploitation through clandestine activities of the SMBR communities is described in more detail in the section 'Social Pressures' that follows.

Also a threat to forests is the introduction of foreign tree species through government reforestation programmes such as PRONARE, without adequate planning and control. Since the species are not endemic to the area, their introduction has the consequence of also introducing pests and diseases, and cannot be guaranteed to grow well (SEMARNAT, 2000).

3) Social Pressures:

Clandestine activities such as limber extraction, poaching/hunting of fish and mammals, are all identified as social pressures on the environment in the SMBR.

Between 1996 and 2000, 86 counts of illegal activities were reported, with an average of 17 per year (DRBSM, 2001). The illegal activities differ in type, including 65 forestry, 3 mining, 9 flora and 10 fauna, as well as the extent of environmental damage. This number was up to 38 counts in 2003, an increase from 25 in 2000.

Changes in consumption patterns, more precisely, the introduction of soft drinks and packaged goods), have caused rural areas to become littered with plastics and other synthetic materials. The population increases in some of the communities of the SMBR have also increased the severity of the other sources of environmental degradation listed above.

Table 3.2: *SMBR Communities and Breakdown of Land Area per Management Zone*

Municipality	Community	Area in core zone (%)	Area in buffer zone (%)	Area in transition zone (%)
Autlán	1) Santa María	8.03	64.21	27.77
Autlán	2) Ahuacapán	14.45	52.80	32.75
Autlán	3) Corralitos y Yerbabuena	0.00	10.09	89.91
Autlán	4) Tecomatlán	0.00	22.80	0.00
Autlán	5) Tecopatlán	44.66	0.91	0.00
Autlán	6) El Chante	0.00	0.16	83.98
Autlán	7) Las Montañas	33.30	66.70	0.00
Casimiro Castillo	8) Casimiro Castillo	0.00	18.78	81.22
Casimiro Castillo	9) Barranca de la Naranjera	42.90	55.26	1.84
Casimiro Castillo	10) El Parotal	0.00	100.00	0.00
Casimiro Castillo	11) El Zapotillo	5.96	41.46	52.58
Casimiro Castillo	12) Piedra Pesada	0.00	63.20	36.80
Cuautitlán	13) Cuautitlán	0.00	3.94	1.02
Cuautitlán	14) Ayotitlán	18.04	21.35	60.61
Cuautitlán	15) C.I de Cuzalapa	23.96	59.87	11.01
Cuautitlán	16) San Miguel y anexos de Manantlán	0.00	0.00	0.82
Cuautitlán	17) Guayabillas	100.00	0.00	0.00
El Grullo	18) El Aguacate	0.00	20.23	99.13
El Grullo	19) NCPE Emiliano Zapata	0.00	76.41	23.59
Tolimán	20) El Rodeo	0.00	1.02	0.00
Tolimán	21) La Laguna	32.15	69.29	0.00
Tolimán	22) San Pedro Toxín	0.00	84.47	11.90
Tolimán	23) Toxín	68.18	31.82	0.00
Tolimán/Minatitlán	24) El Terrero	7.58	92.42	0.00
Tolimán	25) C.I. de San Fco.Teutlán	0.00	0.00	0.00
Tuxcacuesco	26) Mezquites	6.67	0.65	23.81
Tuxcacuesco	27) Zenzontla	8.89	0.01	0.00
Tuxcacuesco	28) Chachahuatlán	0.00	74.76	0.25
Comala	29) Campo Cuatro	0.00	0.00	0.57
Comala	30) Lagunitas	0.00	100.00	0.00
Comala	31) Zacualpan	0.00	46.97	53.03
Minatitlán	32) Platanarillo	23.75	74.21	26.15

3.5 THE FIRST PHASE OF MANAGEMENT (1987-1993)

Although the creation of the SMBR actually took place in 1987, an extensive and important series of events unravelled prior to this time. The discovery of the endemic species teocintle corn, *Zea diploperennis*, occurred back in 1979 as a result of international collaboration. The group involved in the discovery was made up of researchers from Mexico, the United States, and Israel. The publication of an article regarding the discovery of *Zeo diploperennis* thought long extinct in the wild, roused international attention amongst the scientific community to the rich ecological diversity of the area. The publication also inspired the idea for the creation a protected area and a scientific research centre. The group joined forces with renowned Mexican scientists, Arturo Gómez-Pompa, and Gonzalo Halffter, and received the institutional support of the University of Guadalajara, the National Council of Science and Technology (CONACyT), and the World Wildlife Fund (WWF). In 1984, state government of Jalisco acquired Las Joyas, a parcel of 1245 hectares of land rich in biodiversity, which would later become the Las Joyas Scientific Research Station (ECLJ) (Jardel Peláez, Santana, Graf Montero, Iñiguez D., & Robert, 1999). Originally, Mr. Iltis had a far more traditional idea for a protected area than that of the people-centred Biosphere Reserve approach. However, the Mexican researchers insisted a National Park style of biodiversity protection would not be feasible in the area at hand (personal communication, Enrique Jardel, 09/06/03). A group of researchers, led by Rafael Guzmán, initiated a research programme in Las Joyas and went ahead with a study that proposed the creation of the Biosphere Reserve (Guzmán Mejía, 1985).

In 1985, the University of Guadalajara created the Las Joyas Natural Laboratory (LNLJ) as a research station dedicated specifically to the purpose of scientific research and the conservation of the Sierra de Manantlán through the creation of a Biosphere Reserve. The LNLJ became the institutional base out of which the Biosphere Reserve project for the Sierra de Manantlán would be organized (Graf Montero & Justo, 2001; Jardel Peláez et al., 1999). The LNLJ actively promoted local and national support for the creation of a Biosphere Reserve. During this time, it came to the attention of the group that several communities of the Sierra Manantlán were engaged in a fight against the exploitation of private logging and mining companies, a fight that had been going on

for several decades (Graf Montero & Justo, 2001). These communities became important allies of the LNLJ in gaining support for the creation of the Biosphere Reserve, which they saw as a means of ending the exploitation of their natural resources. The Sierra de Manantlán was thus regarded as a space of coinciding interests, of conservation on the part of researchers, and communal control of resources by the local population (Graf Montero & Justo, 2001).

In 1986, the World Wildlife Foundation (WWF) funded a series of planning workshops that served to consolidate the proposal for the Biosphere Reserve. On March 5th, 1987, the Sierra de Manantlán Biosphere Reserve was officially declared under presidential decree. During this same year, the LNLJ moved from its headquarters in Guadalajara to a small city (El Grullo) located in the transition zone of the SMBR. It served to fill the institutional void of conservation protection that the government was not able to provide. At that time, Mexico was experiencing an economic recession and severe cuts were made to government spending as part of the structural adjustment programmes (SAP's) that were being implemented. Despite this predicament, due to the international importance of the SMBR, LNLJ was able to attract national and international funding that far exceeded the capacity of the government (personal communication, Enrique Jardel, 01/07/03).

Having obtained the decree and official creation of the SMBR, the next step was to translate the conservation biodiversity and sustainable community development from paper into practice. However, a number of obstacles prevented this from occurring during this first phase of management.

The first obstacle was the threat that the decree would be reversed. After the creation of the Biosphere Reserve, a private lumber company and a small group of *caciques* (local strongmen) launched a formal protest to have certain communities be omitted from the reserve. The *caciques* had benefited from logging concessions that were held with 5 different communities. With the decree of the Reserve, the logging concessions that existed between the lumber company and each of these communities were annulled. All five communities, save one, the Indigenous Community of Cuzalapa, have since withdrawn these requests; Cuzalapa's case remains pending in the National Supreme Court of Justice (personal communication, Martín Gómez, 05/07/04; personal

communication, Trinidad, 17/05/03). Nevertheless, the situation post Biosphere Reserve-creation was politically and socially tense. To give the reader a sense of the severity of this tension, a researcher of the University of Guadalajara stated in an interview that his life was threatened several times from his involvement with the SMBR (personal communication, 09/06/03). Other intimidation techniques that were used include encircling reserve employees with armed individuals.

Once this threat had subsided, the second step was to first inform people of the Reserve's creation (since the majority of its population was unaware of the Reserve's existence), as well as the resource-use regulations and restrictions that now applied to their land. Many individuals were unhappy with the fact that limitations had been placed on their use of natural resources and productive activities without their consultation, or even notification in the majority of cases. An academic researcher working in Ayotitlán noted that many of these people saw the creation of the Biosphere Reserve as yet another imposition on their rights to the land (personal communication, Darcy Tetreault, 05/03/03). Under the new amendments of the LGEEPA, Article 58 now states that prior to the declaration to create a protected area, all parties of interest must be notified, and that mandatory studies on its creation must be made public (SEMARNAP, 1988).

Although the LNLJ was able to fill part of the institutional void that was not filled by the government, the LNLJ was part of the University of Guadalajara and had to also maintain the activities of an academic institution. As such, they were unable to properly manage and protect the SMBR, especially the core areas. Illegal land and resource use proliferated with the lack of supervisions and reinforcement; this put doubt in the minds of the communities who supported the creation of the Biosphere Reserve as a means of blocking the exploitation of their natural resources (Graf Montero, Jardel Peláez, Santana, & Gómez G., 1999).

The weak institutional organisation of the government dependencies responsible for conservation and rural development initiatives at that time was an additional obstacle. These organisations displayed an incapacity and unwillingness to coordinate with each other, at times even refusing to recognise the existence of the Biosphere Reserve. In addition, it as also mentioned in an interview with Director of the SMBR that the government implemented programmes that were contradictory to the objectives of the

Biosphere Reserve (personal communication, 09/06/03). The problem of incongruence in national programmes was also mentioned by the Subdirector of Programme Design and Operations for the PRODERS programme of the CONANP (personal communication, 17/06/93). In both instances the same example was given: that the government implemented one programme that paid the *campesino* to plant trees, and another programme that paid them to cut down trees.

Between 1993 and 1994, a number of important events took place at the national level. One of them was the Zapatista movement, which forced the government to take a closer look at the predicaments of indigenous regions. Based on the social unrest and violence in the region of Sierra Manantlán, the government feared that an organized armed movement would possibly emerge from this area as well. The government reacted by funnelling a flow of government programmes into the region. While this was positive in some regards, it presented a new challenge for the management of the SMBR. They were now faced with a slew of government projects that were aimed stimulating economic and social development, but did not consider their environmental consequences. They had to fight hard to try to make these programmes environmentally sustainable. Also during this period, the creation of SEMARNAT occurred, which increased federal funding to the Reserve and a strong commitment to sustainable rural development on behalf of Julia Carabias, the appointed head of this agency (personal communication, 09/06/03).

The last change that occurred during this time was the creation of the Directorship of the Sierra de Manantlán Biosphere Reserve (DRBSM) in 1994. This was part of the revamping of the system of protected areas, funded by the World Bank's Global Environment Facility, which involved the creation of the CONANP and the creation of Directorships for ten protected areas. Sergio Graf Montero, a researcher of the ECLJ, was appointed Director of the DRBSM (personal communication, Enrique Jardel, 09/06/03). At the regional level, the LJL was transformed into the Manantlán Institute of Ecology and Biodiversity Conservation (IMECBIO). At this point in time, the DRBSM was instated as the official management institution of the SMBR. However, IMECBIO maintained an integral part in the management of the SMBR, dealing specifically with the research and education objectives of the reserve. IMECBIO also provides the technical

support required by the DRBSM to make the best-informed decisions for the management of the reserve. The role of the DRBSM is described in detail in the following section.

3.6 THE SECOND PHASE OF MANAGEMENT: The Directorship of the SMBR

As stated above, the Directorship of the Sierra de Manantlán Biosphere Reserve (DRBSM) was created in 1994. The office headquarters of the DRBSM are based in the town of Autlán de Navarro, Jalisco, situated in the transition zone, just outside the northern limit of the Biosphere Reserve. To recap, the DRBSM is a decentralised unit of the National Commission of Natural Protected Areas (CONANP), itself a dependency of the Ministry of Environment Natural Resources (SEMARNAT).

According to the national law governing protected areas in Mexico, LGEEPA, a management programme must be issued within the first year after a decree is passed for a protected area (SEMARNAP, 1988). Although this law was created only after the creation of the SMBR, an official management programme was inevitably required, both legally and logistically. However, before a management proposal could be submitted, further research was required, especially on the social contexts in which they were working. At the time of the decree, the social complexity of the communities was entirely unanticipated (personal communication, Enrique Jardel, 09/06/03). The results of the researcher revealed that the communities (including '*ejidos*' and 'indigenous communities' were characterized by poor or entirely dysfunctional institutional organisation, strong internal land tenure conflicts, as well as without adequate internal norms to control and regulate the use of natural resources. These conditions would later limit the success management of projects and social development (Graf et al, 1999).

It was not until the year 2000, 17 years after the decree of the Biosphere Reserve, that the Management Programme was finally published. This was partially attributed, however, to the fact that a participatory approach was taken to devising the programme. Altogether, 61 community representatives from a 17 of the 32 communities of the Reserve took part in five participatory workshops held by the DRBSM (SEMARNAT, 2000). The results of these workshops were presented to the TAC's, and later to seventeen *ejidos* and Indigenous Communities for their feedback and approval. In 2000,

the SEMARNAT published the official *Management Programme for the Sierra de Manantlán Biosphere Reserve, Mexico*. One advantage of publishing the plan so late was that it could incorporate both the theoretical and practical knowledge gained over more than ten years experience (Graf Montero et al., 1999).

According the Management Programme of the SMBR, Biosphere Reserves are regarded as experiments in integrating ecological conservation and social development (Graf Montero & Justo, 2001; SEMARNAT, 2000). Based on the MAB Biosphere Reserve model, the SMBR has three basic objectives: ecological conservation, social development, and research and education.

The DRBSM manages the SMBR according to their conceptual framework, which is based on the following principles (SEMARNAT, 2000, p.96- my translation):

1) Conservation and development are integral parts of **one single management strategy**, which takes into consideration that improving people's standards of living is not possible without a natural resource base and favourable environmental conditions.
2) A strategy of **adaptive management** is necessary to accommodate the dynamic nature of ecosystems and insufficient knowledge, which requires constant feedback analysis through research and observation.
3) Conservation is part of a **regional development strategy**, which establishes that the distribution of production, conservation, and restoration activities are conducted in accordance with the availability of natural resources, environmental limitations, and social objectives.
4) The rights of the agrarian communities and private landowners of the Reserve must be acknowledged in self-management, natural resource production, and social and economic development. The inhabitants of the Reserve must be considered the **primary beneficiaries** of conservation and development initiatives, that their rights as land owners must be respected, and that they be considered as **active agents** in the management of the protected area
5) The administration of the SMBR must be conducted through **participatory mechanisms** that include the different interest groups of the Biosphere Reserve and generate spaces for collaboration between these actors.

Since there are communities with territories located inside the core areas, the core areas and buffer zone are not managed as separate units. Instead, the Biosphere Reserve has divided into four areas, with one DRBSM employee designated to each of these sectors. The role of the four employees is to implement projects that promote the sound use of natural resources, as well as satisfy the needs and requests of community members.

3.6.1 Establishment of the Core Areas:

The first objective of the DRBSM was to establish the protection of the three core areas, the most protected areas of the Biosphere Reserve. Activities in the core areas are restricted to scientific research, guided visits (for educational and recreational purposes) of groups no larger than 30 people, ecological restoration; the only natural resource-use permitted in these areas must be part of planned protection and management activities that are approved by the SEMARNAT (SEMARNAT, 2000). The issuance of fines was used in the early establishment of the core areas in cases where warnings had not been sufficient in bringing peoples resource use in line with regulations (personal communication, Martín Gómez García, 12/01/03).

One of the core areas is also the Las Joyas Scientific Research Station (ECLJ). The ECLJ is located in the central-western part of the SMBR, and occupies a total of 1,245 hectares of land. The research station is part of the University of Guadalajara and is administered and managed by full-time employees of IMECBIO.

The objectives of the ECLJ are to:

1) Offer adequate conditions for the research and monitoring of the structure and function of the natural ecosystems of the protected area.
2) Contribute to the training of scientists and experts on the fieldwork of ecology and management of natural resources.
3) Preserve the diversity of ecosystems and species in the SMBR
4) Protect the natural populations of *Zea diploperennis* and the Mesophytic Mountain Forest.
5) Offer public visits with the purpose of environmental education and interpretation.

The current zoning of the SMBR, as is acknowledged in the Management Programme, is inadequate in meeting the objectives of the Biosphere Reserve. The decisions for the zoning were based on preliminary studies, without an adequate knowledge base of the protected area. The Cabinet eventually modified the original layout to improve the effectiveness of the reserve boundaries, however, the outcome was no better. Various errors were made, such as placing populated areas and areas **not** in need of high protection, in the strictly protected core areas. On the other hand, there were also areas of noted conservation need that were left outside of core areas (SEMARNAT, 2000). What's more, the communities were not given the opportunity to participate in the decisions regarding the zoning of the reserve, despite the fact that they are the ones most affected, particularly by the core areas which place significant restrictions on their livelihoods. Furthermore, the rules concerning the core areas are exceedingly strict to permit proper management (SEMARNAT, 2000).

At the time of my research, a fence was being erected around the southernmost core area to deter encroachment. Nevertheless, the core areas and buffer zone were relatively well established, and more attention was being extended to the transition zone. This difference is reflected in the widespread awareness of the SMBR within the Reserve on the one hand, and virtual absence of this knowledge in the transition area, on the other (personal communication, Martín Gómez, 2003).

3.6.2 Organisation and Management Strategies:

The SMBR is administered according to the official *Management Programme of the Sierra de Manantlán Biosphere Reserve*, published in 2000. The programme outlines management guidelines, administrative rules (the dos and don'ts of a Biosphere Reserve), and the management strategies on which operations are based (these strategies are listed below). As such, this programme acts as a reference guide for SMBR employees. The components of the management strategy as stated in the *Management Programme of the Sierra de Manantlán Biosphere Reserve* are listed as follows: conservation and ecological restoration, community development and natural resource-use, scientific research and education, and administration of the Reserve.

The DRBSM is staffed by a total of 16 employees: 13 full-time staff (a Director, a Subdirector, four Community Extension workers, one Coordinator of Logistics and Gender Equity, one head of Forest Fire Prevention and Control, a lawyer, an accountant, two administrative assistants, and a driver), and three part-time or seasonal workers. There is one employee, a Community Extension worker, who is from a SMBR community. The employees of the reserve show genuine commitment and dedication to the communities they work with, working long hours, spending a lot of time away from their families to be in the communities, all for a very modest financial compensation.

3.6.3 Community Development Projects:

One of the primary tasks of the DRBSM is carrying out community development projects. The majority of these projects attempt to complement of both development and conservation objectives. The implementation of community development projects has had a positive effect on the overall support of SMBR by communities inside and around the Reserve. One *campesino* from the ejido Toxín said to me during a conversation that despite his initial resistance and reluctance to participate with the Biosphere Reserve, the DRBSM community extension worker designated to this community had promoted projects that were hard for him to refuse (personal communication, 15/05/03). He said that before the SMBR, only a handful of people who were exploiting the forests were more affluent. "Now at least we are equal in our poverty!" (personal communication, 15/05/03). Along the same lines, Barranca de la Naranjera, in the words chosen by the Director of IMECBIO, experienced a "complete turn of the tortilla" (my translation); while this community was one of the most resistant to the creation of the SMBR, it is now one of the most supportive (personal communication, 06/06/03). In contrast, during a visit to the reserve by a group of four consultants hired by the World Bank to evaluate the GEF-financed projects, the secretary of the ejido Toxín made a statement concerning her dissatisfaction with the absence of consultation prior to the establishment of the Biosphere Reserve. She also criticized community development projects implemented by the DRBSM for not benefiting women since they predominantly involve agriculture and construction, which are traditionally carried out by men.

The DRBSM work takes two approaches to community development projects. They have projects they devise themselves, and they also administer programmes offered by other government dependencies, bringing as many opportunities as possible to the communities. As shown in Table 3.3 below, projects are derived primarily from two government programmes: the Sustainable Rural Development Programme (PRODERS), described above, and the Seasonal Employment Programme (PET). PET is a government programme administered by five federal departments: Ministry of Finance and Public Credit of Mexico (SHCP), the Ministry of Social Development (SEDESOL), the Ministry of Environment and Natural Resources (SEMARNAT), Ministry of Communications and Transport (SCT), and the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Nutrition (SAGARPA). The purpose of the programme, as its title suggests, is to provide off-season temporary employment to rural Mexicans to supplement their incomes with the objective of alleviating conditions of extreme poverty. PET projects are geared toward intensive manual labour in infrastructure building and environmental preservation (SEMARNAT, 2005). The wages received are ten percent lower than minimum wage.

At the time of my research, there were discussions under way to begin a 'payment for environmental services' programme in the Indigenous Community of Zacualpan. The idea is that this community should be compensated for the costs (lost opportunity cost) incurred from conserving their forests to ensure rainwater absorption and the provision of drinking water to the lower lying city of Colima.

To uncover any trends in the types of community development projects implemented in the DRBSM, the percent contribution of the different funding sources was analyzed, which is shown in Table 3.2 below. Of the financial contributions allocated to community development projects, a total of $1,678,481.44 Mexican pesos for the year 2003, 42.6 % is derived from PRODERS and 37.9 % from PET; the remaining 20 % is derived from the National Forestry Commission (CONAFOR), The Ministry of Rural Development (SEDER), the GRA Foundation, and a small potion from the DRBSM. The monetary allotments are either received in direct cash sums, or indirectly through infrastructure and materials. These projects are open to all members who wish to participate in them, and are introduced to the communities by the DRBSM extension

worker in Communal Authority General Assemblies (held once a month). *Campesinos* from a total of sixteen communities were involved in community projects in 2003, benefiting a total of 1688 families.

When asked how DRBSM projects have been beneficial, several *campesinos* replied that they have made them start communicating with each other. An *ejidatario* from El Terrero said, "Before everyone just did their own thing. Now people are talking a lot more" (participant observation, 30/04/03). When asked why there were not more people participating in the projects, one of the community extension workers explained that some community members were unhappy with the fact that the DRBSM provide remuneration only after work has been completed. He explained that the local elite were used to benefiting from the INI projects where they were paid prior to carrying out a project, which led to the creation of clientelistic relations between local elites and their kin (personal communication, 20/05/03; personal communication, Hugo Eladio, 17/03/03).

Table 3.3: *Sources of Funding for Community Development Projects Implemented in the SMBR for the Year 2003*

Source of Funding	Financial Inputs	Percent Contribution
PRODERS	$714,657.00	42.6
PET	$635,514.44	37.9
CONAFOR	$274,500.00	16.4
SEDER	$35,160.00	2.1
GRA Foundation	$13,000.0	0.8
DRBSM	$5,650.00	0.3
TOTAL	$1,678,481.44	100.0

Figure 3.5: *Percent Contribution of Financial Inputs According to Funding Agency for the Year 2003*

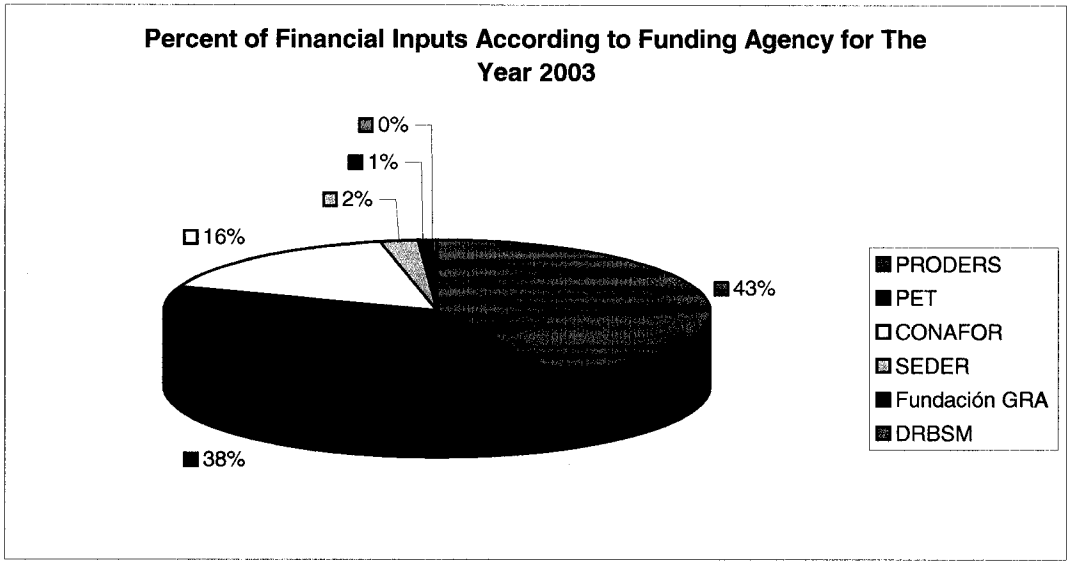


Table 3.4: *Total Financial Investment per Thematic Area and Number of Family Unit Beneficiaries for The Year2003**

Activity	$ (Mx pesos)	Family Units
Forest management	$665,292.41	181
Soil conservation	$ 342,855.41	263
PRC	$316,217.68	612.0
Ecotourism	$655,152.79	251
Agroforestry	$224,799.7	118
Farming	$120,000.00	127
Road construction and Restoration	$ 20,160.00	83
Seed Saving Project (Ayotitlán)	$5,650.00	53
TOTAL	$ 2,350,127.94	1688

* one project was omitted as it is was incomplete

1) Improvement of productive systems (agriculture and livestock):

The majority of community projects administered by the DRBSM are aimed at improving agricultural production systems. This is because the current systems are one of largest contributing factors to environmental degradation in the SMBR (personal communication, Martín Gómez García, 12/01/03). In the attempt to increase output more land is cleared, causing deforestation and soil erosion. Pesticides and chemical fertilisers have also been introduced to agricultural practices, and are contaminating runoff water. Given that the primary livelihood activity of *campesinos* is agriculture, they also place greater demand for projects aimed at improving agricultural systems.

a) Soil conservation: In the year 2002, 64,743 metres of stone barriers and 8,774 metres of living barriers (made of live plants or trees such as pitayo and banana trees, as well as agave plants) were constructed and planted in the SMBR. The barriers are used to reduce soil erosion from water run-off during the rainy season. These barriers are quite effective when they are maintained. The problem is that thee upkeep is often are not performed or maintained. This may be attributed to the fact that the barriers are built as part of a programme whereby *campesinos* are paid at a rate per metre of barrier built, or for every tree planted, which provides incentive to participate in the programme. Despite the benefits of decreased soil erosion, there seems to be a lack of incentive to maintain them.

b) Conservation of seed biodiversity: The ejido Ayotitlán, where the original 'teocintle' was first discovered, is the only known community in the Biosphere Reserve whose corn varieties that has not yet been contaminated with 'improved' strains through cross-pollination. The DRBSM has established a seed-saving system with the community to create a seed bank with the aim of conserving the genetic diversity of food crops endemic to this area.

c) Sugar Cane Cattle Feed: During the dry season, cattle-feed becomes extremely scarce, and *campesinos* risk loosing their animals to starvation. A programme was put forth to address this problem by providing *campesinos* with means of feeding their livestock during the dry season. The programme provides *campesinos* with grass seeds to grow hay, as well as barbed wire for the construction of fences to protect their plots from wildlife. The project benefits

those *campesinos* with cattle, or who want to rent out the plot to other farmers. Since the majority of *campesinos* do not have cattle (only the more wealthy do), there is not equal opportunity to benefit from these projects (personal communication, 11/06/03).

2) Forest Fire Management

a) Reduction of Deforestation: Traditionally, *campesinos* in this area of Mexico construct fences made of tree branches to protect their agricultural plots from wildlife, as well as to demarcate their land. In order to decrease the number of trees that are cut for this purpose, the DRBSM has introduced the use of living fences. They are made with branches from a particular type of tree that remains alive when planted in the ground. The DRBSM is currently investigating how to improve the success rate of living fences as only approximately one third of all branches that are planted stay alive (personal communication, 13/05/03).

b) Forest Fire Prevention and Reforestation: According to the National Forestry Law, the construction of temporary fire barriers (*guardarrayas)* are required before plots are burned to clear them prior to seeding (an ongoing practice of slash and burn agriculture). The law also specifies the times of day when burning is permitted. However, according to the Head of Forest Fire Prevention of Control of the DRBSM, these laws are often violated (17/04/03).

c) Fire brigades: Almost every community has their own volunteer fire brigade. In the first years of having organized fire brigades, volunteers were recompensed for their work by direct financial payments. However, money was mismanaged by the recipients. Compensation is now granted by giving a basket of basic necessity items that are not readily available within the communities (i.e., soap, toilet paper, corn flour, pasta noodles, rice, etc (personal communication, 26/11/02).

d) Tree nurseries:

There are four tree nurseries found in the SMBR: two in Ayotitlán, one in Barranca de la Naranjera, and one in El Terrero. The nurseries are managed by a combination of DRBSM extension workers and community members (personal communication, Hugo Eladio, 17/05/03). At first, these nurseries were used

primarily to grow pine and oak seedlings for reforestation projects. However, fruit seedlings are now also grown for use as living fences to replace the use of wood (which decreases deforestation and has the added benefit of enhancing the diet of the family with fresh fruit). The fruit tree seedlings are provided free of charge to community members that wish to plant them Over the last few years, demand has increased in the communities for these trees, as they can be planted on the personal property, thereby providing fruit that can be sold to supplement income (personal communication, 20/05/03).

3) Ecotourism: Ecotourism is regarded as a compensatory alternative source of income, especially in communities whose access to natural resources is significantly affected by the core areas. Four communities are currently undertaking ecotourism projects: El Terrero, Platanarillo, Toxín, and Zacualpan. In 2000, 217,900 Mexican pesos were allocated to projects related to ecotourism through PRODERS, benefiting a total of 251 families (personal communication, Juan José, 17/05/03). However, most parts of the SMBR are not well suited for ecotourism, as they are not characterized by special attractions to draw ecotourists other than birders (personal communication, 27/06/03).

The community identified as having the highest ecotourism potential is the ejido Toxín as there are many scenic sites, as well as sites of archaeological interest. This community is also in greatest need of alternative livelihoods because 85 percent of their land is located in a core area. However, the project has only achieved limited success so far. The people of this community are shy toward outsiders, and only one family has agreed to attend to the guests (cooking, setting the accommodations, etc). Furthermore, the project remains dependent on the DRBSM for advertising and logistical support (transporting travellers to and from the site). The DRBSM extension worker designated to this community commented that these activities tie up a lot of his time, which could alternately be used to forge ahead with other projects (personal communication, 27/06/03). The objective is to eventually locate funds to purchase a vehicle that will be used by the community for the ecotourism project.

Some concern has arisen regarding the environmental impacts of ecotourism projects. During a meeting with between the World Bank and several of the *ejidatarios* (land-owners) of Platanarillo, an *ejidatario* raised the issue that trash is left behind by

tourists such as plastic bottles and wrappers. As he said, "my cows end up eating them and then I end up finding two or three of my cattle dead" (participant observation 13-14/05/03). Furthermore, this *campesino* made the statement that they do not know how to undertake an ecotourism project, and that they need someone to teach them how to make it work.

While Zacualpan has been allocated a sum of money for an eco-tourism project, intense political division has left this community without a legally recognised leader, and has precluded the possibility of carrying forward this project, as well as others that require the involvement and approval of communal authorities.

4) Protection and Patrolling of core areas: In communities where productive system activities are limited by the restrictions of the core areas, several paid positions have been offered for patrolling these areas. This provides some compensation for the restricted land-use activities of core areas. Permanent community groups have been formed in Toxín and la Laguna to protect the Cerro Grande core area.

5) Small Business: Two families of the SMBR were provided with the start-up funds and training necessary to establish small general stores run out of their homes.

3.7 ADVISORY COMMITTEES: Formal Mechanism for Community Participation

Although there are several opportunities of different types of community participation in the SMBR, such as community development projects, the formal mechanism that is used is the Advisory Committee (AC). The idea of creating a formal council for stakeholder participation had existed since the beginning of the SMBR project. However, the creation of a participatory mechanism in the form of AC's was imposed by the World Bank as part of the conditions attached to the fund they granted to Mexico for improving their natural protected area system (personal communication, 09/06/03). The World Bank originally called the councils *Technical* Advisory Councils (TAC). However, on the request of the DRBSM, the title was changed in 1993 to simply Advisory Councils, as the original title implied the existence of technical expertise amongst its members and marginalized the majority *campesinos* who do not have formal technical training (personal communication, Martín Gómez, 26/01/03).

Since the SMBR is located in two states (Jalisco and Colima), two AC's have been formed in to accommodate their distinct local interests. Sub-councils were also created to address thematic areas. These sub-councils hold separate meetings and report their progress to the AC during their meetings. The Sub-councils are: the Sub-Council of Forest Management, the Sub-Council of Management and Recovery of the Ayuquila River, the Sub-Council of Ecotourism, the Sub-Council of Evaluation and Monitoring (one in each state), and the Sub-Council for Equity between Men and Women.

The Commission of Evaluation and Monitoring is being promoted in various Biosphere Reserves in Mexico by the CONANP. The purpose of this committee is to promote community organisation and autonomy. This committee was only in its infancy during the time of research. Workshops were conducted in conjunction with the PRODERS of CONANP to teach *campesinos* participatory evaluation techniques to assess the projects performed in their communities by government dependencies and community organisations, as well as to monitor their own progress. Each community will eventually elect a member community representative who will participate in the commission.

The Commission for Gender Equity is the second newest of the subcommittees and is being promoted within various communities through workshops. The first workshop was held in 2002 in the Indigenous Community of Cuzalapa. This community was chosen to introduce this subcommittee since the women of this community have already demonstrated a high level of organisation. The objective of this commission is for women to become more informed about and involved with Biosphere Reserve activities. Participation in the commission however does not grant these women the right to vote or even attend the annual committee meetings. As stated above, only AC members can vote, and to be part of the AC one must be a landowner, which many women are not. The one exception is most recent elected president of the AC, who is a woman.

While all those who were interviewed regarding the AC's agree that they play an important role, they are not achieving an adequate level of community participation. Part of problem began with the process of how the AC's were initially formed. While the DRBSM was in agreement with the need for a formal participatory mechanism,

employees and DRBSM researchers complained that the process of creating the AC was rushed. The World Bank set an unrealistic deadline, and it required was a sheet of paper with a list of names of different stakeholders (personal communication, 01/07/03). A researcher of IMECBIO stated that building a council bit by bit is how the AC could be effective. DRBSM did take the initiative, however, to initially exclude the municipal governments. It was reasoned that they would be too domineering and would inhibit the participation of the *campesinos*. Once the *campesinos* had become accustomed to the meetings and found their voice, government representatives were then included (personal communication, Martín Gómez, 16/05/03).

In an interview with the Director of Social Participation of the CONANP, she identified several problems in relation to the AC's and their implementation. Firstly, the actual social representation of the communities in the AC's is minimal in practice. Because of the limited size of the AC's only one member of a community can become part of the committee, and the smaller communities have no representatives at all. Furthermore, there are those who are using natural resources inside the reserve, for example by fishing, but do not have land titles within it. These resource users are not represented in the AC, and the AC has no means of communicating their decisions to them. Secondly, she stated that there is a lack of integration between conservation and sustainable management of natural resources in the approach taken by the AC. Conservation is reserved for unpopulated areas, and "management" refers strictly to the management of populated areas. She stated there is a need to develop a strategy that integrates the management of both human and natural resources. She also commented that the CONANP is working to improve the effectiveness and efficiency of the AC's.

The AC meetings are also difficult logistically. Communities are located in various remote areas of the Reserve, and the meetings take place near the DRBSM in Autlán de Navarro. Few *campesinos* have vehicles or other means of transportation; therefore, Reserve employees must drive committee members to and from the site of the meeting, which is both costly and time consuming.

Given the infrequence of AC meetings, the General Assemblies of the communal authorities, which are held monthly in each community, are used as the primary means of communication between the DRBSM and the communities. The exception is the

Indigenous Community of Cuzalapa, where DRBSM do not attend General Assemblies, due to pending request by the community to be excluded from the SMBR in the National Court of Law.

3.8 THE MANANTLÁN INSTITUTE OF ECOLOGY AND BIODIVERSITY CONSERVATION (IMECBIO)

IMECBIO is located in Autlán de Navarro, about a fifteen-minute walk away from the DRBSM office. Although the group has become part of an academic institution, their primary objective is their commitment to the SMBR, performing research, and acting as a support unit to the DRBSM (personal communication, 06/06/03). In so doing, they continue to respond to the needs of the communities of the reserve, as well as the needs of the different stakeholders involved.

The IMECBIO is comprised of several groups that focus on particular areas of research. These include Forestry Management, Flora and Fauna, Environmental Education, and Community Development. They also spawned a new academic programme, Natural Resource and Farm Engineering (IRNA, for its Spanish acronym). The general purpose of the programme is to give both theoretical and practical training to students in relation to the SMBR.

All of the interviewed researchers made reference to the differences between themselves and DRBSM. Unlike the DRBSM, they have the leisure of not having to make immediate decisions, and thus can take the time required to collect more comprehensive data. The DRBSM also have to produce concrete results and numbers that are required for donor institutions (personal communication, 09/06/03). Addressing direct problems such as forest fires, they must dedicate several months to this problem, paying fire brigades, which also limits community development projects. According to Peter Gerritsen, this is part of the reason why the IMECBIO is important in complementing the work of the DRBSM (personal communication, 06/06/03).

3.9. INSTITUTIONAL COORDINATION BETWEEN THE DRBSM AND IMECBIO

Some say that the success of the SMBR is as a result of the coordination between the DRBSM and IMECBIO (personal communication, 06/06/03). However, others believe that the lack of coordination between these institutions is one of the obstacles to the success of the Biosphere Reserve.

According to the Director of IMECBIO, one of the biggest problems with coordination between themselves and the DRBSM is that given the restraints posed by being part of an academic institution, they are unable to produce information with the expedience that is required by the DRBSM (personal communication, 06/06/03). The DRBSM is responsible for responding to the immediate needs of the communities of the communities and other interest groups, and require information that IMECBIO is not able to provide on short notice. The IMECBIO is still trying to balance out their research and teaching responsibilities with the needs of the DRBSM so as not to stall the work of the DRBSM.

Another problem with their coordination arises from misunderstandings caused by the fact that IMECBIO does not have the depth of understanding and knowledge the DRBSM has with regard to the diversity of the interests and visions that exist in the reserve. Also, the perspective of IMECBIO members have as academics is different than that of the DRBSM. As was stated by the Director of IMECBIO, "it is a question of getting together to present our different visions and coming to a common objective." This, he said, becomes more complicated when dealing with social issues. It was also mentioned that some researchers of the IMECBIO believe the DRBSM focus on carrying out community development projects has been to the detriment of biodiversity conservation (personal communication, 09/06/03).

The DRBSM does coordinate research and activities with the IMECBIO laboratories. For example, they have undertaken continued collaboration on project aimed at cleaning up to the Ayuquila-Armería river system. The biggest success of this project was the redesigning of the sugar refinery production process that enabled the reuse of wastewater that was polluting the river where it was discarded. Nonetheless, there is a stark lack of coordination between the DRBSM and the Community

Development Laboratory. Both the DRBSM and researchers of this Laboratory agreed that the communities would benefit from greater coordination between the two parties. However, both also stated that cooperation would be difficult given the different manners in which they carry out development projects.

3. 10 COMMUNITY ORGANISATIONS

1) The Organisation for Support to Indigenous Communities (UACI):

The UACI was created in 1994 by a group of researchers of the University of Guadalajara as a dependency of the General Coordination of Extension. Its creation arose out of an increasing awareness within the university for the need to change research practices in relation to indigenous populations, so that "communities would not be objects of research studies, nor passive subjects of programmes, but active subjects of their own development process" (UACI, 2001, p.4). The objective of their work is to promote the recovery, conservation, defence and the development of indigenous cultures and their territories (UACI, 2001). Their methodologies of Cultural Dialogue workshops are based on the work of Juan José Rendón, who in turn formulated his methodologies on Dialogue and Problematization methodologies formulated by Paolo Freire.

The UACI works exclusively in the ejido Ayotitlán of the SMBR, working with the Nahuatl Indians (they also work with the Huicholes of the Sierra Huitchola in the state of Jalisco). While their most significant endeavours involve defending the rights of the Nahuatl indigenous people, their mandate covers the broader themes of justice, education, culture, health and natural resources (UACI, 2001). They have five ongoing project themes, which are: the revival of oral history traditions; the promotion of activities in the Culture House of Ayotitlán, the integration of school and community in the Sierra Manantlán; strengthening traditional decision-making bodies; agrarian judicial training and advisory support; alternative medicine and establishment of a botanical community garden.

One of the most significant outcomes of their work was the revival of the Council of Elders, the traditional governing body of Ayotitlán, which was abolished following the process of land reform in 1963 when Ayotitlán became an ejido. The ejidal structure was recognised by many *campesinos* as being an external imposition on their indigenous

rights and culture, and were happy to begin anew meeting as the Council of Elders. The group now meets on a monthly basis. One of the undesirable aspects of the committee is that since traditionally women did not form part of the Council of Elders, they are not granted the right to participate in decision-making; women are however permitted to attend the meetings (Tetreault, 2001; UACI, 2001).

In an interview with a member of the UACI, she expressed one of their latest ideas, which is to develop a University Degree programme by correspondence so that young people did not have to leave their communities to get an education. The UACI also believe that a long-term objective of the DRBSM should be that communities themselves should eventually manage the Biosphere Reserve. In an informal interview, the Biosphere Reserve Director agreed with the idea of the education project, and believed that ideally some day the reserve should be run by *campesinos*. However, the UACI is of the opinion that if the *campesinos* had the choice, the Biosphere Reserve would not exist under the same institutional structure that currently exists (personal communication, 15/06/03).

2) Network for Sustainable and Self-Managed Agriculturalists (RASA):

The RASA is an organisation that promotes the use organic agricultural methods amongst rural communities of Jalisco. They hold workshops to teach willing farmers about organic farming techniques and to bring them together to share experiences and learn from each other. While the RASA has groups working in various parts of the state of Jalisco, until now workshops have only been held in the ejido of Ayotitlán and the Indigenous Community of Cuzalapa of the SMBR. Due to the political division that characterized Ayotitlán, the RASA is forthright about their workshops being open to all members of the general public.

I attended a RASA workshop that took place in Tel Cruz, Ayotitlán (participant observation, 15/12/03). Before teaching some of the techniques of organic farming, the workshop leader, a farmer himself, stated how organic agriculture fits into the objective of continuing to pursue the subsistence farmer lifestyle. He said, "The government wanted *campesinos* to leave the countryside to buy up the land and produce on it. Now, how can we continue with the *campesino* lifestyle?" He went on to say that those who were responsible for the current state of peasant farmers in Mexico were the government

(free-trade, Article 27, lack of support) and peasant farmers (for using chemical fertilizers and pesticides). The workshop promoted planting a diversity of crops to secure self-sufficiency in the event of pest infestation, and the use of using organic fertilizers and materials that are locally available and are free. Inspired by the fact that organic produce has higher market value, at one point during the workshop some of the *campesinos* started discussing the possibility of growing and marketing organic avocados. At this point, the workshop leader intervened and reminded them that investing all their efforts in one crop could prove to be unviable.

During a conversation with a man from Cuzalapa, I asked if he had started using organic agriculture methods in his fields. He said that he was testing these techniques on a small parcel that was part of the sugarcane project promoted by the DRBSM and that he would see from there. Another woman from Cuzalapa was using techniques learned in RASA workshops to start her own small garden outside her house to grow vegetables and herbs that she can use for cooking and feed to her children, knowing that they are chemical-free (personal communication, 23/05/03).

The UACI and la RASA have been working closely together since the time when there was a massive pest infestation that destroyed the better part of corn crops in Ayotitlán. The UACI contacted la RASA for support in organic agriculture to promote techniques that would prevent a future infestation (personal communication, 15/06/03)

3) Popular Education and Capacity Building (EPOCA):

EPOCA is an organisation that works in several parts of Mexico. This organisation has provided technical support in terms of workshop development and facilitation, designing comic books directed at a *campesino* audience that deal with subjects such as forest fire prevention, and other technical activities for the DRBSM. However, they do not have a physical presence in the communities of the SMBR apart facilitating workshops from with DRBSM. These comic books were produced with the funding of USAID.

4) Community groups of Ayotitlán:

The only community of the SMBR with organized community-based groups is Ayotitlán (personal communication, Martín Gómez, 03/0704). The three community-based groups of Ayotitlán are described in sequence.

- The Society of Social Solidarity (SSS): The SSS is a community-based group that was founded in 1990. Their work has focused on promoting the development of small-scale commercial activities, such as apiculture, hand soap, hibiscus, and organic coffee (Tetreault, 2001). However, due to political division within the group, this group is practically inactive at the present time (personal communication, Martín Gómez, 03/07/04).

- The Union of Indigenous Villages of Manantlán (UPIM): The UPIM is based in Ayotitlán, but also has members who live in the neighbouring communities of Cuzalapa and Tolimán (Rojas, 1996). Their mission is more politically oriented than that of the SSS, and has focused on two main issues: 1) to help defend the rights of *ejidatarios* over the control of natural resources from internal *caciques*, and 2) to pressure the government to deliver the 15,632 hectares of land that was granted to ejido of Ayotitlán but never actually handed over to them (Tetreault, 2001). Their projects are devoted principally toward preserving and enhancing cultural aspects of the community, and to a lesser extent on improving on agricultural systems.

The president of the UPIM is also the most recently elected president of the CA, and has collaborated with the DRBSM on numerous occasions. In addition, the UPIM has also collaborated the UACI, RASA, the SSS, and the Council of Elders (described next).

- The Council of Elders: As stated above, the revival of the Council of Elders was initiated in part by the UACI. Members meet monthly to discuss issues related to their community, though have no political power in decisions that concern the entire community. The land-owners (*ejidatarios*) of the community are those with decision-making power.

5) The Women's groups of Cuzalapa:

There are presently 5 women's groups in the Indigenous Community of Cuzalapa that are managed by approximately 25 women in total, although not all 25 participate in every group. The first group was put together in the late 1990's to begin the production of organic honey (which is now a cooperative). The women then moved on to form other

groups to produce and sell traditional embroidered clothing, organic coffee, fruit preserves, and lastly, pomades made with medicinal plants. In an interview with one of the group members, she said that these groups have been important in giving renewed value to local natural resources, and also providing an incentive to protecting them. As she said, "When people are using their own resources, they take care of them" (personal communication, 05/05/03).

None of these groups are yet financially viable for varying reasons. In the case of the coffee group, the woman from Cuzalapa, the director of the DRBSM, and the Reserve employee responsible for projects implementation in Cuzalapa all agreed that the coffee they have produced is not of high quality, not because the plant is unhealthy, but because the roaster is old and lets the rich taste of the bean escape. When the project was in the development stage, the DRBSM advised for the projects to hold off until the proper equipment was available. However, with the support of the University of Guadalajara's Community Development group, the project went ahead with production. The woman from Cuzalapa stated however that despite the financial woes of this project, at the moment people are at least making use of a resource that was being neglected. As a result of the devaluation caused by the drop in the market price, people had started to let their plants die, which also resulted in lowering the self-esteem of the growers Now, instead of buying Nescafé (instant coffee) they are drinking their own coffee and have found renewed value in the coffee and themselves.

As for limited success of the embroidered clothing group, a Biosphere Reserve employee stated that the product is not at par with other sellers in terms of quality because the women still lack training. He also said that nevertheless, these groups have been successful socially in that they have promoted organisation. The organic honey is difficult to sell due to the higher price of 70 Mexican pesos per jar, compared to the 15-21 Mexican pesos price for regular honey. The woman from Cuzalapa said that people need to be educated to recognise the value of a chemical-free product. No reasons were given for the small sales of the fruit preserves and pomades.

When asked how the DRBSM had supported them, one of group members replied they had been dissatisfied with the support provided to the women's groups. She went on to say, however, that they were helpful lending them a vehicle that was used to transport

their embroidered clothing to the coast where they are sold, although this assistance was still not confirmed for the upcoming season. She expressed discontentment with the fact that the DRBSM does not buy coffee from them, and that they always complain that the price is too high. "Being the ones working in conservation", she said, "they should be the first to buy from us" (translation mine). The IMECBIO on the other hand, she said were helpful in the commercialisation of their products, bringing them to stores and assisting in the organisation of small *tianguis* (local markets) set up at the campus of the University of Guadalajara located on Autlán de Navarro.

3.11 INTER-ORGANISATIONAL COOPERATION BETWEEN GROUPS WITH PHYSICAL PRESENCE IN THE SMBR

Throughout my time working in the SMBR, I had the opportunity to interact regularly with DRBSM and IMECBIO staff, as well as members of la RASA and the UACI. During this time, I detected that there was a lack of cooperation between certain segments of the organisations working in the communities of the SMBR. As the Director of the DRBSM admitted, "Together we could do much more, but it is not that easy... we have very different ways of doing work". A representative of the UACI stated "Can we really expect the communities to be organized when we ourselves [the DRBSM, UACI, UPIM, and other groups carrying out community development projects] are not even organized?" Both the DRBSM and the UACI said in reference to the other that whenever they have worked together, they always want to be in control and tell them what to do.

One of the researchers who works closely with the DRBSM stated that those of the Community Development Laboratory only criticize the work of others and don't actually do anything themselves (personal communication, 06/06/03).

3.12 THE COOPERATIVE OF AYOTITLÁN

When the director of the DRBSM was asked what the biggest project failure in the history of the SMBR was, he replied "the Cooperative of Ayotitlán". The information gathered on this section resulted from two interviews that were held with the Director of the SMBR (May 19th, 2003 and July 2nd 2003); one interview was with the Secretary of the cooperative (June 28th, 2003), and another interview was with a member of the

cooperative (May 22nd, 2003). Before describing the experience of the cooperative, a brief overview of the history Ayotitlán is provided.

This ejido is one of the most marginalized and politically divided communities found in the SMBR. While the people of this community are Nahuatl Indians, they have lost many of their traditional roots as the result of discrimination from Spaniards and mestizos during the Conquest. This discrimination involved the refusal of purchasing their products for not speaking Spanish, and mocking their traditional clothing and culture. The community was also plagued by armed violence until very about fitfteen years ago. The violence was engendered by agrarian conflict and their struggle against the internal *caciques* and private forestry and mining companies that had exploited the community for close to a century. Many people of Ayotitlán were in agreement with the creation of the reserve in order to finally end this violence and exploitation. One of the mining companies, Peña Colorado, still exists on the edge of the community, as it is located outside the perimeter of the Biosphere Reserve.

The idea for the cooperative began in 1995 when a man from the community, who had been working as a consultant in the city of Guadalajara, started up a kiosk to buy and sell vegetables and other items produced in their community. Not long after, during a community meeting, the idea was put forth to form a farming tool cooperative. A twelve-member committee was formed. From the kiosk they started to sell seeds, hammers, shovels, and other articles that amounted to 56 in total. The kiosk worked so well that they could not keep up with demand. Therefore, they decided to rent a room in order to store all the produce, where they worked for the following 3-4 years.

By 1998, as the demand increased for even more products (medicine, stationary, soft drinks, construction materials, etc.), they decided to apply for funding from INI and received $100,000 pesos ($10,000 US). The DRBSM supported them with an additional $4,000 Mexican pesos ($400 US). The money was used to construct a new store. They held a meeting to begin organizing the project; an ejidatario donated a piece of land, a carpenter was hired from within the community, and construction began. The next step was to apply for official cooperative status, for which they were required to submit their official name; they called the cooperative *The Rural Cooperative Society of Indigenous Communities of Ayotitlán, Sierra de Manantlán.* A total of 14 people registered with a

public notary as members. To take care of the day-to-day operations on the kiosk, a few people were also hired. The DRBSM supported them with the salaries for a community-elected treasurer, and also designated one of their employees to assist the cooperative in their work (providing lifts to Guadalajara to acquire produce, training in soil analysis, etc.).

In 2000, the members decided to expand the cooperative to increase their capital and to have more beneficiaries. They promoted the cooperative by advertising that members would receive a 10% discount and priority in selling their produce in return for their $200 peso membership fee. They succeeded in increasing their number of members to 73 from a total of 13 different localities. By this time they had a newly built store, a warehouse to store corn, and the cooperative had a net income of $1,5000 mexican pesos monthly ($150 US) (personal communication, 02/07/03). The members were meeting every month to make proposals for improvement and discuss concerns (personal communication, 29/05/03). The cooperative was regarded as a community success (Tetreault, 2001).

Before too long, inconsistencies began to be noticed in the accounting; $2000-3000 Mexican pesos were disappearing every month. The men hired to tend to the store started giving away soft drinks, or beer, and getting drunk on site, not selling well and sometimes leaving the post altogether. The members and the Director of the DRBSM decided to do an inventory to try to resolve the source of the missing funds. They found that the accounts for corn warehouse were balanced, but the store was missing produce. They hired another person just to take care of the accounting. However, money and produce continued to go unaccounted for. Rumours and accusations started to fly in the community, and people became discouraged.

The DRBSM attended five separate assemblies with the members to try to find a way to resolve the problem. They laid out the numbers indicating where the problems were. According to the Director, as well as the cooperative member that was interviewed, two of the executive members of the cooperative were responsible for stealing the bulk of the money. However, according to the Director of the DRBSM, the people of the community were incapable of punishing those who were responsible.

During this time, the DRBSM came to realise that their own employee was assisting those who were stealing from the cooperative, presumably taking his own share as well. It was also brought to their attention that this individual had previously stolen from the INI where he worked prior to his job with the SMBR. Since this employee only had 2-3 months left to his contract, and it would take that amount of time to prove their grounds for firing him, the Director chose to assign him a different project. However, this individual continued to continue his business with the community on his own account.

The cooperative eventually came to an end in January of 2002 when the store was broken into and 22,000 Mexican pesos were stolen, as well as produce. The members and the DRBSM wanted at least to allow the community to sell the produce that was left, but the INI took several days before making a decision on how to proceed and the rats got into the store and destroyed the products. The community was upset, and the members began demanding their membership fee, not from the cooperative itself, but from the DRBSM. With financial help from the INI, the DRBSM returned reimbursed each member. One woman who had invested $10,000 Mexican pesos threatened to murder two people who she thought were responsible for the robbery. These two individuals fled the community for a few months, and returned with the money.

A community member of Ayotitlán who I interviewed commented that he blamed the Director of the SMBR for the demise of the cooperative since he was the one would bring the people to deposit the money, even though he openly acknowledges that it was two people from his community who made off with the cash. The Director says he never touched the money because this would defeat the purpose of a project meant to increase autonomy. He also said that unfortunately, all projects that involve large sums of money end with corruption. Others said that the DRBSM simply should have known better then to permit the community to handle such a large sum of money.

Despite the negative experience of the Cooperative of Ayotitlán, some members of the community would like to start up the cooperative again; this has not occurred to date.

3.13 SUMMARY OF OBSTACLES TO PROJECT SUCCESS GIVEN BY INTERVIEW PARTICIPANTS:

During formal and informal interviews with the extension workers of the SMBR, CONANP and examination of documents written by community-development groups, a number of impediments to project success were given. They are as follows:

1) Agrarian conflict: Agrarian conflict is a major source of tension in many SMBR communities. The conflicts translate into political divisions within the communities, and pose a challenge to the DRBSM and other groups pursuing projects in the reserve. The division is so deep in the Indigenous Community of Zacualpan that they have been without a community president (comunero) for over five years. Although a person was elected during a General Assembly, the small opposition group had the decision postponed on the grounds that the election was undemocratic (since this group did not vote at the assembly). The conflict in this community has existed for more than 100 years.
2) Corruption and Distrust: Due to the long history of corruption in Mexican governance and in their communities, there is a general culture of distrust that characterized these communities. During an interview, an anecdote was told about a meeting that was held in the ejido Ahuacán to organize a project (Enrique Jardel, 06/06/03). The Director at the time said to the 20 people at the meeting 'alright, now we need to elect a person who is trustworthy, and who knows how to do accounting and the like'. One of the twenty people interrupted and said 'there is not one here who is like that'.
3) Lack of Community Organisation and Paternalism: There is a general lack of community organization within the SMBR, attributable to a long history of paternalism in Mexico's countryside. The situation is more acute in communities where financial support has been especially generous. One extension worker said that the *campesinos* are not used to the way the DRBSM works in that they will not pay upfront, but wait until the job is completed, verify that it is actually done, and then pay the amount due. With government programmes in the past, money was given at the beginning of the project, and the *campesinos* often did not follow through with the work. The problem of paternalism is particularly acute in El Terrero. Being a

community rich in forestry resources in the small Colima state, but asymptotically located on the border of the state of Jalisco, this community has been treated as a gem by the ruling political party. The fear is that the community will want to become part of the much larger state of Jalisco, and Colima will loose the economic benefits of its forest products. As a result, the concentrated allocation of government subsidies has caused a culture of dependence in this community (personal communications, 01/07/03, 10/07/03, and 27/06/03). The Director of the DRBSM actually said that the *caciques* are best to work with because they are generally the most motivated and take initiative.

4) Lack of self-esteem: Indigenous people and rural populations of Mexico have suffered marginalization, exploitation, discrimination, poverty, and more recently, environmental degradation. They have been told they are 'backwards' and inferior. During a conversation with an IUCN-Mexico Applied Anthropologist, he said that low self-esteem is what brings people to not care about their surrounding environment and throw their garbage on the ground, for example.
5) Use of money: Financial remuneration in community projects is a bit of a contentious issue. The Community Development Laboratory of IMECBIO strongly disagrees with the use of paid labour as an incentive for project participation. Although the DRBSM continues to use this strategy, they realize it is limited in potential. For example, in a project where *campesinos* were paid for every tree planted, many trees were planted, but they were not taken care of. By the following year, almost all the trees had died (personal communication, Martín Gómez, 05/02/03). Money also has a tendency to incite corruption. As one of the researchers of the Community Development Laboratory to me, "money gives rise to a lot of conflict. In this country, money tends to disappear". The Cooperative of Ayotitlán is indicative of this problem.
6) Community Size: The extension workers all stated that the smaller the community, the easier the work of implementing a project since the incidence of conflict is smaller.
7) Logistics: One of the most time consuming activities of the Biosphere Reserve extension workers is travel. Since the territory of the Biosphere Reserve is extensive,

and telephone lines are not established in the majority of the localities, the field staff spend nearly half their time in travelling. Eventually, the DRBSM hopes to have a network of radio transmitters and receivers established in order to facilitate communication with the communities (personal communication, Oscar Sánchez Jímenez, 27/06/03).

8) External Agents: The SMBR has received funding from several international organisations such as the WWF, The World Bank, USAID, Department for International Development (DFID) UK government department (several projects have been funded by DFID as part of an agreement signed between the UK and Mexican governments). IMECBIO researchers, however, have encountered problems when working with DFID employees. The overall consensus with DRBSM employees and researchers who had worked with international organisations was that while the financial assistance is needed, the human resources that come along with the package are less than desirable. Many complained that they try to 'run the show', or that they only make commitments in short term processes, and none in the medium or long term. It was stated, however, that when these professionals possess a genuine commitment to community development and social participation, the projects are quite different (personal communication, 02/07/03).

One researcher commented that in fact, the majority of the problems that affect the environmental and social conditions of the SMBR are outside of their control. He explained: "A few years ago during a reunion in Tuxcacuesco with community representatives and the municipal government, we were all sitting there talking about the different projects, and people were saying that everything was good, soil barriers, soil conservation, and the corn is growing better; and we were all feeling pretty good about it all, until it occurred to one *campesino*, 'but why should we be trying to grow corn if it is worth nothing?" (personal communication, 01/07/03).

3.14 WHAT EVER HAPPENED TO *ZEA DIPLOPERENNIS*?

According to one of the main researchers in the area, the discovery of the plant brought about a certain element of irony. The people who discovered the ancient strain

of corn were conservation advocates with a passion for plants. The distribution of plant sample were not controlled, and it is suspected that the genes of *Zea diploperennis* are now being researched for their potential in improving the resilience of modern strains of corn, thus contributing to an overall decrease in genetic diversity. The genetic diversity is also being commodified and used for capital gain, and neither the communities nor the Mexican government will partake in any of the profits made from these ends. In Mexico, researching the genes of *Zea diploperennis* to improve the commercial corn varieties is simply not possible since they do not have the means to invest into this type of research. This researcher remarked further that in the *Las Joyas* research laboratory they research not how to improve corn, but how to conserve its genetic diversity (personal communication, 01/07/03).

CHAPTER 4

Discussion

4.1 Introduction

In Chapter 2, the theoretical debates surrounding sustainable development and Biosphere Reserves were put forth according to three main perspectives of sustainable development: Mainstream Sustainable Development (MSD), Conservationist Sustainable Development (CSD), and Community-Based Sustainable Development (CBSD). The literature reviewed suggested that, as currently implemented in Mexico, Biosphere Reserves are not achieving sustainable community development. Chapter 3 provided an extensive account of the Sierra de Manantlán Biosphere Reserve, México, in addition to a brief description of modernization in Mexico and evolution of Biosphere Reserves in Mexico.

The purpose of the present chapter is, while keeping in mind the three perspectives, to explore what the experience of the SMBR tells us about the implementation of biosphere reserves in Mexico. More specifically, we attempt to answer the questions raised at the end of Chapter 2, which were: Are Biosphere Reserves, as currently implemented in Mexico, compromising the present needs of the rural poor in the name of biodiversity conservation and 'greater good' of global society? Does the management of the Sierra de Manantlán Biosphere Reserve (SMBR) reveal a conservation bias compared to community development? Are the indigenous and local communities systematically participating in the management decisions of the Biosphere Reserve? Are Biosphere Reserves yet another means by which international agencies and transnational corporations are gaining control over access to natural resources in rural communities? Alternatively, are Biosphere Reserves paving the way for the attainment of sustainable rural communities?

4.2 The SMBR: Some initial conclusions

On a very general level, two initial conclusions can be drawn from the case study of the SMBR. The first is that the SMBR is presently a functional protected area that

does not suffer from the "paper-parks" syndrome described by Dudley, Hockings, and Stolton, (1999) that characterizes many protected areas throughout the developing world. However, this was not the case until 1994 when the Directorship of the SMBR was created and provided a physical body that carried out the necessary functions involved with managing a protected area. Since this time, the SMBR has achieved a certain amount of success in their attempt to conserve biodiversity and promote community development, addressing immediate environmental problems, such as forest fires, and that implementing community-based projects with the long-term objective of environmental sustainability.

The second general observation is that no overt cases of natural resource exploitation by corporations or the Mexican government have existed in the SMBR since its creation. The discovery of *Zea diploperennis*, the ancient strain of corn that brought international attention to the biodiversity in the region, was not a result of a bioprospecting mission to exploit the natural resources of the region, nor is the Las Joyas Scientific Research Station (ECLJ) associated with corporate interests (as is the case with the Montes Azules Biosphere Reserve, Mexico). The relative success of the SMBR and absence of overt exploitation allows a discussion that explores the finer details of sustainable development in Biosphere Reserves instead of getting bogged down with merely identifying the means and methods of exploitation. This leaves room for a more constructive analysis that delves deeper into the effectiveness of joint conservation and development initiatives and community participation in Biosphere Reserves. This is not to say that the possibility of more subtle and underlying levels of manipulation is completely dismissed; in fact, two such cases were uncovered in the case study and will be identified in the body of this chapter.

4.3 The successes of the SMBR and Biosphere Reserves in Mexico

Since its creation in 1987, the SMBR has come a long way in implementing the Biosphere Reserve strategy, and many positive results have been achieved in increasing environmental awareness and protection, as well as improving the living conditions of those who live in the reserve. Differentiating between the positive changes in the Reserve that are due to the creation and management of the SMBR and those that are due

to other factors is difficult, and no studies have yet been conducted draw such conclusive results. Nevertheless, there are certain positive results that can be directly attributed to the creation and work of the SMBR. For example, the SMBR was responsible for neutralizing the violent conflicts that had been taking place in the southern part of the Reserve for close to century as a result of natural resource exploitation by logging and mining companies; this is considered to be one of the great successes of the SMBR. Another example was redesigning the production process of the sugar refinery located on the outskirts of the Reserve, which enabled the reuse of wastewater that had previously been discarded in the Ayuquila-Armería river system. This significantly reduced the contamination of river water.

Furthermore, as several government officials mentioned, the SMBR Advisory Council (AC), is amongst the most successful of Mexico. As described in Chapter 3, AC's are the official participation mechanism for protected areas in Mexico that was imposed by the World Bank through their GEF grant. The AC is based on the 'stakeholder participation' model used by the World Bank. This approach to participation was criticized in Chapter 2 for not taking into account differences in power that affect the ability of different stakeholders to participate on an equal level (Jeanrenaud, 1999). However, in the creation of the AC of DRBSM, they accounted for differing power dynamics by deliberately excluding government officials from the council until the *campesinos* became comfortable with this participation process. This reduced the risk of their voices being drowned out by government officials who ultimately have more power than *campesinos* and could potentially intimidate them. Still, problems are associated with the AC participation mechanism are not inexistent and will be discussed in further detail in the section on Community Participation.

At the national level, Mexico has demonstrated a marked initiative in the last ten years in improving environmental protection and social participation. A major part of this initiative was the consolidation of the Mexican System of Natural Protected Areas (SINAP) funded by the World Bank. The World Bank grant allotted money to SINAP for the hire of management teams that provided a physical presence in protected areas. Furthermore, Biosphere Reserves, the most people-centred approach to protected area management, has been embraced by Mexico to permit a more progressive approach to

protected areas than stricter versions akin to the Yellowstone Model, such as National Parks. Biosphere Reserves account for over 60 percent of the total area devoted to protected areas. The National Commission for Natural Protected Areas (CONANP) has also made social participation a priority in protected areas, with the aim of creating AC's in all protected areas of Mexico.

The changes that have taken place at the national level in Mexico are part of a general international trend to reverse past problems associated with the mainstream colonial model of conservation originally devised with the U.S. national parks system. International organisations such as the World Bank, IUCN, WWF, have all adopted a more human-centred approaches to conservation, recognising indigenous rights to both land and natural resources, their right to equal treatment, and the value of indigenous knowledge. However, far more work remains to be done before the goal of integrating human development and biodiversity conservation is achieved in Biosphere Reserves at the regional, national, and international levels. These points will be raised throughout the discussion.

Furthermore, as will be highlighted throughout this chapter, the successes of the SMBR can mainly be attributed to the elements of implementation that most closely reflect the new ideology of conservation. By the same token, the negative aspects of the SMBR and Biosphere Reserves in general can be attributed to the persistence of mainstream/traditional approaches to conservation and development.

4.4 'THE COMMUNITY' OF THE SMBR

Due to the false assumptions made about 'community' and confusion regarding the concept that was described in Chapter 2, it is imperative to clarify who the 'community' of the SMBR is before proceeding with the remainder of this discussion. In keeping with statements made by Agrawal and Gibson (1999) and Blackburn and Holland (1998), no one cohesive community unit exists the SMBR. Instead, there are 32 separate communities located in and adjacent to the SMBR that are distinct in biogeographical conditions, social histories, cultures, economic status, size, and levels environmental degradation. For this reason, I refer not to the 'community' of the SMBR, but the 'communities' of the SMBR. Similar to the conditions described by Young

(1999) in her study of the El Vizcaino Biosphere Reserve, Mexico, each of these 32 communities are diverse in and of themselves, characterized by political division and conflict that are mostly instigated by disagreements over land titles. The SMBR has made a discernible effort to customize their management programme and projects to the particular conditions and needs of each of these communities. This is in agreement with one of the principles associated with New Conservation described by Furzy De Lacy and Birckhead (1996) and Pimbert and Pretty (1995) that community-based conservation projects need to be cohesive with local conditions.

4.5 The Principal Change Agents and their Inter-Dynamics

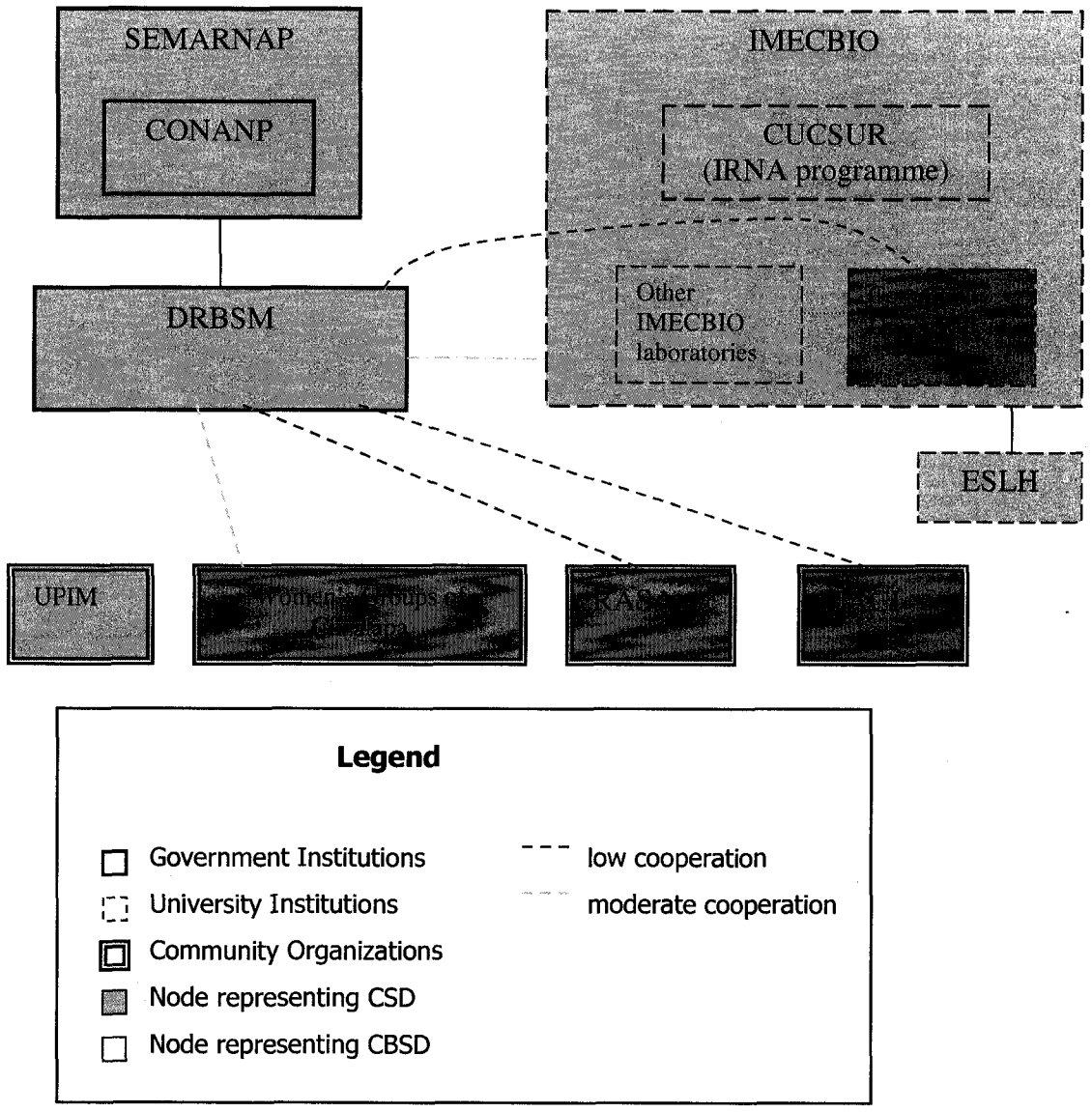
Based on the description of the SMBR in Chapter 3, the three perspectives that are outlined in Chapter 2, MSD, CSD, and CBSD, all find representation in the SMBR case study. That is, every principal agent of change, whether they are a community group or an institution, is identified as associating to one of the three perspectives. Furthermore, there are nodes of cohesiveness those who share a common perspective. The relationship between those groups of the same perspective are quite fluid, whereas the interactions *between* these nodes are much less fluid (however, the economic institutions that represent MSD were not included). Therefore, the divides between the nodes of cohesiveness among the principle agents of change of the SMBR correspond to the theoretical divides between MSD, CSD, and CBSD. The institutions and community organizations, and the relationships between the nodes of cohesiveness are demonstrated in the schematic diagram below.

At the regional level, the DRBSM, EPOCA and the IMECBIO 'Laboratories' save Community Development, form one cohesive node that pursues strategies that closely resemble CSD; that is, although they are pursuing community development and participatory initiatives, their end goal remains biodiversity conservation and their strategies are technical and apolitical. A second cohesive group is formed by the Community Development Laboratory of IMECBIO, the UACI, the RASA, the Council of Elders of Ayotitán, and the Women's Groups of Cuzalapa, whose strategy closely reflects CBSD. The cohesiveness of this group can be attributed at least in part to the fact that some overlap exists between the participants these groups; some members of the RASA

are also researchers and professors of Community Development Laboratory of IMECBIO at CUCSUR, or are students of the IRNA academic programme of CUCSUR. This latter group also worked together with the SSS and UPIM who also clearly abide by a CBSD approach. However, their collaboration ceased after disagreements and political conflicts arose, and have yet to re-establish a working relationship. The UPIM is somewhat of an exception as this group, although abiding more closely to the CBSD perspective, works quite closely with the DRBSM, whose president is also the current president of the Advisory Council of the Biosphere Reserve.

At the national level, Biosphere Reserves are part of the sustainable development strategy implemented by the federal government which is a combination the MSD and CSD that are carried out by different parts of the government; MSD is representative of the Fox administration as a whole, however the CONANP abides by an approach that more closely resembles CSD. Thus a large variety of different actors are working within the same geographic space. Julia Carabias, a key contributor to the development of PRODERS and defends a position congruent with CBSD, and appears to be seeking change 'from the inside out'. For the government to simultaneously pursue MSD and CSD is counterproductive and will be discussed in the final section.

Figure 4.1 *Schematic Diagramme of the Institutions and Community Organizations of the SMBR, and Nodes of Cohesiveness in Accordance with CSD, and CBSD*



4.6 Striking a balance between Conservation and Development

One of the major debates regarding Integrated Conservation and Development Projects (ICDP's) surrounds achieving an appropriate balance between the objectives of conservation and community development such that sustainable community development is reached. The DRBSM is subject to these same criticisms; some argue that biodiversity conservation is suffering from too strong of a community development focus, and others argue the work of the SMBR is failing communities by devoting a disproportionate amount of energy to conservation. One definitive conclusion can be drawn from the presence of this debate: both conservation and development initiatives are taking place in the SMBR; however, to what extent are they balanced or integrated?

The different types of projects pursued by the DRBSM, from cleaning up the Ayuquila-Armería river system, to seed saving, and ecotourism, demonstrate a genuine effort toward striking a balance between conservation and community development in the management of the SMBR. Furthermore, the SMBR management plan conveys a strong commitment to the full integration of conservation and development objectives. The document states "Conservation and development are integral parts of **one single management strategy**, considering the fact that improving peoples standards of living is not possible without a natural resource base and favourable environmental conditions". This statement clearly demonstrates a commitment in SMBR at the level of the community. However, a small yet significant part of this statement is missing to complete a balanced relationship between biodiversity conservation and community development: a natural resource base is also not possible without the existence of favourable social conditions (including political and economic conditions). This observation is one small factor, but is indicative of a tendency toward a conservation bias that has existed in the SMBR since its inception. Much like the overall evolution of the UNESCO International Network of Biosphere Reserves, a strong conservation bias was apparent in the early years of the SMBR, and although less acute, the discrepancy persists into the present. As will be shown in the following paragraphs, the establishment of the SMBR, the first phase of management in particular, unfolded much like what McNeely (1995), O'Riordan (2002) and numerous others described as colonialist/ 'fines and fences' approach/ Yellowstone model of conservation.

A further indication of a biodiversity conservation focus is demonstrated by the the main objective of the SMBR for the year 2003 as described in the Annual Operation Plan, which is stated as "Ensuring the conservation and sustainable utilisation of the Natural Resources of the Reserve"; "community development" is listed afterwards as being a means to achieving this objective. Therefore, we find that the goals of biodiversity conservation and community development are treated by DRBSM in the same way as they are in CSD. As stated by O'Riordan and Stoll-Kleemann (2002), the purpose of buffer zones is to ensure the conservation of biodiversity in core areas, and not for sustainable community development. That is, biodiversity conservation is the main objective, and community development is treated as a means to conservation.

Starting from the very beginning, the impetus for the creation of the SMBR was the rich biodiversity of the region that was revealed with the discovery of *Zea diploperennis*. As such, the objective behind creating the Reserve was strictly concerned with achieving biodiversity conservation, not social development, or sustainable development, or even the conservation of traditional culture. In fact, at the time of the decree, the promoters of the project were completely unaware of the number of communities or people residing in the Biosphere Reserve, let alone being familiar with the needs of the communities or how they would participate in the Biosphere Reserve. In fact, they even had little information on the ecological conditions of the 139,577 hectares that made up the SBMR. This suggests further that the objective at the beginning of the project was to achieve the decree of the SMBR as quickly as possible in a rush to protect biodiversity. However, there were consequences to establishing the Reserve and its boundaries prior to performing research on the ecological and social conditions of the region. According Furzy and De Lacy (1996) Pimbert and Pretty (1995), the boundaries of a protected area must be cohesive with the particular ecological and social characteristics to be effective both in terms of conservation and development. However, the boundaries of the core areas and the buffer zone of the SMBR did not adequately consider either the ecological or social characteristics of the Reserve. As the Director of the SMBR commented, the management boundaries were ill conceived, are not cohesive with the conservation and development needs, and have acted as obstacles to the efficient management of the SMBR.

4.6.1 Core Areas

The establishment and strict management of core areas have posed many problems in the SMBR that are reminiscent of those associated with the 'fines and fences' approach to conservation. Just as the 'fines and fences' approach describes by its title, several fines were issued to residents unwilling to abide by the new rules, and a fence was being erected around the core areas at the time of research. As described by several authors mentioned in Chapter 2, such as Chandra S. Negi and Sunil Nautiyal (2003), these strict conservation methods incited unproductive conflict and tension between the communities and SMBR managers. Especially in communities with a majority of their land in a core area, or communities with prior community conflicts, the establishment of the Reserve gave rise to tensions between residents and DRBSM staff that went as far as death the occurrence of threats being made against the promoters of the Biosphere Reserve. As described in Chapter 3, a handful of communities also made official demands to have their land omitted from the SMBR.

A subtler yet alarming issue regarding the implementation of core areas is the case of the community Rincón de Manantlán. One of the rules of Biosphere Reserves in Mexico states that those communities who resided in core areas prior to the creation of the Reserve cannot be expelled or displaced. The case of the community Rincón de Manantlán raises some suspicion with regard to this rule. Rincón de Manantlán is the only community of the SMBR whose land lies entirely inside a core area. Coincidentally (or not), this is also the only community whose request for land claim has been definitively rejected by the agrarian authorities. The rejection was based on the grounds that the people living in the community are not the original owners of the land in question. Ironically, the individuals who form this community were previous inhabitants of Ayotitlán who had already been expelled from their homeland (in some cases violently) by *caciques* (local strongmen). Due to the long and complicated history of land claim issues in Mexico, the majority of the SMBR communities have pending land claims with the agrarian authority. Therefore, based on the fact that Rincón de Manantlán is the only community of the Reserve to have its land claim definitively rejected, and also being the only community entirely located in a core area, raises some serious questions as to the actual motives of the agrarian authority. While it is not

possible to state definitively the intentions of the government, the correlation between these two factors strongly suggests that since Mexican law does not legally permit the displacement of communities, the government is seeking alternate means by which to remove Rincón de Manantlán from one of the core areas of biodiversity.

The use of core areas as part of the Biosphere Reserve model is itself represents a conservation bias. In fact, the strict protection of core areas is probably the greatest contradiction of the Biosphere Reserve strategy, and is an indication that Western approaches to conservation persist in this strategy. For example, that the boundaries of core areas in Mexico and around the world are entirely inflexible once they are decreed is in direct opposition to the adaptive management strategy that is outlined as part of the Seville Strategy and the SMBR management programme. Instead, the inflexible core area boundaries reflect more closely the 'pristine myth of nature' described by Furze and De Lacy (1996) and Denevan (1992), that assumes nature is in a static state, and is one of the false assumptions about nature on which the Western approach to conservation is based.

Furthermore, the compartmentalization of biodiversity conservation and sustainable community development initiatives between the core and buffer areas respectively, reflects a further assumption regarding a human-nature dichotomy, which is that there is an antagonistic relationship between humans and nature that is characteristic of Western conservation. This is not to say that areas devoted to strict conservation are innately negative. However, these areas should be determined collectively by those whose livelihoods will be affected, and they should be flexible both in time and in space. In so doing, the boundaries would more likely reflect both the natural landscape and social conditions of each area, and hence a more effective management of the reserve. The Mapimi Biosphere Reserve is an example of how the full integration of Reserve residents in determining the Reserve boundaries avoided problems associated with conservation and development projects being imposed in inappropriate areas.

4.6.2 Normal Professionalism

The problem of 'normal nrofessionalism' has also seeped in at the national level and has caused a conservation bias in the CONANP. As a reminder, 'normal professionalism' refers to specialization within and discipline or profession, as opposed

to the diversification of ideas, values, methods, and behaviours within a discipline or profession (McGrath, Marinova, & Newman, 2005). According to the data presented in Chapter 3 on the academic backgrounds of CONANP employees, the biological sciences were far more strongly represented among CONANP staff than the social sciences; the discrepancy was even stronger when considering just the academic backgrounds of Biosphere Reserve Directors, where 76 percent of Biosphere Reserve employees were trained in the hard sciences, and none were found to hold a degree in social sciences. Furthermore, as indicated by Peter Gerritsen (1998), normal professionalism is also a problem at the DRBSM, where all Reserve employees are trained biologists, save one person who is a lawyer. These findings reinforce Gómez-Pompa and Kaus' claim that Modern Mexico, the dominant minority of Mexican society that abides by Western values and aspirations, hold power at the national level and are responsible for Mexico's pursuit of conservation through the Western protected areas strategy developed in the U.S. One can discern that with the high concentration of biologists and ecologists involved in protected areas, Colchester's (2000) assertion that the criteria used to select protected areas are based more on technical ecological value than on social or political factors (Colchester, 2000). As described above, this was certainly the case with the SMBR.

4.6.3 Research

A further conclusion that stems directly from the previous point is that, due to the conservation bias in SMBR and the CONANP, the research that is performed in Biosphere Reserves focuses far more on the ecological sciences than on the social sciences. Of the five laboratories that make up IMECBIO, the research centre affiliated with the SMBR, only one performs research related to social development; the remaining laboratories are devoted to ecological research, namely botany, zoology, forestry management, and natural resource management. The conservation bias in research has also been encouraged by international conservation agencies that have funded research in the SMBR. For example, the IUCN funded research on strictly the flora and fauna of the SMBR, which contributed to the formulation of the management plan. This suggests that Neumann (1999) makes a valid point when stating that one of the largest obstacles to achieving community conservation and development is the increasing role of

international conservation agencies and NGO's in developing countries. A comment made by an antropologist of IUCN-Mexico consolidates this argument. He said that social scientists are employed as a last resort, once high conflict situations have arisen; this is because studies in the social sciences take longer to carry out than hard scientific ones, and are treated as an added cost. The irony is that, if more research was dedicated to the social sciences and understanding the social causes behind environmental degradation, ecological conservation would be easier to undertake, as it would be more coherent with the complex interrelationship between humans and the 'environment'.

4.7 Community Participation

One of the characteristics that set BR's apart from other types of protected areas is the promotion of community development and management through social participation. As was mentioned in Chapter 3, the DRBSM has pursued several different means of increasing community participation, such as the Advisory Council's, carrying out community development projects (some of which have a direct cash incentive, others with non-cash incentives), and forming part of community groups and brigades. Most recently, the DRBSM, together with the CONANP, promoted the training of community members in Participatory Systems of Monitoring and Evaluation methods with the objective of empowering communities is evaluating and performing their own projects. Despite the wide variety of community participation opportunities in the SMBR, the 'paradox' community-based conservation, as referred to by Marshall Murphree (Young, 1999), is apparent in the SMBR. Community participation in decision-making remains weak, taking the form of 'interactive participation' and 'self-mobilization' (described in Chapter 2), exists in the SMBR, and management continues to be top-down in nature.

This trend started at the beginning of the SMBR project. When the decree for the SMBR was passed, the majority of the communities of Manantlán were not advised, let alone consulted. Like the case of the El Vizcaino Biosphere Reserve described by Emily Young (1999), this meant that day to day livelihood practices of the residents of the SMBR became clandestine overnight, and without any forewarning. Together, the scientists and researchers made the decision that the Biosphere Reserve would be created, and where the boundaries of the core areas and buffer zone would lie. There was an

urgency to push for the creation of the reserve for conservation purposes, and the opinion of only a few communities was solicited at that time. What's more is that the purpose behind involving certain communities at this stage was only to increase support and pressure for the creation of the Biosphere Reserve, since these communities saw the Reserve as a tactic to finally bring an end to the resource exploitation, and consequent violence, that had been taking place on their land for close to a century. As Sally Jeanrenaud distinguishes between treating participation as a *means* and as an *end*, the use of community consultation in this case was a *means* of securing the creation of the Biosphere Reserve, as opposed to treating participation as the inherent right of residents to be informed participants in the process of Biosphere Reserve creation. As Colchester (1994) states, introducing restrictions of natural resource use without prior consent is a violation of the rights of indigenous and local people.

Although the original promoters of the Reserve felt compelled to pass the decree of the SMBR as early as possible to safeguard biodiversity, they may have actually created more problems for themselves in the long run by not taking the time to solicit the participation of *campesinos* prior to the decree. By not being involved in the decision to create the SMBR, either through consultation or interactive participation, residents inevitably had negative reactions toward SMBR. When management authorities began enforcing the laws of the Reserve, they were suddenly subject to the imposition of rules that limited and/or prohibited (depending on the management zone their lands fell under) access to natural resources, and inherently, access to their livelihoods. The fact that *campesinos* were not properly informed about the SMBR prior to its creation instilled a fear amongst them that the SMBR was just another scheme by which the government would eventually rob them of their land. Even 13 years after the decree, the SMBR has been unable to shed the *campesinos* of this fear. This intense sense of insecurity amongst *campesinos* is explained by the government's historical record (particularly that of the agrarian authority) of facilitating natural resource exploitation by private logging and mining companies. As was explained in Chapter 3, one of the methods used by the agrarian authority was a stalling tactic by which land claims were purposefully kept pending so that private companies could exploit resources while no one community had could assert official ownership of the land. When considering the mistreatment of

campesinos by the government, it comes as no surprise that they remain distrustful of the government's motives. The initial incapacity of the SMBR to prevent continued mining and logging exploitation in the Reserve by outside logging and mining companies also raised serious doubt amongst those community members who had promoted the creation of the SMBR as a means to drive out these companies. This indicates that the appropriate institutional and structural conditions were not in place prior to the decree of the SMBR.

Proponents of the community-based perspective to sustainable (CBSD) described in Chapter 2 stated that land ownership was necessary for communities to have full control, and responsibility, over natural resource use and thereby secure their conservation. However, under the rules of Mexican Biosphere Reserves, although land ownership does not change, communities become subject to land use restrictions, thus rendering land ownership insufficient in securing authority over natural resource use. Gómez-Pompa and Kaus osing the rules implies that those who created the rules have a superior understanding and authority on how the resources will be conserved. What advantage is having ownership of land if external decisions dictate what you can and cannot do on it? One may be tempted to contemplate that perhaps these communities will be better off in the end as the Biosphere Reserve will help them protect their natural resource base, and perhaps it will in the end. However, within this line of reasoning lies the assumption that the communities do not know what is best for their own livelihoods, and decisions need to be made for them. Marcus Colchester Vandana Shiva has stated that this mentality is what has justified the global reach of international organisations. In addition, this assumption has also permitted paternalism to persist in Mexico. This will be discussed in more detail below.

Since the creation of the SMBR in 1987, revisions have been made to the LGEEPA that states that the opinion of stakeholders must now be sought before the establishment of any protected area. However, nowhere is there mention of what mechanism must be utilized to seek such opinions, or who invites the stakeholders to participate in this mechanism. This being left undefined creates a lot of room for marginalization by omitting unwanted or problematic stakeholders from the process. Furthermore, the law does not outline what transpires should a stakeholder disagree with the creation of a protected area. Therefore, although the acknowledgement of the right of

interest groups to consultation is an improvement from complete disregard, this law leaves much to be desired with respect to providing stakeholders with a clear mechanism to defend their right to informed consent prior to protected area establishment.

Although community participation was minimal, and even manipulative according to Jeanrenaud's (1999) separation between participation as 'means' and 'end", a concerted effort was made to improve community participation when it came time to put together the Management Programme. In fact, an extensive participatory methodology was carried out that involved 17 of the 32 communities and 61 community members. By doing so, the SMBR was able to customize the Management Programme to the specific needs of the respective communities, and in so doing began to gain their trust. This process helped reverse the negative view of *campesinos* toward the Biosphere Reserve; it permitted them to realize that the government was bringing aid and projects to the area, and that people working on behalf of the SMBR were genuine in their commitment to achieving sustainable community development in their communities. Had this process been carried out prior to the creation of the Reserve, and instead of the coercive strategies that were undertaken to enforce conservation at the beginning of the project, the tension, fear, fines, and other negative factors could have likely been avoided. To justify the early creation of the reserve based on the need for biodiversity conservation is invalid, as it took just as long to establish conservation methods as it did to achieve a more positive perception of the SMBR by the *campesinos*.

4.7.1 Participation in Community Development Projects

The community projects carried out by the SMBR, which by their sheer existence are an improvement from the Yellowstone model as well as the old paternalistic habits of the Mexican government, do not however contribute adequately to the sustainable community development objective of Biosphere Reserves. The projects involve weak participation in the form referred to by J.N. Pimbert (1994) as 'participation for material incentives.' The Seasonal Employment Programme (PET), which account for over one third (38 %) of all DRBSM projects, pay *campesinos* to build road barriers, or construct soil conservation barriers, or other similar projects. They are only temporary programmes that act as band-aid solutions, providing *campesinos* with a source of income during the low season of agriculture. As such, they do not actually contribute to

the long-term economic or environmental sustainability of these communities. These programmes are devised at the government level, and implemented in a top-down fashion. The implementation of these programmes has inadvertently further entrenched the tradition of paternalism in rural Mexico by creating a disincentive for community initiative. They do not engage community members in formulation of development projects or improve community organisation. In the DRBSM's defence, they do not actually formulate PET programmes themselves. They administer PET projects created by other government agencies as part of their commitment to provide as many resources and programmes as possible to communities, and to respond to their demands. The fact of the matter is that PET programmes are what other government agencies are offering, and these programmes are in high demand from *campesinos*, as they provide the financial inputs required for agricultural production they are no longer able to recover through the sales of their produce (particularly corn, which has significantly decreased in market value).

Projects that are developed at the level of community and that value natural resources have a better chance of empowering its participants and securing the long-term conservation of natural resources. For example, the women's groups in Cuzalapa were self-initiated, and are inherently promoting biodiversity conservation through the commercialisation of locally available products. It should be noted that this type of commercialisation differs from the commodification and bioprospecting initiatives of international and multinational corporations that are external to the community, whose interests are of personal rather than communal gain, and that do not promote local interests in the sustainable use of resources. As one participant described, coffee plants were left to die after the fall in the market value of coffee. However, interest in these plants was revived after women formed a cooperative to sell organic coffee. She also said people the women and their husbands felt better about themselves, being able to find purpose on the plants and in turn themselves. In theoretical terms, the coffee cooperative led to the empowerment of it participants. The group that sells natural pomades has also renewed community interest in locally available medicinal herbs, and traditional medicine in general. They have become concerned about the conservation of green

spaces in their communities so as to preserve the diversity of medicinal, many of which are said to be less available than they once were.

Another point to be noted about DRBSM projects is that, as the conservationist perspective on sustainable development (CSD) would agree, their projects rely primarily on technical solutions. As the Director of the SMBR stated, their foremost concern is to improve agricultural systems, which is done by offering technical solutions, such as erecting physical barriers and living fences for soil conservation. However, as proponents of CBSD expressed in Chapter 2, technical solutions are void of social analysis, and tend to treat the symptoms rather than the causes of environmental degradation. Of all the projects that the SMBR implement, none address social problems such as alcoholism, nor do they collaborate with the government agencies that do. By focusing on technical solutions, DBSM projects also run the risk of not being cohesive with broader social, political, and economic contexts in which they are implemented, as suggested by Robert Daniels and Thomas J. Bassett (2002). The latter case is exemplified in an anecdote presented in Chapter 3 when in the middle of a meeting where *campesinos* and SMBR staff were rejoicing the success of the soil conservation measures in increasing corn production yields, one *campesino* interjected with the following simple yet powerful observation: "what good is increasing corn production if it is worth nothing on the market?" The fact is that following the ratification of NAFTA, the price of corn decreased by 70 percent between the years 1994 and 2000, and has placed a severe economic burden on *campesinos*. This anecdote exemplifies the stark economic and political reality in which the SMBR is embedded. A problem of this magnitude, however, lies outside the control of the DRBSM, and is representative of incongruence in government objectives that will be discussed in more detail in section 4.9.

4.7.2 Community Participation in the Advisory Council (AC)

The Advisory Council (AC) is the formal mechanism of community participation used in the SMBR, and as confirmed by the interview with Director of Social Participation of the CONANP, is one of the best functioning AC's in all of Mexico. Unlike the majority of other AC's, only the *campesinos* have voting rights, an additional indication of the DRBSM's commitment to community participation. However, while the AC is serves an important purpose, several shortfalls are associated with this

mechanism of community participation. As the Director of Social Participation for the CONANP commented, only a small proportion of the community populations find representation in the AC's of Mexico since there are many communities, and the AC cannot accommodate a couple or less people from each community, if at all. Furthermore, a study performed by Martha Rosas' study found that the Directors of protected area's tended to retain most of the power in AC's, despite the fact that they do not actually have voting rights. This is attributed in part to the fact that, as with the case of the SMBR, Director's formulate the AOP's that are presented at the annual AC, and the *campesinos* exercise their voting privilege by show of hands after each objective is stated. Therefore, the participation of *campesinos* in the AC is actually closer to consultation than interactive participation in decision-making, as they do not formally participate in the formulation of the objectives. In the SMBR, the DRBSM together with a few researchers from IMECBIO decided who would be invited to participate in the AC, leaving out members with whom they deemed cooperation would be problematic, such as representative(s) of the Community Development Laboratory of the IMECBIO. This raises issues of unequal power dynamics between the various stakeholders, which the AC is not designed to take into consideration. Therefore, a clear process should be devised that details who has the right to participate in the AC , as well as a clear process for dealing with differences of opinion and conflict.

Another important point made by the Director of the Social Participation is that time will be required before the AC model of participation is fully functional since the Directors are not accustomed to integrating participation into their management strategy. This finding supports an earlier point that the high incidence of CONANP employees and Biosphere Reserve Directors with degrees in Biology and the ecological sciences has hampered the importance and relevance social issues in Biosphere Reserves.

4.7.3 Indigenous Participation

Many international organisations and multilateral agencies are recognizing the rights of indigenous populations. Although this recognition is extremely important in the move away from colonial conservation and closer to recognizing and granting the rights of indigenous people, to direct projects simply at preserving indigenous culture. However, being indigenous is not sufficient as a factor in determining where

conservation has greatest potential, nor who is in greater need of funding. Firstly, not all areas of high biodiversity are found in indigenous communities. Secondly, the definition of indigenous becomes complicated; even where clear indigenous roots and heritage exist, many no longer abide by their traditional social and land use systems; examples from the SMBR include the replacement of locally-adapted seed varieties with "improved" ones, the use of synthetic fertilizers and pesticides, loss of indigenous language, influx of garbage from the use of packaged foods, loss of medicinal plant knowledge, etc. As O'Malley (2001) has indicated, communities are surrounded by neoliberal macroeconomic policies that are bound to infiltrate even the remotest areas of the world unless these influences are challenged collectively. Thus, merely preserving indigenous culture is unlikely to suffice. Secondly, this view of indigenous people remains embedded in the notion that indigenous people are part of 'nature', while 'modern' human are separate from 'nature'. Therefore, strategies are needed that take into account these influences by finding collective alternative means of economic development.

Part of the CBSD strategy of the UACI, an organization working in the community of Ayotitlán, is to revive old traditions that were lost due to oppression and discrimination. The aim is to renew the identity of the indigenous people of Ayotitlán, and identity for which they can be proud and provides self-esteem. For example, one of the biggest accomplishments of the UACI was the renewal of the Council of Elders, the traditional mechanism of community governance that was abolished following implementation of the ejidal system and its associated governing structure. Traditionally, women were not permitted to participate in the Council of Elders. Post-renewal, women are now permitted to attend the meetings, though have no decision-making powers. To encourage the revival of traditional structures of decision-making can bring a sense of pride, and even empowerment, to indigenous communities that have been oppressed and shunned throughout recent history. However, there is a certain element of irony in reviving tradition systems to empower the communities if they act to further marginalize certain segments of the population, such as women. While it is perhaps unethical to impose views regarding the equal treatment of men and women of SMBR communities, this is not to say it cannot be gently encouraged with the long term objective of women

increasing their participation in decision-making processes and achieving positions of power.

4.7.4 Women's Participation

While rural communities are recognized as being a marginalized segment of society, women are in even further marginalized sub-segment of the former (Guijit & Shah, 1998). Overall, women's participation in the SMBR is lower than men's; several factors contribute to this discrepancy. First, in order to be part of the AC, one must be part of the communal authority of their respective community, for which one must be a landowner. Since very few women own land titles, they are unable to participate in the AC. Only one woman forms part of the AC, though she was also voted in as President by the rest of the council. Another factor is that the projects performed by the DRBSM generally revolve around farming activities, which are male dominated. Therefore, despite the fact that the community projects are technically open to both men and woman, men participate more and are the primary beneficiaries. Although women, children, and the elderly, can be said to be indirect beneficiaries, they remain marginalized by the activities they are unable to participate in. However, the DRBSM has made an effort to increase women's participation, as exemplified by the creation of Sub-Council on Equity between Men and Women. The intention is to increase women's access to knowledge about the SMBR and value their contributions and knowledge. Though women have been traditionally been oppressed in rural society in Mexico, efforts such as the Sub-Council on Equity between Men and Women are a positive step in the direction of achieving more equal treatment of men and women.

4.8 Contextual Obstacles to the Success of the SMBR

While it is easy to criticize the lack of community participation in the SMBR, the blame cannot be placed on conditions that rest solely within the Biosphere Reserve. A comment made by the Director of the SMBR echoed precisely a statement made by Adrian G. Davey (1996): the biggest the impediments to achieving conservation and development in the SMBR stem primarily from conditions that exist outside the Reserve itself. The main obstacles to project implementation provided during the fieldwork were agrarian conflict, corruption and distrust, paternalism and lack of community

organisation, low of self-esteem, and economic marginalization. All of these factors can be traced back to sources outside the SMBR. Agrarian conflict stems from a long and complicated history of land reform in Mexico. In Chapter 3, these conflicts were shown to have deepened political divisions in several communities, in some cases rendering project implementation impossible (for example, the ecotourism project in Zacualpan that could not be implemented due to the absence of a recognized community president). The SMBR is limited in what they can do if the government continues to stall in resolving these conflicts, and the communities do not engage in a dialogue.

Corruption is also an unfortunate yet blatant reality of projects, particularly those that involve financial management at the local level. The experience of the Ayotitlán Cooperative is akin to what Lyons, Smuts, and Stephens (2001) found in the implementation of community projects in South Africa, where corruption prevailed once funds were handed over to the communities. Similarly, the Ayotitlán Cooperative was progressing very successfully until they began accumulating a financial base. At this point, products and money started to go unaccounted for, and a handful of people eventually stole almost the entire savings, bringing a dismal and tragic end to the Cooperative. Some people accused the DRBSM for the failure of the project with the argument that the DRBSM should have known not to permit the community to handle the financial aspect of the project. However, as the DRBSM defends, the idea for the Cooperative stemmed from the community, and the DRBM merely provided support and cannot be held responsible for the corruption that took place.

Another complicating factor that has affected community development initiatives and participation is paternalism. The effects of paternalism run deep into community dynamics, and have resulted, arguably, in a lack of community organisation and lack of self-esteem. For example, according to interviewees, paternalism was most acute in El Terrero, Colima. Due to its rich forest resources, and proximity to the state of Jalisco, the PRI government undertook intense bouts of electioneering to encourage the community to remain within the boundaries of the small state of Colima. The mentality there now is that they can simply rely on the government for aid and need not engage in activities themselves. On the contrary, the community Ayotitlán was essentially ignored by the government until the creation of the Biosphere Reserve, and did not receive any form of

government assistance. Coincidently, Ayotitlán is the only community with existing community-based organisations (the Union of Indigenous Villages of Manantlán- UPIM, and the Society of Social Solidarity- SSS). Furthermore, extension workers working in El Terrero described this community as being particularly difficult to work with, not due to conflict, but because of a lack of community initiative. This finding is similar to the situation of indigenous Cree communities in Quebec, and Ontario, Canada described by Berkes (2000), where local institutions for wildlife management were strong in Quebec where government programmes for natural resource management were weak, and the opposite was true for adjacent Ontario.

The existence of paternalism was also displayed in the many comments and pleas of *campesinos* that were reiterated throughout my various conversations with them, and their comments made during assemblies and meetings. For example, many expressed "we want more jobs... we are poor... we need more support from the government... we need you to teach us... we need your help because we do not know the technical parts." These comments also indicate low self-confidence in pursuing development projects. The tone of the *campesinos* pleas suggests a feeling of helplessness and inferiority in comparison to the management staff of the DRBSM and researchers, technical experts who will help them. The tone of these comments is partially explained by the effects of a long history of paternal relations with the government. However, another part may be explained by the fact that the SMBR was imposed on the communities, so they deserve compensation of the burden they must endure as a result. It is argued here that had the communities been involved in the creation of the SMBR from its inception, this sense of the SMBR being a burden would be eliminated, and the tone of the *campesinos* would be replaced instead by one of cooperation.

4.9 Biosphere Reserves as a Partnership: An idealistic vision?

Part of the Biosphere Reserve vision is that they be managed as a partnership that involves all interest groups (or stakeholders to use World Bank lingo). However, as our case study has shown, bringing all these interests together at the same table entails overcoming some serious obstacles. Apart from the logistical difficulties physically

bringing together all interest groups, as mentioned with the AC's, less conspicuous factors are also at hand.

Section 4.5 on the Principal Agents of Change an their Inter-dynamics brought attention to the existence of certain nodes of cohesiveness amongst the actors in the SMBR that corresponded to the MSD, CSD, and CBSD perspectives. As was explained in that section, the different perspectives of each node have impeded cooperation between the actors working in the SMBR, despite the fact that they are working toward a common goal, the sustainable development of the communities of the Biosphere Reserve, their means of achieving this goal are very different. The CSD node undertake projects aimed at achieving results in the short-term, and are based on technical and apolitical solutions. This is not to say the DRBSM does not have long-term objectives; however, they are to a large extent bound to demands and limitations that are out of their control; for example, fighting forest fires, the imposed deadline to created the AC. CBSD groups are not tied to such conditions, and therefore have more flexibility in their projects. They implement projects that are geared more toward achieving long-term results and have a political aim; that is, they aim to provide and alternative to Neoliberal policies and modernization; they promote the value and protection of indigenous and *campesino* culture and rights.

By their own recognition, CSD, and CBSD do not cooperate well together. For example, although the UACI and the RASA are technically stakeholders of the SMBR, they do not form part of the AC. Furthermore, although they had collaborated on projecin the past, they were displeased with the experience and have ceased all collaboration. It was interesting to note that both groups provided many of the same reasons for not working together. They said the other group wanted undue control of the project, and tried to tell the other what to do. Each node also provided criticisms of other group's work. The CBSD group was very critical of DRBSM's use of money as an incentive in project participation. The CSD group criticized the lack of structure in the CBSD projects. What's even more interesting is that representatives of each node were in agreement with the criticisms made against them. As a member of the UACI admitted, they and the DRBSM are not setting a good example to the communities, with whom they promote cooperation and organization between community members. It is clear that both have different visions of how to go about achieving sustainable

community development, and this is precisely why partnerships are both problematic but beneficial. As with any perspective, good and bad aspects can be ascertained to both. Therefore, under the logic that the sum is better than its parts, they could be more effective if they worked together as a partnership. Representatives of each node also admitted that the communities would benefit from their cooperation. Therefore, the institution of the Biosphere Reserve should incorporate a consensus-building mechanism that would act to create synergy between the various stakeholders and approaches, rather than create division and tension between them.

A consensus-building mechanism could also equalize the imbalances in power between the interest groups of the Biosphere Reserve; that is, between the international agencies and national governments of developing countries, elites of developing nations and marginalized rural *campesinos*, then at the regional level, between actors of different groups

4.10 The incongruence of national government policies

The common thread that weaves through many parts of this discussion is that many of the obstacles to Biosphere Reserve success are external to the Biosphere Reserve itself, and beyond the control of *campesinos* and Reserve managers alike. These obstacles consist principally of the macro-economic neoliberal policies being undertaken by the Mexican government and the multilateral agencies such as the World Bank. What results can be expected of a Biosphere Reserve when the factors putting the largest strain on development and the environment are outside the reach of *campesinos* and management staff? They can implement innumerable projects and achieve zero land erosion, however this will not make selling the fruits of agriculture any easier.

The fact that Mexican government and World Bank's simultaneous commitment to Neoliberalism and conservation causes some doubt as to what the real motive is behind conservation projects. Both are pursuing 'sustainable development' projects and programmes with the aim of alleviating rural poverty through community development, biodiversity conservation, and community participation. They promote approaches such as Biosphere Reserves, PRODERS, and the GEF-funded SINAP consolidation of protected areas. However, they have also demonstrated a clear commitment to

Neoliberalism, such as free trade and economic liberalisation that in fact have proven to be counterproductive to the aforementioned objective as they are further marginalizing the rural poor. Examples provided in Chapter 3 that pertain specifically to the attempt to modernize the rural sector were the introduction of Green Revolution technology, the inclusion of corn in NAFTA, the amendment of Article 27 of the Agrarian Law, and the different social programmes introduced under the Salinas administration. Given the clear contradiction of these objectives, why are they simultaneously pursued?

Unlike the claims of MSD proponents, the fruits of economic growth have yet to trickle down to the ranks of the poor, and technology has not succeeded in curbing environmental degradation on a global scale. As we saw in Chapter 3, the inclusion of corn and other grains decreased global market prices. The predicaments of the rural communities of the SMBR showed that this has had the effect of further exacerbating economic marginalization, social erosion, and environmental degradation as people become demoralized, emigrate in search of employment or clear more land in the attempt to sustain themselves and their families. Given this scenario, one can deduce that the Neoliberal approach to 'sustainable development' is seriously flawed.

Since Biosphere Reserves are unable to control the larger structural problems that affect poverty and environmental degradation in rural areas, they do not pose a threat to neoliberal policies and the accumulation of capital in the higher ranks of Mexican and global society. In reality, Biosphere Reserves and other programmes directed at the rural poor have improved predicaments just enough to avoid another armed uprising (like the Zapatistas), which is stated to have been one of the main reasons for increased government funding in the SMBR. This suggests that the quest for biodiversity conservation, like MSD, continues to be treated in isolation if the larger context of economic development. While the discovery the SMBR may be free of obvious corporate interests, this is not the case for all Biosphere Reserves in Mexico. The bioprospecting that is suspected to be occurring as part of a laboratory funded by Conservation International in the Montes Azules Biosphere Reserve, Mexico suggests that the pair are motivated more by corporate interests than biodiversity conservation.

These factors suggest that the Mexican government is treating the quest for economic growth (through neoliberal policies) as completely separate from the objective

of biodiversity conservation. There are two broad explanations for why this may be so. One explanation is that biodiversity conservation and the economic growth through Neoliberal policies as unrelated, or at worse, using biodiversity conservation as a means to appease international public outcry and safeguard natural resources as future inputs to the economic growth equation. In either case, for sustainable natural resource use to take place in the SMBR, it is imperative that the regional level actors collectively challenge the broader political and economic structures that are the real sources of environmental degradation.

4.11 Conclusion:

As we have seen, within the limits of a Biosphere Reserve there exist many actors who have a stake in the fate of natural resources, including local populations, government agencies, NGO's, academic institutions, and international agencies, and even the famous yet elusive global society. While it is unjust to deny marginalized communities a means of access to development, it is also irresponsible of local and national governments, and unjust to a putative global society, to not address the natural resource destruction that is prominent in many marginalized rural areas. However, placing restrictions on local people's access to natural resources without first soliciting their opinions within a structure that gives equal weight to the marginalized as to other actors, is clearly unjust and unacceptable. Furthermore, one must keep in mind that while the greater good must be taken into consideration, local populations have direct access to natural resources, and they live with them. The resentment that can be left due to unfair implementation of Biosphere Reserves has been well documented and has been shown to end unacceptably for all but the powerful.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

As currently implemented, Biosphere Reserves can, with genuine commitment of management staff, attain a certain degree of success with respect to biodiversity conservation and community development at the regional level, however, they will not succeed in achieving sustainable community development, socially or ecologically. The limitations on the success of Biosphere Reserves boil down to two main causes:

1) The Biosphere Reserve model as devised by UNESCO, and its implementation in Mexico, remains rooted in the mainstream Yellowstone model of biodiversity conservation at the international, national, and regional levels, despite the adoption of community development and community participation initiatives. In particular, the limits of core areas are inflexible, and have been enforced using old coercive tactics of issuing fines and erecting fences, even suspicious government tactics of community displacement. These factors are in direct contradiction to the adaptive management strategy adopted by the SMBR and the MAB-UNESCO programme. Moreover, the absence of a clear mechanism for *campesinos* to engage in informed decision-making in the establishment and management of core areas, and the formulation and implementation of community sustainable development projects, propagates the problems associated with colonial-style conservation. This persistence, despite the strong focus on community development initiatives in theory and practice, is indicative of the roots Biosphere Reserves being planted in mainstream conservationist thinking that views humans and nature as separate and incompatible entities.
2) Secondly, the broader Neoliberal policies undertaken at the National level and International levels, and in which Biosphere Reserves are embedded, are in direct conflict with the objectives of Biosphere Reserves. Neoliberal policy packages, such as the ratification of the North American Free Trade Agreement (NAFTA), are perpetuating the larger socio-economic conditions are marginalizing Mexican rural communities, and impeding the success of the community development and biodiversity conservation successes of Biosphere Reserves. The incongruence of

the dual objectives of sustainable development and Neoliberalism by both the Mexican government and the World Bank suggests one or both of two possibilities: 1. Biosphere Reserves are viewed to serve merely as a means to appease public outcries for poverty alleviation, social participation, and environmental protection. 2. Biosphere Reserves are regarded as means to secure natural resources and biodiversity for broader neoliberal development goals, such as pharmaceutical and industrial development.

RECOMMENDATIONS

Several recommendations can be drawn from the discussion presented in Chapter 4 and the central conclusions presented above. These are:

On a general level:

1) To establish a clear mechanism for community participation and ensure the right of local people to informed decision-making prior to the establishment of Biosphere Reserves, in the determination of core area limits, and in the formulation and implementation of community sustainable development projects. Ensuring that communities be involved from the inception of Biosphere Reserves will help mitigate problems associated with community distrust with regards to governments motives, and increase the confidence of historically marginalized people in being active players in their own development. This would inevitably entail greater time requirements prior to Biosphere Reserve establishment, but would pay-off in the longer term through stronger community participation and improved engagement in sustainable community development and biodiversity protection.
2) To enable the boundaries and uses of the core zones to be flexible so that they are able to better reflect the evolving aspects of ecosystems and goals of conservation efforts.
3) To integrate consensus-building approaches and conflict resolution strategies into the management of Biosphere Reserves.

Pertaining more specifically to Mexico:

4) For the Mexican agrarian authorities to settle land tenure requests and conflicts.
5) Increase the social science representation amongst employees working with the national level agency responsible for the implementation of Biosphere Reserves and rural sustainable development (CONANP) to increase the attention given to the social and economic aspects of environmental degradation and biodiversity conservation.
6) Determine means by which the community members can engage in alternative forms of economic development based not on temporary work provided by the government and that perpetuate paternalism, but on initiatives that will lead to long-term sustainability, greater self-reliance, and confidence-building. Projects of this sort include analog forestry, the development of non-timber forest products, organic agriculture, and kitchen gardens.
7) Enable individual Biosphere Reserves to work more closely with government dependencies on social issues such as alcoholism. While this issue was not fully analysed, as it is an area more closely related to social work, it is nevertheless an important issue that is indicative of the broader social problems that rural communities are facing.

Pertaining specifically to the SMBR:

8) To increase the social science representation amongst employees of the DRBSM.
9) To create a committee with local community members to devise long-term sustainable community development initiatives to move away from the incentive-based participation of PET programmes.
10) To increase the lines of communication with organizations and researchers, despite differing ideologies. More specifically, to incorporate representatives of these organizations and researchers into the AC of the SMBR.
11) To integrate consensus-building and conflict resolution strategies in the AC of the SMBR
12) For the IMECBIO to increase social research relating to community development, social work, and self-confidence building amongst the communities of the SMBR.

13) To create as a long-term objective the management of the SMBR by community members.

If Mexico continues along a path of economic liberalisation and Neoliberalism, sidelining the needs of the poor in the quest for economic growth, this will further impede the success of Biosphere Reserves as well as all sustainable development pursuits in rural areas of Mexico that already suffer from unfavourable social and economic conditions. The lingering aspects of top-down and coercive methods of conservation in the implementation of Biosphere Reserves also serve as a plea for continued focus on community-based and socially just initiatives. It is important to take into account that such ideological shifts take time, and Mexico has made significant progress in the last ten years both in terms of environmental and social justice. At the international level, the shift away from mere economic growth in MSD and similar shift away from strict conservation in CSD is an indication that the human-nature divide may be beginning to close in. Nevertheless, some examples suggest that conservation is being used as yet another means of increasing access to natural resources in marginalized biodiverse areas. The lack of such exploitation in the Sierra de Manantlán brings hope that a more socially just strategy of rural sustainable development may one day become ubiquitous.

ANNEXE A: PERSONAL COMMUNICATIONS

Interviews (formal and informal):

	Person	Position	Date
1	Erika Domínguez	Director of Social Participation, CONANP	23/06/03
2	José Juan Arriola Arroyo	Subdirector of Programme Design and Operations, CONANP	17/06/03
3	Rodolfo Roldán	Employee, Consulting Agency pg-7	15/05/03
4	Andrés Lutopi Escalante	Applied Anthropologist, IUCN	19/06/03
5	Luís Eugenio	Director, IMECBIO	06/06/03
6	Martín Gómez García	Director, DRBSM	various dates between 01/09/03 and 02/07/2003
7	Hugo	Sector Head # 1, DRBSM	20/05/03
8	Juan José	Sector Head # 2, DRBSM	17/05/03
9	Trinidad	Sector Head # 3, DRBSM	17/05/03
10	Oscar	Sector Head # 4, DRBSM	29/05/03
11	Oscar	Sector Head # 4, DRBSM	13/05/03
12	Miguel	seasonal worker, DRBSM	30/05/03
13	Rubén	Head of Forest Fire Prevention and Control, DRBSM	17/04/03
14	Leyla	Coordinator of Logistics and Gender Equity	26/11/2002
15	Pedro Figueroa	Researcher, IMECBIO	04/06/03
16	Peter Gerritzen	Researcher, IMECBIO	06/06/03
17	Victor Villabazco	Researcher, IMECBIO	09/06/03
18	Gerardo Cruz	Researcher, IMECBIO	10/07/03
19	Enrique Jardel	Researcher, IMECBIO	09/06/03
20	Enrique Jardel	Researcher, IMECBIO	01/07/03
21	Rocio	Coordinator of Ayotitlán Projects, UACI	15/06/03
22	Davíd	RASA member and IRNA student	11/06/03
23	Darcy Tetreault	academic researcher, University of Guadalajara	05/03/03
24	Imelda	Secretary of former Ayotitlán Cooperative	28/06/03
25	Julian	Tree Nursery Caretaker, Ayotitlán	22/05/03
26	Rosa	Women's Group Participant, Cuzalapa	23/05/03
27	José Jímenez	Jefe del Monte, El Terrero	29/05/03
28	two community members of the ejido El Terrero		29/05/03
29	Don Emilio	Comisariado of the Indigenous Community of Zacualpan	14/05/03

ANNEXE A: PERSONAL COMMUNICATIONS (continued)

30	anonymous	community member of the Indigenous Community of Zacualpan	01/00/00
31	Oscar Sanchez	community member of El Terrero	25/06/03
32	anonymous	ejidatario of Toxin	15/05/03

ANNEXE A: PERSONAL COMMUNICATIONS (continued)

Electronic Communications:

email Martin Gómez García #1	29/06/04
email Martin Gómez García #2	03/07/04
email José Juan Arriola Arroyo	24/09/04

Participant Observations:

Event	Date	Location	Organising Body
Advisory Committee Meeting	02/09/02	Autlán de Navarro	DRBSM
Advisory Committee Meeting	11/09/02	Colima	DRBSM
Gender Equity Workshop	08/04/03	Cuzalapa	DRBSM
World Bank Evaluation Tour of the SMBR	13-14/05/03	Various locations in the SMBR	DRBSM and the World Bank
Second Participatory Monitoring and Evaluation S	27-28/05/03	Ej.Toxín	DRBSM
Organic Agriculture Workshop	29-30/04/2003	Telcruz, Ej.Ayotitlán	RASA and UACI
Participatory Monitoring and Evaluation Systems \	30-31/04/2003	Nido de La Paloma, Ej. Toxín	DRBSM and CONANP

BIBLIOGRAPHY

Adams, J. S., & McShane, T. O. (1996). *The myth of wild Africa: Conservation without illusion.* Berkeley: University of California.

Adger, W. N., Benjaminsen, T. A., Brown, K., & Svarstad, H. (2001). Advancing a political ecology of global environmental discourses. *Development and Change, 32*, 681-715.

Agrawal, A., & Gibson, C. C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development, 27*(4), 629-649.

Alexander, N., Foster, P., Ishii-Eiteman, M., Carrere, R., Sundar, A., Welch, C., et al. (2002). *Marketing the Earth: The World Bank and sustainable development*: Friends of the Earth and The Halifax Initiative.

Apffel Marglin, F., & Chandra Mishra, P. (1993). Sacred Groves Regenerating the Body, the Land, the Community. In W. Sachs (Ed.), *Globlal ecology: A new arena of political conflict* (pp. 197-207). Halifax: Zed Books.

Baird Callicott, J., Crowder, L. B., & Mumford, K. (1999). Current Normative Concepts in Conservation. *Conservation Biology, 13*(1), 22-35.

Barber, K. (Ed.). (2001). *The canadian Oxford dictionary.* Don Mills: Oxford University Press.

Barborak, J. R. (1995). Institutional Options for Managing Protected Areas. In J. A. McNeely (Ed.), *Expanding Partnerships in Conservation* (pp. 30-38). Washington D.C.: Island Press.

Barcena, A., & Payne, N. D. (1995, Winter). Stewardship and Sustainable Development. *National Forum, 75,* 33-45.

Barkin, D.*Wealth, poverty and sustainable development: contributions to an alternative strategy.* Retrieved March 12, 2002

Barkin, D. (2001). Neoliberalism and popular sustainable development. In H. Veltmeyer & A. O'Malley (Eds.), *Transcending Neo-liberalism: community-based development in Latin America.* Connecticut: Kumarian Press.

Barkin, D. (2004). A strategy to create new beneficiaries from world trade. *Agricultura, Sociedad y Desarrollo, 1*(1), 35-52.

Barkin, D. (not available). *Wealth, poverty and sustainable development: contributions to an alternative strategy.* Retrieved March 12, 2002

Barrow, C. J. (2003). *Environmental change and human development: Controlling nature?* New York: Oxford University Press.

Bensinger, K. (2003, December 17, 2003). *Mexican corn comes a cropper*. Retrieved March 2,, 2004

Benton, T. (1994). Biology and social theory in the environmental debate. In M. Redclift & T. Benton (Eds.), *Social theory and the global environment* (pp. 28-50). London and New York: Routledge.

Blackburn, J., & Holland, J. (1998). *Who Changes? Institutionalising participation in development*. London: Intermediate Technology Publications.

Blaickie, P. M., & Brookfield, H. (Eds.). (1987). *Land degradation and society*. London and New York: Methuen.

Blomstrom, M., & Hettne, B. (1984). Theories of Growth and Modernization. In *Development theory in transition* (pp. 8-26). London: Zed Books.

Blühdorn, I. (2000). Ecological modernization and post-ecological politics. In G. Spaargaren, P. J. Mol & F. H. Buttel (Eds.), *Environment and global modernity* (pp. 208-228). London: SAGE Publications.

Bray, D. B. (1997). *Notes on Grassroots Sustainable Development and Biodiversity Conservation in Mexico*. Retrieved March 17, 2002, from http://www.planeta.com/planeta/98/0298cgbd.html

Bray, D. B., Merino, L., Negreros-Castillo, P., Segura-Warholtz, G., Torres-Rojo, J. M., & Vester, H. F. M. (2003). Mexico's community-managed forests as a global model for sustainable landscapes. *Conservation Biology, 17*(3), 672-677.

Brenner, L. (2006). Áreas Naturales Protegidas y Ecoturismo: El caso de la Reserva de la Biosfea Mariposa Monarca, México. *Relaciones 105, 27*(Winter), 237-265.

Brohman, J. (1996). Refocusing on needs. In *Popular Development* (pp. 8-23). Malden, Ma: Blackwell.

Brown, J., & Mitchell, B. (1999). Private Initiatives for Protected Areas in South America. In S. Stolton & N. Dudley (Eds.), *Partnerships for protection: New strategies for the planning and management for protected areas* (pp. 173-184). London: Earthscan Publications.

Carlsen, L. (2002). *Self-determination and autonomy in Latin America: One step forward, two steps back*. Alburquerque: Interhemispheric Resource Centre (IRC), Institute for Policy Studies (IPS).

Castillo, A., & Toledo, V. (2000). Applying ecology in the Third World: The case of Mexico. *Bioscience, 50*(1), 66-76.

Cleaver, H. (1997). *Nature, Neoliberalism and Sustainable Development: Between Charybdis & Scylla?* Retrieved October 25, 2005, from http://www.eco.utexas.edu/Homepages/Faculty/Cleaver/port.html#*

Colchester, M. (1994). *Salvaging Nature: Indigenous Peoples, Protected Areas and Biodiversity Conservation.* Retrieved 03/12/2003, 2003, from www.wrm.org.uy/subjects/nature.html

Colchester, M. (2000). Self-Determination or Environmental Determinism for Indigenous Peoples in Tropical Forest Conservation. *Conservation Biology, 14*(5), 1365-1367.

Colchester, M. (2001). This park is no longer your land. *The UNESCO Courier*(July/August).

Colchester, M. (2004). Conservation Policy and Indigenous Peoples. *Cultural Survival Quarterly, Environment and Natural Resources*(28.1), www.culturalsurvival.org/publications/csq.

CONANP. (2005, July 27). *Reservas de la Biosfera.* Retrieved November 12, 2005, from http://www.conanp.gob.mx/anp/rb.php

Craig, G. (1998). Community development in a global context. *Community Development Journal, 3*(1), 2-17.

Cronon, W. (1983). *Changes in the land: Indians, colonists, and the ecology of New England.* New York: Hill and Wang.

Daniels, R., & Bassett, T. J. (2002). The Spaces of Conservation and Development around Lake Nakuru National Park, Kenya. *The Professional Geographer, 54*(4), 481-490.

Davey, A. G. (1996). National system planning for protected areas. In S. Stolton & N. Dudley (Eds.), *Partnerships for protection: New strategies for planning and management for protected areas.* London: Earthscan Publications Ltd.

de Campos Mello, V. (2000). Mainstreaming the Environment: Global Ecology, International Institutions and the Crisis of Environmental Governance. *Human Ecology Review, 7*(1), 31-45.

Denevan, W. (1992). The pristine myth: The landscape of the Americas in 1492. *Association of American Geographers, 28*(3), 369-381.

Dovie, D. B. K. (2003). Detaining livelihoods and disputing biodiversity: Whose dilemma? *Ethics, Place and Environment, 6*(1), 27-41.

Doyle, A., & MacDonald, A. (2002). *Greens decry Earth Summit outcome, jeer Powell.* Retrieved August 27, 2006, from

http://www.planetark.org/dailynewsstory.cfm/newsid/17637/newsDate/6-Sep-2002/story.htm

DRBSM. (2001). *Conservación y Restauración Ecológica: Protección y vigilancia, diagnóstico de ilícitos dentro de la Reserva durante 1995-2000.* Autlán de Navarro: CONANP.

Dudley, N., Hockings, M., & Stolton, S. (1999). Measuring the Effectiveness of Protected Area Management. In S. Stolton & N. Dudley (Eds.), *Partnerships for Protection: New strategies for planning and management for protected areas* (pp. 249-257). London: Earthscan Publications.

Dunning, J. H. (Ed.). (2003). *Making globalization good: The moral challenges of global capitalism.* New York: Oxford University Press.

Elford, D. (2002). Conservation by Self-Determination in Central America. *Fourth World Journal, 5*(1), 98-149.

Erdos, J. E. (1998). *Biodiversity in the Amazon: Promoting indigenous stewardship as policy.* Retrieved December 14, 2003, from http://www.planeta.com/planeta/98/0298amazon.html

Escobar, A. (1998). Whose knowledge, whose nature? Biodiversity, conservation, and the Political Ecology of social movements. *Journal of Political Ecology, 8*, 53-82.

Esteva, G., & Prakash, M. S. (1997). From Global Thinking to Local Thinking. In M. Rahnema & V. Bawtree (Eds.), *The Post-Development Reader* (pp. 277-289). Halifax: Fernwood Publishing.

Europaworld. (2004, January 1). *Biosphere Reserves for Sustainable Development.* Retrieved November 12, 2005, from http://www.europaworld.org/week162/biosphere30104.htm

Furzy, B., De Lacy, T., & Birckhead, J. (1996). *Culture, conservation and biodiversity: The social dimension of linking local level development and conservation through protected areas.* Chichester: John Wiley and Sons.

Gallopin, G. C., & Winograd, M. (1995). Ecological prospectives for tropical Latin America. In T. Nishizawa & J. I. Uitto (Eds.), *The fragile tropics of Latin America.* New York: United Nations University.

GEF. (2006). *What is the GEF?* Retrieved June 26, 2006, from http://www.gefweb.org/What_is_the_GEF/what_is_the_gef.html

Gerritsen, P. (1998). Community development, natural resource management and biodiversity in the Sierra de Manantlán Biosphere Reserve, México. *Community Development Journal, 33*(4), 314-324.

Ghai, D., & Vivian, D. V. (1992). *Grassroots environmental action: People's participation in sustainable development.* London and New York: Rootledge.

Gil-García, J. R. (not available). Article 27: The Change in Mexican Agrarian Policy and the Policy Formulation Process in the Developing World. *Reckelfeller Colleg Review, 1*(2), 15.

Giugale, M. M., Lafourcade, O., & Nguyen, V. H. (Eds.). (2001). *Mexico: A comprehensive development agenda for the New Era.* Washington, D.C.: The World Bank.

Gómez, E. (2002). *Sobre la Reserva Ecológica Campesin en los Chimalapas: Movimiento campesino y ecología comunitaria.* Retrieved January 14, 2003, from http://www.angelfire.com/on4/tjfzln/chima.html

Gómez-Pompa, A., & Kaus, A. (1999). From prehispanic to future conservation alternatives: Lessons from Mexico. *Proceedings from the Natural Academy of Science of the United States of America (PNAS), 96*(11), 5982-5986.

Gow, D. D., & Vansant, J. (1983). Beyod the Rhetoric of Rural Development Participation: How can it be done? *World Development, 11*(5), 427-446.

Graf Montero, S., Jardel Peláez, E., Santana, C., Eduardo, & Gómez G., M. (1999, November 3-5). *Instituciones y gestión de Reservas de la Biosfera: El caso de la Sierra de Manantlán, México.* Paper presented at the Seminario del Proyecto Investigación Interdisciplinaria en las Reservas de la Biosfera, Buenos Aires, Argentina.

Graf Montero, S., & Justo, R. (2001). *Proceso de gobierno, empoderamiento y manejo de áreas naturales protegidas, el caso de la Reserva de la Biosfera Sierra de Manantlán.*Unpublished manuscript, Autlán de Navarro.

Graf Montero, S., Santana, C., Eduardo, Jardel Peláez, E., & Benz, B. B. (1995). La Reserva de la Biosfera Sierra de Manantlán: un balance de ocho años de gestión. *Revista Universidad de Guadalajara, Número especial: Conservación Biológica en México*(March-April), 55-61.

Gudynas, E. (1993). The fallacy of ecomessianism: Observations from Latin America. In W. Sachs (Ed.), *Global Ecology* (pp. 170-178). London: Zed Books.

Guha, R., & Martinez-Allier, J. (1997). *Varieties of environmentalism: Essays North and South.* London: Earthscan Publications.

Guijit, I., & Shah, M. (Eds.). (1998). *The Myth of Community; gender issues in participatory development.* London: Intermediate Technology Publications.

Hadley, M. (Ed.). (2002). *Biosphere reserves: Special places for people and nature.* Paris: UNESCO.

Hallman, D. G. (1992). *A place in Creation: Ecological visions in science, religion, and economics*. Toronto: The United Church Publishing House.

Healey, R. G. (1997, April 16-19). *Ecotourism in Mexico: National and regional policy contexts.* Paper presented at the Annual Meeting of the Latin American Studies Association, Guadalajara.

Hettne, B. (1990). *Development Theory and the Three Worlds*. New York: Longman.

Hulme, D., & Murphree, M. (Eds.). (1999). *Communities, wildlife and the 'New Conservation' in Africa*. London: John Wiley & Sons.

IDRC.*Monarch Butterfly Model Forest*. Retrieved November 18, 2002, from www.idrc.ca/imfn/

IUCN. (1998). *Biosphere reserves- myth or reality? Proceedings of the Workshop on Biosphere Reserves at World Conservation Congress in Montreal, 1996.* Gland, Switzerland and Cambridge, United Kingdom: IUCN and UNESCO-MAB Programme.

IUCN. (2002). *Monarch Butterfly Model Forest, Mexico*. Retrieved October 18, 2002, from www.idrc.ca/imfn/

Jardel Peláez, E. (1998). Efectos ecológicos y sociales de la explotación maderera de los bosques de la Sierra de Manantlán. In R. Ávila, J. P. Emphoux, L. G. Gastélum, S. Ramírez, O. Shöndube & F. Valdez (Eds.), *El occidente de México: arqueología, historia y medio ambiente*. Guadalajara: Universidad de Guadalajara/ Instituto Francés de Investigación Científica para el Desarrollo en Cooperación (ORSTOM).

Jardel Peláez, E., Santana, C., Eduardo, Graf Montero, S., Iñiguez D., L. I., & Robert, O. (1999). Investigación científica y manejo de recursos naturales el la Reserva de la Biosfera Sierra de Manantlán. In K. Oyama & A. Castillo (Eds.), *Manejo, conservación y restauración de recursos naturales en México: Perspectivas desde la investigación científica*. México, D.F.: Siglo XXI, in press.

Jeanrenaud, S. (1999). People-oriented conservation: progress to date. In S. Stolton & N. Dudley (Eds.), *Parterships for protection: New strategies for planning and management for protected areas*. London: Earthscan Publications.

Jones, E., & Wersch, G. (1990). Developing a natural balance: Mexico's Sian Ka'an faces thechallenge of preserving the environment while accommodating man's presence. *Americas, 42*(3), 27-35.

Keller, R. H., & Turek, M. F. (1998). *American Indians and National Parks*. Tucson: The University of Arizon Press.

Kemf, E. (Ed.). (1993). *The law of the mother: Protecting indigenous peoples in protected areas*. San Francisco: Sierra Club Books.

Khor, K. P. (2001). *Rethinking globalization: critical issues and policy choices*. New York: Zed Books.

Klooster, D. (2000). Community Forestry and Tree Theft in Mexico: Resistance or complicity in conservation? *Development and Change, 31*, 281-305.

Kolawole, A. (1982). The Role of Grassroots Participation in National Development: Lessons from the Kwara State of Nigeria. *Community Development Journal, 17*(2), 121-133.

Korten, D. C. (1999). *The post-corporate world: Life after capitalism*. San Francisco and West Harford: Berret-Koehler Publishers and Kumarian Press.

Kremen, C., Merenlender, A. M., & Murphy, D. (1994). Ecological Monitoring: A vital need for Integrated Conservation and Development Programs in the Tropics. *Conservation Biology, 8*(2), 388-397.

Kull, C. A. (2002). Empowering Pyromaniacs in Madagasgar: Ideology and Legitimacy in Community-Based Natural Resource Management. *Development and Change, 33*, 57-78.

Larson, A. M. (2002). Natural resources and decentralisation in Nicaragua: Are local governments up to the job? *World Development, 30*(1), 17-31.

Laserre, P., & Hadley, M. (1997). Biosphere reserves: A network for biodiversity. *Ecodecision, 23*(Winter), 34-38.

Leach, M., Mearns, R., & Scoones, I. (1999). Environmental entitlements: Dynamics and institutions in Community-Based Natural Resource Management. *World Development, 27*(2), 255-247.

Leader-Williams, N., Kayera, N., & Overton, G. L. (Eds.). (1996). *Community-based conservation in Tanzania*. Gland, Switzerland: The World Conservation Union (IUCN).

Leeuwis, C. (2000). Reconceptualizing Participation for Sustainable Rural Development: Towards a negotiating approach. *Development and Change, 31*, 931-959.

Leis, H. R., & Viola, E. J. (1995). Towards a sustainable future: The organizing role of ecologism in the north-south relationship. In F. Ficher & M. Black (Eds.), *Greening environmental policy: The politics of a sustainable future* (first ed., pp. 221). New York: St Martin's Press.

Lipietz, A. (1992). *Towards a new economic order: Postfordism, ecology and democracy* (M. Slater, Trans.). New York: Oxford University Press.

Lohmann, L. (1993). Resisting green globalism. In W. Sachs (Ed.), *Global ecology: A new arena of political conflict* (pp. 159-169). Halifax: Zed Books.

Lyons, M., Smuts, C., & Stephens, A. (2001). Participation, empowerment and sustainability: (How) do the links work? *Urban Studies, 38*(8), 1233-1251.

Manning, S. E. (1996). *Politics and economic change in Mexico: Neoliberalism, the state, and civil society*. Baltimore: John Hopkins University, Working Paper #19.

Martino, D. (2001). Buffer zones around protected areas: A brief literature review. *Electronic Green Journal*, 3.

Martinussen, J. (1997). Theories of Growth and Modernization. In *Society, state and the market* (pp. 56-72). New York: Zed Books.

McDermott Hughes, D. (2001). Cadastral politics: The making of community-based resource management in Zimbabwe and Mozambique. *Development and Change, 32*(741-768), 741-768.

McGrath, N., Marinova, D., & Newman, P. (2005, 30/01/2005). *Crossing Borders Through Reflective and Participatory Practice: Learning, researching, teaching and facilitating sustainability*. Retrieved December 6, 2005, from http://lsn.curtin.edu.au/tlf/tlf2005/refereed/mcgrath.html

McNeely, J. A. (Ed.). (1995). *Expanding Partnerships in Conservation*. Washington D.C.: Island Press.

Mexico- Consolidation of the Protected Areas System Project (GEF). (2002). The World Bank.

Miller, K. R. (1996). *Balancing the scales: Guidelines for increasing biodiversity's chances through bioregional management*. US: Word Resources Institute.

Moncada, G. (1999). *Los Chimalapas: Trouble in paradise*. Retrieved February 22, 2005, from http://www.mexicodesconocido.com.mx/english/naturaleza/otras_areas_naturales_prot/detalle.cfm?idsec=9&idsub=0&idpag=2056

Murombedzi, J. (1999). Devolution and stewardship in Zimbabwe's CAMPFIRE programme. *Journal of International Development, 11*, 559-582.

Nadal, A. (2000). Mexican corn: Genetic variability and trade liberalization. *Procientic, Documento de Trabajo 1-06*.

Negi, C. S., & Nautiyal, S. (2003). Indigenous peoples, biological diversity and protected area management- policy framework towards resolving conflicts. *International Journal of Sustainable Development and World Ecology, 10*(2), 169-179.

Neumann, R. P. (1997). Primitive ideas: Protected area buffer zones and the politics of land in Africa. *Development and Change, 28*, 559-582.

Nietschmann, B. (1997). Protecting indigenous coral reefs and sea territories. Miskito Coast Raan, Nicaragua. In S. Stevens (Ed.), *Conservation through cultural survival: Indigenous peoples and protected areas* (pp. 193-224). Washington, D.C.: Island Press.

O'Riordan, T., & Stoll-Kleemann, S. (Eds.). (2002). *Biodiversity, sustainability, and human communities: Protecting beyond the protected.* Toronto: Cambridge University Press.

Otero, G. (2000). Neoliberal reform in rural Mexico: Social Structure and Political Dimensions. *Latin American Research Review, 35*(1), 187-209.

Paulson, J. (2000). Fake Greenery: The Mexican Government uses 'Environmentalism' to repress the Zapatistas. *NACLA Report on the Americas, 34*(1), 1-3.

Phillips, A. (1996). Biosphere reserves and protected areas: What is the difference? In *Biosphere reserves- myth or reality? proceedings of the Workshop on Biosphere Reserves, World Conservation Congress*. Montreal: IUCN.

Pimbert, M. P., & Pretty, J. N. (1995). *Parks people and professionals: Putting "participation" into protected area management.* Geneva: United Nations Research Institute for Social Development (UNRISD).

Pinzón Rueda, R., & Lima Feitosa, M. (1999). Extractive Reserves: The use of protected areas to promote sustainable management. In S. Stolton & N. Dudley (Eds.), *Partnerships for protection: New strategies for planning and management for protected areas* (pp. 215-223). London: Earthscan Publications.

Rabold, J. (2005). *A Guide to Yosemite National Park.* Retrieved Sept.28, 2005, from http://jrabold.net/yosemite/intro.htm

Rahman, A. (1993). *People's self-development: Perspectives on participatory action research.* New Jersey: Zed Books.

Rakotonindrina, R. (1998). The Economic Reality of Participation of Local Communities in Biosphere Reserves: A case of Madagascar. In IUCN (Ed.), *Biosphere reserves- myth or reality? Proceedings of the Workshop on Biosphere Reserves at World Conservation Congress in Montreal, 1996.* (pp. 29-33). Gland, Switzerland and Cambridge, United Kingdom: IUCN and UNESCO-MAB Programme.

Rojas, R. (Ed.). (1996). *La comunidad y sus recursos: Ayotitlán ¿desarrollo sustentable?* (first ed.). Guadalajara, Jalisco: Universidad de Guadalajara and Instituto Nacional Indigenista.

Rosas-Hernandez, M. I. (2001). *Participatory Environmental Policy Processes: The case study of Advisory Councils in Protected Areas in Mexico.* Unpublished Master of Arts, University of Sussex, Sussex.

Russell, V., & Lassoie, J. (1998, June 10-14). *The Chimalapas Ecological Campesino Reserve: The golden gourd of conflict and its role in protected area management.* Paper presented at the seventh annual conference of the International Association for the Study of Common Property, Vancouver.

Sachs, W. (1992). *The Development Dictionary.*

Sachs, W. (1993). *Globlal ecology: A new arena of political conflict.* Halifax: Zed Books.

Sachs, W. (1995). *The political anatomy of "Sustainable Development"* (No. 35). Wuppertal, Germany: Wuppertal Institute fro Climate, Energy, and Environment.

Sachs, W. (2001). Rio+10 and the North-South divide. *World Summit Papers*, 1-16.

Salinas-León, R.*Green Herrings: NAFTA and the Environment.* Retrieved November 21, 2003, from http://www.cato.org/pubs/regulation/reg16n1a.html

Sayer, J. A. (1999). Globalization, Localization, and Protected Areas. In S. Stolton & N. Dudley (Eds.), *Partnerships for protection: New strategies for planning and management for protected areas* (pp. 29-40). London: Earthscan Publications.

Scholte, J. A. (2002). *The sources of neoliberal globalisation.* Geneva: United Nations Research Institute for Social Development (UNRISD).

Schücking, H., & Anderson, P. (1991). Voices unheard and unheeded. In *Biodiversity: Social and ecological perspectives.* Penang: World Rainforest Movement.

SEMARNAP. (1988). General Law of Ecological Balanace and Enironmental Protection (pp. 97). Mexico, Mexico: Procuraduría Federal de Protección al Ambiente.

SEMARNAT. (2000). *Programa de Manejo de la Reserva de la Biosfera Sierra de Manantlán, México* (First ed.): Instituto Nacional de Ecología.

SEMARNAT. (2005). *PET.* Retrieved June 12, 2004, from http://www.semarnat.gob.mx/dgpairs/dfi/que_pet.shtml

Shiva, V. (1993). The Greening of the Global Reach. In W. Sachs (Ed.), *Global Ecology* (pp. 149-156). Halifax: Zed Books.

Shiva, V., Anderson, P., Schucking, H., Gray, A., Lohmann, L., & Cooper, D. (1991). *Biodiversity: Social and ecological perspectives.* Penang, Malaysia: World Rainforest Movement with Zed Books.

Shiva, V., Anderson, P., Schücking, H., Gray, A., Lohmann, L., & Cooper, D. (1994). Conflicts of Global Ecology: Environmental activism in a period of global reach. *Alternatives, 19*, 195-207.

Sibanda, B. M. C., & A.K, O. (1996). Some reflections on conservation, sustainable development and equitable sharing of benefits from wildlife in Africa: The case of Zimbabwe and Kenya. *South African Journal of Wildlife and Research, 26*(4), 175-181.

Simonian, L. (1995). *Defending the land of the Jaguar: a history of conservation in Mexico*. Austin: University of Texas Press.

Smith, B. C. (1998). Participation without power: Subterfuge or development? *Community Development Journal, 33*(3), 197-204.

Spaargaren, G., Mol, P. J., & Buttel, F. H. (Eds.). (2000). *Environment and Global Modernity*. London: SAGE Publications.

Spinage, C. (1998). Social change and conservation misrepresentation in Africa. *Oryx, 32*(4), 265-276.

Steinberg, M. (1993). Protecting wildlands through culturally compatible conservation. *Environmental Conservation, 20*(3), 260-262.

Stevens, S. (1997a). The legacy of Yellowstone. In S. Stevens (Ed.), *Conservation through cultural survival: Indigenous peoples and protected areas* (pp. 13-32). Washington, D.C.: Island Press.

Stevens, S. (Ed.). (1997b). *Conservation through cultural survival: Indigenous peoples and protected areas*. Washington, D.C.: Island Press.

Stolton, S., & Dudley, N. (Eds.). (1999). *Partnerships for protection: New strategies for planning and management for protected areas*. London: Earthscan Publications.

Strong, M. (2000). *Where on Earth are we going?* (First ed.). Toronto: Alfred A. Knopf Canada.

Sustainable Development Timeline. (1997). Retrieved May 14, 2006, from http://www.iisd.org/rio+5/timeline/sdtimeline.htm

Tangley, L. (1988). A new era for biosphere reserves: Mexico's Sian Ka'an shows that it's hard to be everything a biosphere should be. *Bioscience, 38*(3), 148-155.

Tetreault, D. V. (2001). *Environmental degradation, poverty, and sustainable development: A case study of rural Mexico and the community of Ayotitlán.* Saint Mary's University, Halifax.

Torgerson, D. (1995). The uncertain quest for sustainability: Public discourse and the politics of environmentalism. In F. Ficher & M. Black (Eds.), *Greening environmental policy: The politics of a sustainable future* (first ed., pp. 221). New York: St Martin's Press.

UACI. (2001). *La creación de un espacio universitario adecuado con las comunidades indígenas*.Unpublished manuscript, Guadalajara.

UNESCO. (1995). The Seville Strategy for Biosphere Reserves. *Nature and Resources, 31*(2), 2-17.

UNESCO. (2005, July 7). *Complete List of Biosphere Reserves*. Retrieved November 25, 2005, from http://www.unesco.org/mab/brlist.htm

UNESCO. (2006). *People, Biodiversity and Ecology*. Retrieved June 25, 2006, from http://www.unesco.org/mab/BRs.shtml

Veltmeyer, H. (2001). The Quest for Another Development. In H. Veltmeyer & A. O'Malley (Eds.), *Transcending Neo-liberalism: Community-based development in Latin America* (pp. 1-24). Connecticut: Kumarian Press.

Veltmeyer, H., & O'Malley, A. (2001). *Transcending Neo-liberalism: Community-based development in Latin America*. Connecticut: Kumarian Press.

von Droste, B. (1996). Biosphere reserves: A comprehensive approach. In J. A. McNeely (Ed.), *Expanding partnerships in conservation*. Washington D.C.: Island Press.

Weinberg, B. (2003). Mexico: Lacondon Selva Conflict Grows. *NACLA Report on the Americas, 36*(6), 26-32.

Wells, M., Brandon, K., & Hannah, L. (1992). *People and parks: Linking protected area management with local communities*. Washington D.C.: The World Bank/WWF/USAID.

Wily, L. (1999). Moving forward in African community forestry: Trading power not use rights. *Society and Natural Resources, 12*(1), 49-61.

Worster, D. (1977). *Nature's Economy: The roots of ecology*. San Francisco: Sierra Club Books.

Young, E. (1999). Local people and conservation in Mexico's El Vizcaino Biosphere Reserve. *Geographical Review, 89*(3), 364-390.

Saint Mary's University
Halifax, Nova Scotia
Canada B3H 3C3

Patrick Power Library
tel 902.420.5534
fax 902.420.5561
web www.stmarys.ca

Copyright Permission Notice

Documentation regarding permissions for the use of copyrighted material in this thesis is on file at the Saint Mary's University Archives. Contact us if you wish to view this documentation:

Saint Mary's University, Archives
Patrick Power Library
Halifax, NS
B3H 3C3

Email: archives@smu.ca
Phone: 902-420-5508
Fax: 902-420-5561