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Promoting community ecotourism enterprises in common property regimes : a stakeholder analysis and geographic information systems application in Ejido X-Maben in central Quintana Roo, Mexico

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PROMOTING COMMUNITY ECOTOURISM ENTERPRISES IN COMMON PROPERTY REGIMES: A STAKEHOLDER ANALYSIS AND GEOGRAPHIC INFORMATION SYSTEMS APPLICATION IN EJIDO X-MABEN IN CENTRAL QUINTANA ROO, MEXICO

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To: Dean R. Bruce Dunlap
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This thesis, written by Melissa K. Cornejo, and entitled Promoting Community Ecotourism Enterprises in Common Property Regimes: A Stakeholder Analysis and Geographic Information Systems Application in Ejido X-Maben in Central Quintana Roo, Mexico, having been approved in respect to style and intellectual content, is referred to you for judgment.

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ABSTRACT OF THE THESIS

PROMOTING COMMUNITY ECOTOURISM ENTERPRISES IN COMMON PROPERTY REGIMES: A STAKEHOLDER ANALYSIS AND GEOGRAPHIC INFORMATION SYSTEMS APPLICATION IN EJIDO X-MABEN IN CENTRAL QUINTANA ROO, MEXICO

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A group of community members of the ejido X-Maben in the state of Quintana Roo, Mexico are currently in the process of developing a community ecotourism enterprise (CEE) to attract both local and foreign tourism to a natural area within their ejido. Most definitions of ecotourism define the natural area of interest as a protected area and include the requirement of integrating local communities into the benefits generated by ecotourism in that particular area. However, few researchers have considered the case of community ecotourism where the natural area is on communal lands and the enterprise itself is fully community-owned. This project analyzes the institutional complexities of planning an ecotourism enterprise within the ejido of X-Maben, includes a stakeholder analysis, and involves a GIS analysis of the placement of nature trails in the ecotourism area. The thesis project also includes examinations of other efforts to establish CEEs elsewhere in Quintana Roo.

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1.1 Tourism Categories

Tourism is a dynamic global economic sector however, as observers have noted, it can frequently be damaging to the environment and very few benefits trickle down to poor people and local communities in many international tourism destinations. In response to these concerns, a category of travel known as ecotourism has emerged in recent years, which attempts to introduce themes of environmental protection and economic equity into tourism practices. Within ecotourism, a further refinement known as community-based ecotourism has more recently emerged, which attempts to center tourism development in local communities in protected or natural areas, maximizing the communities stake in environmental protection by allowing them to profit from tourist interest in these areas. However, these efforts face multiple challenges. In this thesis, I will analyze efforts to launch community-based ecotourism projects in central Quintana Roo, Mexico in order to understand both the challenges and opportunities and to draw out lessons from these efforts. I will look at these efforts through the conceptual lens of common property and social capital theories, and apply a stakeholder analysis to understand the contributions of all interested parties to this effort. Finally, because this project forms part of the Community Tropical Ecosystem Project, which attempts to make academic research useful to local land managers, I will use GIS tools in the development of maps and guides with interpretative nature trails as a contribution to the success of community-based ecotourism in this region.

The World Tourism Organization (WTO, a UN affiliate) defines tourism as "the activities of people who travel outside their usual environment for no more than one year for leisure, business, and other purposes." (Mastny, 2002). Throughout history mankind has always had the desire to explore his surroundings and experience different places and cultures. The Industrial Revolution, and the years to follow, marked a huge rise in tourism accessibility. The invention of photography produced evidence of exotic places which attracted others who wished to experience such marvels for themselves. In the first decades of the twentieth century, the invention of the automobile and the airplane, and the widespread use of each created a boom in tourism, making it feasible to travel to destinations worldwide (Ceballos-Lascuráin, 1996).

Tourism is currently the largest industry in the world and generates revenues of over $3 trillion dollars annually, roughly 11 percent of gross world product (McLaren, 1998). It is also one of the most rapidly growing industries in the world. Each year more and more people are able to travel to new destinations due to the drop in oil prices and cheaper airfares since the end of World War II. The number of international tourists has increased almost twenty-eight times since the 1950s and the numbers are expected to continue increasing. Tourism currently creates over 200 million jobs and accounts for 8 percent of the world trade in goods and services (Mastny, 2002). Because of the economic prosperity that tourism can generate, many developing nations have opened their markets to tourism in order to improve their economic situation. In the world's least developed countries, most of which are in Africa and Asia, tourism is currently the second largest source of foreign exchange after oil, and the tourism market continues to grow across these developing countries (Mastny, 2002). Although Europe and the United

States have historically attracted the most tourists, this dominance in tourism is declining and developing countries are now receiving bundles of international tourists. Travel to exotic and remote places has become increasingly popular in recent years. Many travelers are now searching for new, unexplored areas and unusual cultures (McLaren, 1998). As travel destinations have become more accessible and human desires to seek out nature experiences have increased, new forms of traditional tourism have emerged.

In addition to traditional tourism, categories known as nature-based tourism, ethnic tourism and ecotourism are now enjoying significant percentages of the tourist market. Of these, ecotourism is currently one of the most popular and fastest growing forms and is increasing by about 20 percent annually (Mastny, 2002). Although the terms "nature tourism" and "ecotourism" are often used interchangeably, most of the literature distinguishes ecotourism as a specific category of nature tourism (Ceballos-Lascuráin, 1996). Nature tourism is a broad term that includes all activities in natural areas. However, it may not always be ecologically responsible tourism (McClintock, 2000). Ecotourism can include nature-based tourism but requires ecologically sound and sustainable use of the natural resource. Ecotourism is defined by the International Ecotourism Society as "responsible travel to natural areas that conserves the environment and sustains the well-being of local people." (Mastny, 2002). Honey (1999) provides a more detailed definition that lists seven essential requirements for successful ecotourism:

Figure 1: Ecotourism Requirements (Honey, 1999)

- Ecotourism activities must involve travel to natural areas
- Ecotourism must result in minimal environmental impact.
- It must build environmental awareness.
- It provides direct financial benefits for conservation.
- It provides direct financial benefits and empowerment for local people.
- It must respect local culture.
- It supports human rights and democratic movements.

There are also other alternatives to mass tourism which may include categories such as green tourism, low-impact tourism, and cultural tourism, but none are synonymous with ecotourism and its principles unless they directly produce better protection of the area and involve local people (McClintock, 2000). These new forms of tourism have emerged out of the desire to experience and interact with nature and with other cultures. Mastny (2002) reports one study which found that in 1992 as many as 60 percent of international tourists traveled to experience nature, while 40 percent traveled specifically to observe wildlife in natural areas, such as bird watching and whale watching. Ecotourism developed in the late 1960s during a time of heightened concern about the effects of economic growth on wildlife, natural areas and all aspects of the environment (Nelson, 1994). It began with the principle of taking environmental processes into consideration when deciding on location, intensity and other

characteristics of land-use change. The main focus was initially to reduce deforestation, pollution, erosion and loss of habitat (Nelson, 1994). However, in the 1980s the concept of sustainable development was introduced with the publication of the World Conservation Strategy (WCS) by IUCN and *Our Common Future* by the World Commission on Environment and Development (WCED) (Nelson, 1994). The WCED defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Hall & Lew, 1998). Thus, the characteristics and principles of ecotourism began to evolve, focusing on the importance of sustainable development.

An important distinction between tourism and ecotourism is that an ecotourist visitor to a natural area must cause no harm to the area, whether through litter, cultural disruption, or overuse of resources, and the tourist must be in accordance to the conservation of the area (McClintock, 2000). It differs from traditional tourism, which focuses on consumption of natural resources and alteration of the natural environment. Therefore, in order to be truly successful, ecotourism must involve the protection of natural resources, conservation of the environment, and direct benefits for the local community.

Over the past decade tourism authorities, environmentalists and others have begun to embrace ecotourism as a way to deter some of tourism's negative impacts. Many have attempted to redirect current tourism activities onto a more sustainable path in order to enhance the benefits of tourism, generate jobs and revenue within the country itself, protect the environment and strengthen cultural diversity. The United Nations has also confirmed their support of this concept by declaring 2002 the International Year of

Ecotourism (Mastny, 2002). Yet whether ecotourism can achieve its goals to preserve the environment, while generating an income for local communities, is increasingly under question, due to the common "greenwashing" of tourism operators (McLaren, 1998). Many hotels and tourism projects now label themselves "ecotourism" whether they are environmentally responsible or not. These companies may involve tourism within a natural setting, yet they do not aim to conserve and protect these areas from further damage. Many tourists now call any travel that involves a natural area ecotourism without truly involving sustainable development strategies within the tourism enterprise. This phenomenon contributes to severe environmental and social impacts from the tourism industry which, in turn, has influenced the importance of establishing certification programs in order to ensure true ecotourism.

1.2 Negative Impacts of Tourism

Although tourism is the largest industry today, it is also one of the least regulated, which creates severe effects on the environment and cultures around the world (Mastny, 2002). In general, the impacts of tourism vary according to the amount of tourists an area receives. The individual tourist normally has a relatively low impact. However, problems arise when the number of tourists is large and the resource overused (Ceballos-Lascuráin, 1996). Over the last decades the environmental impacts of mass tourism have received much attention from researchers, environmentalists and conservationists. Tourism impacts can come about from the development and operation of the tourist facilities or from the tourists themselves, they may be short-term or long-term, and they may cover diverse geographical ranges (Hunter & Green, 1995). Due to the increase in world travel, many concerns about the environmental impacts are growing. While the economic

aspects of this market may be positive, there has been much destruction to fragile ecosystems across the globe. For example, the increase in airplane travel has put a strain on the environment by releasing a large source of carbon dioxide and other greenhouse gases into the atmosphere. In addition, as more and more tourists arrive to their destinations, hotels are packed and a massive consumption of resources begins. This becomes a severe problem for the environment and can also affect tourism in the long run. The U.N. Environment Programme (UNEP) estimates that the average tourist produces about two pounds of solid waste and litter each day (Mastny, 2002). Many of the tourist businesses in developing countries have limited or no sewage treatment facilities which can lead to harmful disposal of waste into nearby oceans, mangroves, beaches and rivers. Unregulated and uncontrolled tourism can cause water pollution on a local scale, thus threatening a resource whose high quality is essential for the tourism industry (Mieczkowski. 1995).

Another environmental problem caused by tourism is the alteration of natural areas. Natural and rural areas are continuously being converted to roads, airports, hotels, parking lots, and other tourist facilities, which lead to the deterioration of wildlife habitats and natural areas that may have been the reason for tourism attraction in the first place (McLaren, 1998). Regional tourism planning within developing countries tends to be poor which results in the destruction of natural areas. In addition, the mere presence of tourists in natural areas can affect archaeological sites within the ecosystems. Many tourists around the world leave plastic water bottles, soda cans, and paper products littered around natural and cultural areas. These fragile cultural areas are severely threatened and the disturbance of them can result in a loss of irreplaceable information

(Ceballos-Lascuráin, 1996). In other fragile natural settings, tourists can trample vegetation, disturb unique wildlife, leave behind waste, and even bring in exotic species that ruin these ecosystems. Thus, the environmental damage created by mass tourism can, in turn, hurt the tourism industry by destroying the attractions that initially lure the tourists to these areas (McLaren, 1998). As stated by Mieczkowski (1995), indeed tourism can destroy tourism. Thus, the necessity of sustainable ecotourism arises.

The alternatives of tourism, such as community-based ecotourism in which the development and management is entirely carried out by local people for their own benefit and creates an incentive for the community to preserve their natural areas (Norris et al., 1998), reflect the growing awareness of the importance of environmental conservation, cultural preservation, and decentralized political and economical decision-making (McLaren, 1998). Community-based ecotourism has the potential to create economic benefits for local people, encourage local empowerment and social capital, while promoting conservation of natural areas. Without a doubt, ecotourism may have positive effects on the environment and local communities if well managed and developed (Ceballos-Lascuráin, 1996). Thus, community participation in the decision-making process of ecotourism development is a key issue in ensuring the success and sustainability of tourism (Wahab, 1997). A particular feature in Mexico and in some other countries is that the natural area of ecotourism interest is directly owned by the community. Thus, community based ecotourism represents a direct link between conservation and economic development for the local community, creating an incentive for the community to preserve their natural areas (Norris et al., 1998).

For purposes of this thesis, it is particularly important to note the last three items in Honey's detailed definition of ecotourism (Table 1), that local people must be benefited and empowered, that local culture must be respected, and that human rights and democracy be supported. This all argues that community participation in the decision-making process of ecotourism development is a key issue in ensuring the success and sustainability of tourism (Wahab, 1997). But Honey and others who provided the first definitions of ecotourism had only one land tenure model for ecotourism, that of formal protected areas with local communities living within or on the edges of the protected area (Honey, 1999). A case where communities might directly own a natural area of tourist interest was not explicitly considered. Yet, given that Mexico's land tenure system (discussed below) grants widespread ownership of rural lands to local communities, it is a very common case in Mexico for natural areas of tourist interest to be in the hands of local communities.

1.3 Community-Based Ecotourism (CBE)

Worldwide, indigenous and local peoples are becoming more involved in the ecotourism industry (Zeppel, 1998). The spread of tourism into remote areas often coincides with regions that are the traditional homelands for groups of indigenous communities and local communities. In geographic terms, these regions encompass mountains, deserts, polar areas and tropical rainforests. Thus, these regions are very fragile environments and require sustainable tourism practices so that the indigenous and local communities may continue to flourish (Zeppel, 1998). As indicated, ecotourism is a low-impact form of tourism where the tourists are motivated by trends in environmental awareness and nature conservation. Although negative environmental effects may be

caused from tourism, sustainable community-based ecotourism, in turn, can generate many positive environmental and sociocultural benefits (Van der Straaten, 2000). CBE can be a source of funding to protect natural resources and to improve community development (Norris et al., 1998). Many ecotourists, along with the participation of NGOs in certain ecotourism projects, have come together with indigenous peoples on environmental issues worldwide and have prevented the destruction of vulnerable natural areas.

Local participation in ecotourism is a crucial component of sustainable development. The process of involving local communities in ecotourism projects may not be easy because of the wide geographic distribution of the community, or the lack of any official organization, however it is vital (Boo, 1991). One of the challenges of ecotourism is to ensure that local communities earn a profit derived from the tourism which will give them an economic incentive to conserve the natural and cultural heritage upon which these profits depend (Ceballos-Lascuráin, 1996). It is essential that a community have authority in the planning process and development of an ecotourism enterprise. Planning processes include such tasks as identifying problems, formulating alternatives, planning activities, and allocating resources (Drake, 1991). When the local community is fully involved with the management of lands and receives attainable economic incentives, these communities will take responsibility to protect and conserve their own lands (Horwich & Lyon, 1998). In addition, as the ecotourism level increases, so do the incomes of local people and the quality of life of their community. For example, a local community that depends on agriculture for a living may not have the resources to invest in certain crops or harvesting methods. However, if ecotourism revenue is used as a

supplement to their primary income, the community can afford to invest in certain seeds or harvesting equipment needed. Another example lies in the state of Oaxaca, Mexico where many community based ecotourism projects, such as La Ventanilla and Pueblos Mancomunados, have created a supplemental income for local communities, a raise in environmental awareness and conservation, establishment of protected areas, and preservation of local culture (Aranda, 2003).

Local pride in natural and cultural resources is another benefit that ecotourism may bring to the community. As the local pride increases, the conservation of the natural resource and the revitalization of declining cultural traditions may occur. Community empowerment and pride can increase through ecotourism, giving a sense of achievement to the local people. Furthermore, ecotourism can result in a renewed interest and respect in rural culture, including crafts, music, stories and the role of rural people in preserving the natural heritage (Horwich & Lyon, 1998). Community ecotourism projects not only integrate local people in the pursuit of conservation objectives, but they directly involve the residents in real conservation situations and research efforts. This conservation effort ensures the visitation of ecotourists, which in turn gives the community an economic benefit, thus creating conservation-minded residents within the community (Horwich & Lyon, 1998).

Because ecotourism involves less facility development than mass tourism, ecotourists are more likely to stay in small locally owned hotels, and use low-impact transportation. This is indeed more environmentally friendly and more sustainable than mass tourism, however there is also a danger that some local ecotourism enterprises may, over time, change into mass tourism if the demand for the area increases. All tourism has

an impact on the natural environment but ecotourist operations can minimize it and prevent damage by instructing tourists and enforcing strict codes of conduct (Norris et al., 1998). The issue of carrying capacity is imperative when planning ecotourism enterprises. Carrying capacity is defined by Wight (1998) as "the level of use beyond which impacts exceed acceptable levels specified by evaluative standards". In order to guarantee sustainable ecotourism, the number of visitors must be limited so that the resource is not exhausted. The degree of impact ultimately depends on the quality of the enterprise, the level of guide training, and the behavior of tourists themselves (Mastny, 2002). Making tourism more sustainable requires careful planning and management at all levels, involvement of local communities, and a high level of environmental commitment, as well as extensive training and community organization. Ecotourism needs to carefully monitor visitor impacts, rely on renewable sources of energy and use low impact materials for their infrastructure. One example of a low-impact ecotourism project is in the Sian Ka'an Biosphere Reserve, located in Quintana Roo, Mexico. It is managed jointly by the INE (National Institute of Ecology), SEMARNAT (Secretaría del Medio Ambiente y Recursos Naturales) and the local communities of Felipe Carrillo Puerto, El Ramonal and Solidaridad and is supported by the non-profit making, private organization Amigos de Sian Ka'an. According to Amigos their goal is for the biosphere reserve to become an example of conservation and sustainable use of natural resources. As part of this sustainable use of natural resources Amigos de Sian Ka'an run ecological tours, for small groups of people, into the reserve. In 1996 Amigos was the winner of the Conde Naste Ecotourism Award (Ward, 1997). Another example of a successful community-based ecotourism project is the Community Baboon Sanctuary (CBS) in the

Mayan forest of Belize. The CBS is a conservation project for the protection of the black howler monkey habitat on private lands. It was founded in 1985, with no help from government agencies, by community members and support from outside ecologists, was the first community-based ecotourism project in the country. The sanctuary includes approximately 4,800 hectares of land owned by residents of surrounding villages. The landowner participation in the CBS is completely voluntary; each landowner participant has signed a pledge to follow a specific management plan which consists of a buffer strip of forested area created along property boundaries of each plot of privately owned agricultural land, leaving corridors for the monkeys to forage and migrate through. The CBS includes over 120 landowners that actively participate in the sanctuary and includes programs in education, research, and small-scale ecotourism. The main office is located in a small museum, built in 1989, that is the focus of education programs for visitors and local community members. The research program has focused mainly on the black howler monkey, including studies of their ecology, social behavior, population changes, and genetics. In addition, studies of the bird community have been conducted along with studies on forest regeneration and tree phenology. Ecotourism was suggested by the villagers and currently consists of locally owned bed-and-breakfast programs where visitors stay overnight and take meals in local residents' homes. Local guides then take visitors to participating landowners' corridors to view the monkeys. All of the income goes directly to the local community. The Community Baboon Sanctuary has promoted local economic development through community-based ecotourism efforts, and has enhanced the local pride of natural resources, thus promoting conservation of flora and fauna (Horwich & Lyon, 1998).

Community-based ecotourism projects require a long-term commitment from the community and a strong desire to make a change. Risk is an inevitable component of community-based ecotourism projects due to the changing dynamics of any given community, for example intracommunity politics (Horwich & Lyon, 1998). If the risks are taken to initiate such a project, community members need to be organized and dedicated to resolving any conflicts or obstacles that may unfold. There may be difficulty in securing funding, therefore help from international and national non-governmental organizations can ease the process of development. Community members need to be educated and trained in order to successfully carry out the ecotourism project. The planning process must include the community at all times so that they can become familiar with the management challenges of an enterprise and the distinct set of stakeholders involved in the ecotourism project. In the long run, if communities are well organized and cohesive, ecotourism can generate economic profit for local people, it can raise consciousness about the environment and advocate conservation of natural resources, and it can allow responsible tourists to learn about the cultural and traditional values of the community.

1.4 Studying CBE in a Common Property Regime

Although there is considerable literature which calls for the development of community based ecotourism (CBE) and describes some of the issues, the phenomenon has been very under conceptualized in the academic literature. It is commonly not noted or appreciated that CBE necessarily involves the establishment of a community ecotourism enterprise (CEE), which allows the community to interact with the ecotourism market. In turn, the development of a CEE involves institutional transformations within

the community. How do a community's existing institutions adapt to accommodate a market-oriented effort? If, as is commonly the case in Mexico, the CEE operates using a common property resource belonging to the entire community, how do the traditional natural resource management institutions, which have evolved to deal with the common property, incorporate ecotourism as a new management option? (Agrawal 2002). Understanding the institutional emergence of CEEs in local communities operating with common property regimes requires a brief consideration of common property and social capital theories. Social capital represents the investment that communities make in organizing themselves for some economic or political end. It inheres in the structure of relationships between actors and among actors of a certain community, involving a great deal of trust and close ties that insure the achievement of certain interests (Coleman, 2000). For example, the ejido communities of Mexico operate under the ejido system because they are legally required to do so, and it is now part of their culture. However, they have also invested in organizing themselves for the commercial production of timber through Community Forest Enterprises (CFE), now they are being called to organize themselves for a very new kind of enterprise, a Community Ecotourism Enterprise (CEE), with very different kinds of requirements. To what extent is the prior accumulation of social capital serving to create a successful CEE? Does their experience in establishing CFEs create a successful scenario for establishing CEEs? In the case of ejido X-Maben in central Quintana Roo, there exists a rich social capital in the political organization of the ejido community, however many problems still arise when issues of common property come into play. Within the community there are members who are non-ejidatarios, meaning they hold no legal land title, who are trying to promote a CEE

on the basis of the common property, which presents complications. Thus I will further explain the common property regime in Mexico.

The communities of Quintana Roo are known as *ejidos,* and are part of a common property regime that was established after the Mexican Revolution in 1917, which granted communities permanent usufruct rights over commonly held areas of land. Much of the land in Quintana Roo is currently under this common property ejidal system. Common property regimes are defined as institutional arrangements for the cooperative use, management and ownership of natural resources (McKean, 2000). Throughout history common property regimes have existed and in some cases have been successfully maintained until present day. These common properties can exist among anyone from tribal people using a natural resource to larger and more organized farms in developed countries that share a common resource. The institutions can consist of tens or hundreds of people sharing common property rights. The resource itself is shared among the group and is carefully managed and monitored. The resources are not seen as public goods nor open access, which would suggest that the resource itself is available to an endless amount of people and requires little or no management. Instead, the group of individuals share property rights which, in turn, make it a form of shared private property or "closed access". The monitoring of the natural resource is extremely essential in these common property regimes (Ostrom, 1990). Without proper monitoring, the resource could be abused and depleted in a short period of time. Generally, appropriators themselves are involved in monitoring each other's activities. There are punishments for breaking the rules of the institution, such as fines, that are used in the monitoring process. Ideally, as the institution develops monitoring processes and solutions, the commitment of each

individual becomes more developed and property rights are further defined. There is more incentive to properly use the land and more of a sense of pride in obeying the common rules of the land. As the institution becomes more formalized as a common property regime, a very important key to its success is the recognition and legal support from governments, which is present in Mexico. In Mexico there exists a unique case where common property regime was legislated into existence by government support and involvement, while in many other countries there is a fade out of common property regimes due to opposition by the government. Common property management in Mexico was initiated by a massive agrarian reform, initiated by the government, which placed about half of the national territory into the hands of indigenous communities. What makes Mexico such a unique case is that this common property regime has been an ongoing institutional agreement between state and the communities for over eight decades and remains strong, in contrast to many examples in most common property literature where governments are trying to dissolve forms of common property (Bray, MS). If there is not recognition and support from governments, property rights can be altered and communities destroyed. This could result in a competition where each individual is in a race to extract as much as possible as fast as they can. This would then create a tragedy of the commons. For this reason, there is new interest in studying common property regimes that have succeeded throughout the years and an idea of the reestablishment of former community managements where they once succeeded.

The ejidos in Quintana Roo were established in the 1930s primarily for subsistence agriculture and the extraction of chicle, the sap of the chico zapote tree (*Manilkara zapota*) which is used for chewing gum. The ejido territory includes a

common property forest area, and privately sectored agricultural areas. The community and the individuals draw upon the forest and the entire landscape to generate a livelihood. Thus the communities use private agricultural areas for subsistence farming, and common property forest areas for commercial timber production. Since 1985, these communities have been part of the Plan Piloto Forestal, a Mexican-German effort to promote community forest management for the sustainable production of timber. On the basis of this project, some of the communities in central Quintana Roo have become very well known for their accomplishments in community forest management (Bray, 2000). Many ejidos have formally organized community forest enterprises (CFEs) for the commercial production of timber, and many also undertake a wide variety of traditional natural resource extraction activities, at varying levels of sustainability, including non-timber forest product (NTFP) harvesting, for example chicle extraction and honey production, as well as traditional subsistence activities. Mexico exemplifies a unique example of the success of community enterprises based upon the common property regime.

The community management of Mexico's common property forests has resulted in a wide range of distinct management forms (Bray and Merino-Pérez, 2002). Each ejido bases the form of management according to management plans of the parastatal *Maderas Industrializadas de Quintana Roo* (MIQRO), the first management plan in tropical America. This plan is based on a polycyclical system with a 25 year cutting cycle, with three turns for a total of 75 years, and a minimum diameter limit of 55 centimeters dbh (Bray, 2000). The amount of commercial species available for logging, such as mahogany (*Swietenia macrophylla*) and cedar (*Cedrela odorata*), vary among different ejidos. Therefore, there exists a variety of communal management experiences among the

ejidos. These communal management techniques and experiences have created better organization and structure within the ejidos, as well as an ideology of sustainable use of the forest areas. If a community benefits financially from an enterprise that depends on nearby forests or other natural habitats, they will, in turn, take action to conserve and sustainably use their natural resources (Salafsky et al. 2001).

The success and development of CFEs provides a potential model for the establishment of community ecotourism enterprises (CEEs) that are currently emerging among the ejidos in Quintana Roo. Over the years markets have fluctuated and harvest yields have decreased causing some ejidos to turn to other sources for income. Many individuals tend to migrate to northern parts of Quintana Roo in search of work, where the tourism industry flourishes. As a result of this migration, a loss of culture and identity are at risk for these Mayan communities. Recently, ecotourism has evolved as a new means to generate income within these communities while protecting their natural resources, and as a way to keep community members from leaving the ejido.

In ejido X-Maben an effort to launch a community ecotourism enterprise is currently developing. Stimulated by a variety of stakeholders, this ejido has begun initial planning and implementation and is interested in absorbing some of the tourist market from the areas of northern Quintana Roo, in order to economically benefit their community. The stakeholders that are involved in this ecotourism enterprise range from international levels to local community levels (Grimble & Wellard, 1997). Meffe et al (2002) defines a stakeholder as anyone who has an interest in the topic at hand and wishes to participate in the decision making. In order to properly develop and carry out management of any ecosystem, it is essential to include all potential stakeholders in the

decision making processes. The challenge of effective stakeholder involvement is to help people with conflicting views understand their common interest in working together (Meffe et al, 2002). For this reason it is important to identify the major stakeholders of the given activity. In ejido X-Maben, there are at least one dozen stakeholders, ranging from international NGOs and institutions, such as RARE Center for Tropical Conservation and Florida International University, to national federal tourism agencies and national indigenous organizations. There are also regional and local stakeholders involved that include state NGOs, such as *Yaxche*, state organizations, private tourism agencies, and local tourists. The stakeholders on the local community level involve the General Assembly of the ejido, the local supplier businesses, and finally the group of men directly in charge of the ecotourism project. Once the major stakeholders are identified, a stakeholder analysis must be conducted. A stakeholder analysis is an approach for gaining an understanding of a system by means of identifying the key actors in the system, and assessing their interests in that system (Grimble and Chan, 1995). The objective of conducting a stakeholder analysis is to improve the understanding of natural resource management in order to help develop better and more adequate projects and policies. The goal is to assess the differing interests and different solutions to environmental problems that the various stakeholders may have, and use them to create partnerships that work towards a common goal. Stakeholder analysis is more relevant and necessary where resources are managed as common property rather than when resources are privately owned, due to the fact that there can be many more stakeholders with conflicting interests under a common property situation (Grimble and Chan, 1995). The most effective techniques for data collection and stakeholder analysis are the use of

informal, semi-structured interviews. Participant observation is also helpful in order to understand changes over time and the dynamics of the system. Stakeholder analysis is aimed in particular at dealing with complex situations where there are a large number of stakeholders with very different interests in the resource. Therefore, a complete stakeholder analysis will be crucial in beginning a community ecotourism enterprise that will prove financially beneficial to the ejido X-Maben and that will result in conservation of the natural and cultural resources of the community.

1.5 Methodology

In the case studies to be examined in this thesis, I will be examining the dynamics by which external actors such as government agencies, universities, grassroots organizations, and non-governmental organizations (NGOs) organize themselves to become stakeholders in promoting community based ecotourism (CBE), and their effectiveness at doing so. As one stakeholder, the Community Tropical Ecosystem Management (CTEM), based at EVR/FIU, has an interest in the success of efforts to promote CBE in central Quintana Roo. In order to conduct my research, I completed ten weeks of research in ejido X-Maben, which included short visits and interviews to other community ecotourism experiences in the region. The basic framework was that of action research. Action research is an approach to research that has both practical and theoretical outcomes and encourages those designated as "subjects" to participate directly in the research processes and benefit from these processes (Stringer, 1999). In this case, I worked closely with the cooperative, the General Assembly and authorities of X-Maben, the ecotourism committee of the regional community organization, and other stakeholders in helping to understand the institutional dynamics of CEE promotion in

order to make the process more effective. The approach of community based action research was used in order to focus on the community and their needs, and to improve the quality of people's organizational and day to day lives. Its purpose is to help people in broadening their understanding of their situation and resolve problems that confront them (Stringer, 1999). Community based research recognizes that the research process can have multiple outcomes and many people involved, and takes into consideration the need to enact ways of working that protect the dignity and identities of all stakeholders involved. My role in ejido X-Maben was that of a facilitator, not as a *director* or *head,* because my aim was to assist stakeholders in defining their problems clearly and to support them as they worked towards effective solutions to the problems that confronted them. Community based action research realizes that all stakeholders should be engaged in the process of investigation and research. Therefore, a stakeholder analysis was also carried out during these ten weeks in the field, which helps to provide an understanding for the current system, identifying the key actors or stakeholders, and assessing their interests in the development of the ecotourism enterprise (Grimble & Wellard, 1997). The goal is to assess the differing interests and different solutions to environmental problems that the various stakeholders may have, and use them to create partnerships that work towards a common goal. In order to conduct a stakeholder analysis one must first identify the key stakeholders. Then it is imperative to interview participants in each stakeholder group, and participate frequently in community settings to observe activities and events. Multiple stakeholders are involved in the promotion of the ecotourism enterprise, including local ejidos, regional small farmer organizations, local and international conservation-oriented non-governmental organizations (NGOs), and state and federal

tourism agencies, along with the tourists themselves. The visions and strategies in CEE promotion of each one of these stakeholders were described. I then commenced an analysis of the different visions and strategies and how they may be complementing or competing in the common goal of CEE promotion.

The research presents many questions that involve these aspects such as:

1) What are the challenges faced by communities in common property regimes when developing a CEE?
2) Can community forest enterprises (CFEs) serve as a model for the development and success of establishing a CEE?
3) Who are the stakeholders involved in these efforts and what are their interests and strategies?
4) How can the role of GIS technology used in local communities contribute to the action research framework within this thesis project?

Methods that were used in the stakeholder analysis include; participant-observation research, and unstructured, semi-structured, and formal interviews. Participant observation involves getting close to people and making them comfortable with your presence, so that you can observe and record information about their lives. Participant observation involves experiencing the lives of other people, which in my case involved participation in daily routines of the community of Señor, and participation in many stakeholder activities. Most of my research consisted of qualitative participant observation, which allowed me to fully understand the community and the process of developing an ecotourism enterprise within a common property regime. The other method of research I used was interviewing. Unstructured interviewing was constantly

occurring while I was present in the community. My main focus was on the group of young men that are in charge of the ecotourism enterprise, which is named X'yaat, with whom I spent a great deal of time with in the field and at the ecotourism main attraction, Laguna Azul. I also used semi-structured interviewing as a method for obtaining information from all of the stakeholder groups. A questionnaire was used to interview non-governmental organizations, private sector agencies, federal agencies, and community level organizations. A great deal of note taking, transcribing and document reading was also involved.

In an effort to provide new technical assistance within the research action framework, a GIS analysis of the central environmental attraction used by the CEE, the Laguna Azul, was carried out in order to identify natural features of interest and as an initial exercise in the mapping of interpretative and hiking trails. Aerial photographs of the area were used to help all the actors understand the spatial dimensions of the planning processes necessary to make this new land use fit into current land uses. The use of aerial photography was very valuable in order to grasp an idea of the boundaries of the region and assist in the planning of trails, cabins, and other basic infrastructure. One of the main goals of CTEM is to make academic research useful to local land managers therefore, a GIS application will give the people of the community an informed and detailed map of the project area. The coordinates gathered by global positioning system unit (GPS) during my field research in March 2003 and July 2003 were applied to map the lagoon area and to produce a field guide for ecotourists (appendix 1). There is now more detailed information about the features of the natural area, along with nature trail information and cultural history, which is available to the entire community and visiting tourists.

In the following chapters of this thesis I will go on to discuss the background of Quintana Roo along with historical Mayan culture, the Caste War and the formation of ejido X-Maben. I will later detail the beginnings of the CEE in ejido X-Maben and the processes that are entailed, including complications with common property resources, training techniques, and a stakeholder analysis. Furthermore, I will compare other models of existing CEEs in Quintana Roo to the ejido X-Maben and discuss advantages and disadvantages of the distinct models. I will then elaborate on the GIS application conducted in ejido X-Maben which will include the nature guide, promotional maps and brochures that were done in cooperation with the members of X'yaat, the community's ecotourism group.

I believe this project will contribute to our understanding of the institutional dimensions of community-based ecotourism within a common property regime and the role of new technologies in assisting it. Most definitions of ecotourism define the natural area of interest as a protected area and include the requirement of integrating local communities into the benefits of the protected area based ecotourism. However, few researchers have considered the case of community ecotourism enterprises where the natural area is on community lands and the enterprise itself is fully community-owned. This creates conceptual and practical challenges, which are only beginning to be addressed in the literature. The challenges are even greater when we consider the institutional complexities of establishing community enterprises in common property regimes such as the ejido system of Mexico. How can communities in common property regimes establish their own CEEs? What are the challenges they must face in doing so?

Within the action research framework proposed in this research, how can the research project contribute to the goal of establishing a CEE in ejido X-Maben?

In order to answer these questions I have examined how this new enterprise can fit into existing institutional arrangements within the community, and what the demands are for new knowledge that the enterprise will require. I will attempt to determine to what extent is the prior accumulation of social capital serving to create a successful CEE. I will also discuss how a community's existing institutions adapt to accommodate within an ecotourism-oriented market and how ecotourism can be seen as a new management option for the ejidos of central Quintana Roo.

CHAPTER 2

Environment, History and Institutions of the Zona Maya of Quintana Roo

2.1 Geography of the Yucatan Peninsula

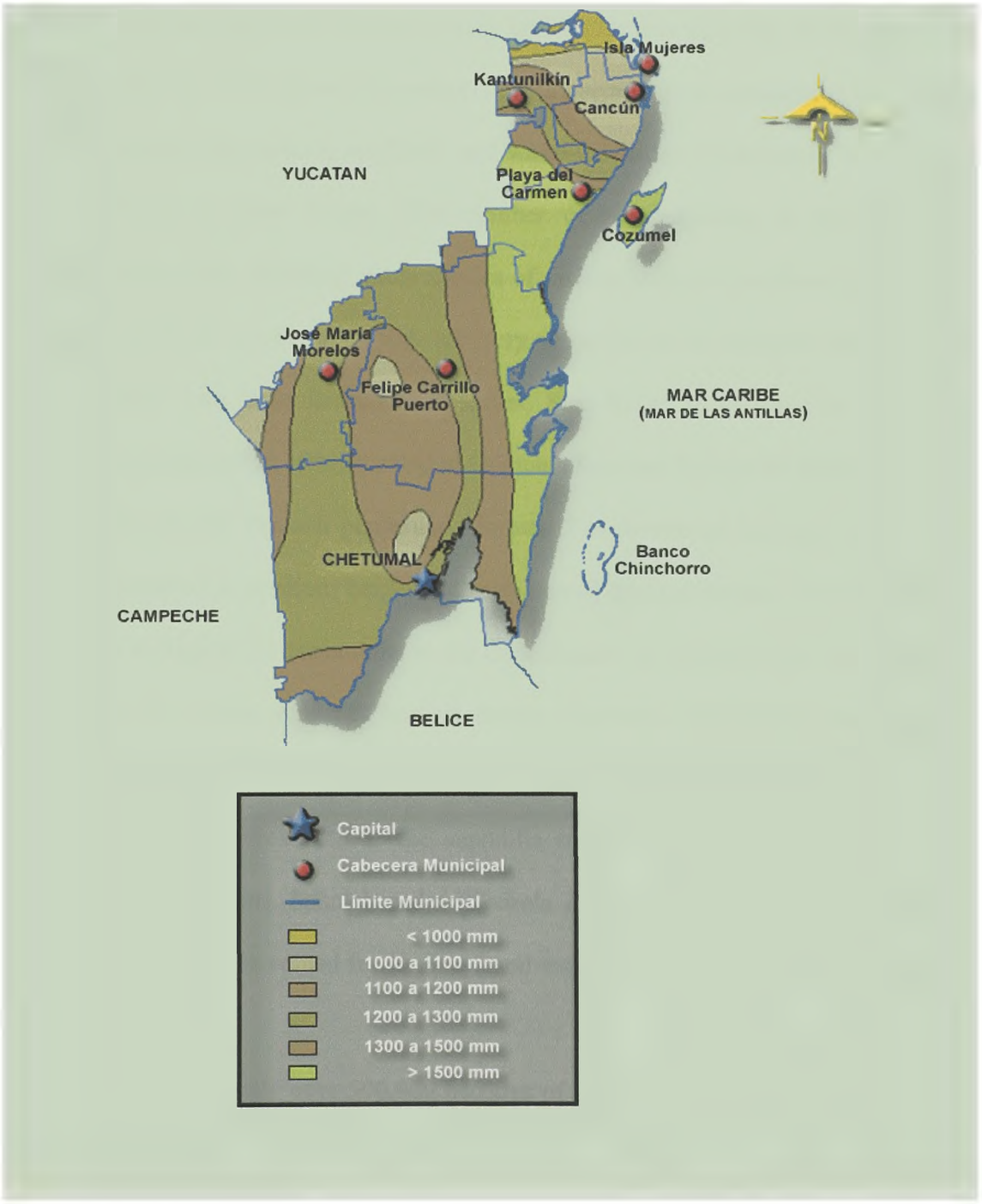
To address the research questions presented in this thesis, it is necessary that I explain the environment, history and the structure of the ejidos in Quintana Roo in order to understand how past experience with organizational institutions have influenced the structure of ejido communities as they operate today. The environment of the Yucatan Peninsula, along with the history of the Maya culture is also important when addressing current forms of resource management and ejido organization within the traditional Maya communities, due to the fact that surrounding environment and culture that have been existing here for thousands of years have influenced and sculpted the present day Maya ejidos of Quintana Roo.

The Yucatan Peninsula is made up of flat land of tangled scrub in the drier northwest region, which then gradually merges into lusher forests and tall trees as you reach the southeast region. It forms part of the isthmus that unites North America to South America and that also separates the Gulf of Mexico from the Caribbean Sea. The peninsula is made up of three states, Campeche, Quintana Roo, and Yucatan and has a total area of 222,000 square kilometers of which 50, 843 corresponds to Quintana Roo. Throughout history, the Yucatan peninsula has been isolated from the rest of Mexico and Central America due to the extensive wetlands in the state of Tabasco that separate the peninsula on the west side, and the vast jungles of the Petén in the south. In colonial times, the Yucatan peninsula was literally imagined as an island. However, in

geological terms, the peninsula is a gigantic limestone and dolomite platform that rose out of the sea over 50 million years ago during the Pleistocene age (Hostettler, 1996).

The peninsula is unique in that there are virtually no surface rivers throughout the region. However, there is an abundance of underground rivers and streams due to the underlying limestone bedrock the peninsula rests on. Solution processes acting on the soluble limestone bedrock have created karstic features such as caverns, underground waterways, and most importantly sinkholes called *cenotes*. The topography of the region is relatively flat with an exception of a small range of hills in the northwest. The climate is tropical, with a minimum of 18 degrees Celsius. The area receives between 1,000 and 2,500 mm annual rainfall, with a south to north gradient, which classifies the region as a tropical wet and dry climate. Central Quintana Roo receives between 1,000 and 1,300 mm of rainfall annually, with the heaviest rains occurring between the months of May and September. There is a pronounced dry season, which occurs between October and April. Water supply has always been of concern to the people of the Yucatan peninsula. Because there are so few surface rivers, cenotes and man made wells have always been important for local people. For the ancient Maya, cenotes were essential for water supply and were even used for rituals and sacrifices. Figure 2.1 below illustrates the annual precipitation in Quintana Roo.

Figure 2.1: Annual Precipitation in Quintana Roo



Source: INEGI, 2003

The forests of the Yucatan peninsula are booming with biological diversity. Wildlife such as jaguars (*Phantera onca*), tapirs (*Tapirus bairdii*), howler monkeys (*Aluoatta pigra*), white-lipped peccaries (*Tayassu pecari*), great curassow (*Crax rubra*), ocellated turkey (*Agriocharis ocellata*), and white-tailed deer (*Odocoileus virginianus*) can be found in these forests. The number of plant species in this region is approximately 1500, including many species of orchids such as *Oncidium sphacelatum* and *Rhyncholaelia dygbiana,* which are very attractive to ecotourists (Sánchez and Islebe, 2002). Two large Biosphere Reserves, Sian Ka'an (designated in 1986) and Calakmul (designated in 1989) located in Quintana Roo and Campeche helps preserve a huge portion of the Yucatan peninsula's forests. The forests of the state of Quintana Roo are classified as medium height and semi-humid tropical forests. The canopy may only reach as high as 35 meters due to the drier climate in comparison to canopies that reach up to 50 meters in wetter tropical forests elsewhere. Nonetheless, there are an estimated 104 tree species, and on average each hectare has up to 30 different species. The most common trees include the sapodilla tree (*Manilkara zapota*), the ramon (*Brosimium alicastrum*), Spanish cedar (*Cedrela odorata*), and mahogany (*Swietenia macrophylla),* which is valued for its fine wood used for furniture (Sánchez and Islebe, 2002, Snook, 1998).

There is currently over 500,000 hectares of "permanent forest areas" that were designated by ejido communities, which makes the forests of Quintana Roo quite impressive in terms of conservation (Bray, 2001). There is evidence from satellite images that the forests of central Quintana Roo have very low rates of loss when compared to other tropical areas of Mexico and Latin America. This may be attributed

to the fact that although there is a dynamic mosaic of land use in the region, not all of these activities result in deforestation. What has been extremely surprising is that the rates of deforestation in central Quintana Roo, compared to other tropical regions of Mexico, have actually reduced after the 1980s, when the Plan Piloto Forestal was initiated (Bray et al, 2002). Thus, the forest cover has been retained despite the logging activity that occurs in these ejidos. This is a result of careful planning by these communities to preserve their resources and more or less sustainably exploit them in order to receive long-term economic benefits. The forests of Quintana Roo have been used to support Maya livelihoods for centuries and the people of this region continue to exploit their natural resources, as was done in the past, however today the forests are logged under government-supervised management plans which help to ensure a rich forest for future generations.

2.2 Maya Civilization

The Maya culture is said to have originated a few millennia B.C. and flourished in the area known as Mesoamerica, which extends throughout parts of Mexico, Guatemala, El Salvador, and Honduras. They arrived in the Yucatan in approximately 1200 BC and built huge monumental structures throughout the region, beginning in the Pre-Classic period and then constantly building newer structures on top of older ones over time. The ancient Maya civilization was based on ceremonial centers and independent city states for example, the city of Tikal in Guatemala, Caracol in Belize, Palenque in Chiapas, and Uxmal in Yucatan. Each city-state was ruled by a distinct king, whom was considered a mediator between the heavens and earth.

Tikal

Chichen Itza

Recent research has revealed that these cities, once imagined as peaceful ceremonial centers, were actually warring adversaries that strived to capture victims for sacrifice in order to please the gods. Blood was praised by the gods, thus the more sacrifices, the happier the gods. Even the highest members of society were involved in blood-letting, and royal blood was considered the most precious offering that could be made to the gods. The Maya also developed sophisticated food production and water management systems. Slash-and-burn agriculture was practiced in most areas, along with some terracing and raised fields in wetland areas. Slash-and-burn agriculture is still practiced today and is locally known as *milpa*. This form of agriculture involves the clearing and

planting of basic grains, the most common being corn, followed by a fallow period that includes continual harvesting of certain plant species, combined with hunting of any game attracted by the forage of early succession. The ancient Maya were also involved in water management. There is evidence that the Maya maintained dense populations in certain areas by using reservoirs and underground tanks (*chultuno'ob*). Because of the extensive dry season that lasts for six months, water reserves were essential for the survival of local populations. In Edzná there is evidence of an extensive system for collecting rainwater as well as draining surplus water. Water reservoirs were also used in Tikal, which consisted of ditched, channels and holding basins. In Tikal, the Maya also sculpted some of the surrounding limestone hills to create a slope that provided the community with adequate water supply. Unlike other civilizations who thrived along riverbanks, the Maya did not inhabit areas near rivers or lakes, therefore they had to invent an entire hydrological system to support their population. Many of these hydrological structures are estimated to have been built in the Pre-classic period, as early as 800 BC (Faust, 2001, Scarborough, 1996)

Most of the large Maya structures and temples were also originally built during the Pre-Classic period and later were rebuilt or added to in the following years. Maya civilization continuously grew and developed, and archaeologists mark the year 250 A.D. as an approximate date for a transition of styles from the so-called Pre-Classic period, which gave way to the Classic period, which lasted until approximately 900 A.D., when most of the great Mayan city-states entered into a catastrophic decline. The ancient Maya are well known for their art, architecture, astronomy, extremely accurate calendars and complex numerology, of which all were of major focus during the Classic

period. After the Classic period, their culture suffered from a collapse where ceremonial centers were abandoned and their intricate studies of art and science diminished (Morley, 1956). There are various theories about the causes of this cultural collapse, one of them being due to an over-exploitation of natural resources compounded by a period of extreme drought in the region. Food scarcity and drought may have also led to an intensification of warfare between neighboring states, all of which contributed to the widespread abandonment of the cities in the southern lowlands; and the other due to the invasion of their lands by other non-Maya culture (Culbert, 1993, Faust, 2001, Pyburn, 1996). In spite of the abandonment of ceremonial centers, documents from the Spanish colonial period show that in the sixteenth century Mayan society remained intact at the village level and very well organized, however their significant advances in art and science had come to an end. Over two million Maya still live in this area today, however different regions have different dialects and distinct attire. The Maya have been divided into two regional subgroups: those of the highland areas of Chiapas, Guatemala, El Salvador and Honduras and those that inhabit the Yucatan peninsula and Tabasco. The Yucatan peninsula is currently inhabited by a group of Maya called the Yucatec Maya.

The dynamics of the collapse of Maya civilization in central Quintana Roo are not known. During the prehispanic period, the main centers of political and religious influence were always located in the northern part of the peninsula which is what now corresponds to the state of Yucatan (Villa Rojas, 1978). The archaeological remains of prehispanic ceremonial centers and towns still hidden under the vast forest cover of Quintana Roo have not yet been thoroughly studied. The largest sites in Quintana Roo,

located near the coast, were Tulum, Coba, and Chacchoben which are smaller when compared to such important sites as Chichen Itza or Uxmal in the state of Yucatan. This may indicate that the region of Quintana Roo was less densely populated than Yucatan before the arrival of the Spanish.

2.3 Spanish Colonization

The first Spanish that arrived in Quintana Roo were thirteen men who had been shipwrecked in 1511, of which only two survived the first encounters with the Maya. Gonzalo de Guerrero and Jerónimo de Aguilar lived among the Maya over a period of many years. They adopted their language and their way of life. Aguilar was kept as a slave, but Guerrero captured the *cacique's* trust and affection to the point that he was allowed to marry his daughter. In October 1527 a first attempt occurred to colonize what is now Quintana Roo. The expedition, made up of 400 soldiers and 150 horses, was lead by Captain Francisco de Montejo. They reached land at a point that is two kilometers from the town of Xelha, not far from Tulum. The Mayas in this town were accommodating to the foreigners and even helped them to construct small huts for accommodation. But the Spanish soon became ill due to the new environment and lifestyle, so the captain decided to leave this small town. For many months they traveled along the coastline, discovering new villages and the Mayan culture. Many of the Mayas were hospitable toward the "white people", but in many towns battles would occur were many natives and Spanish were killed. Thus, after months of travel, sickness and battle, only about 10 of the original 400 soldiers were left (Ancona, 1999). Their first conquest had failed.

Source : R. Berg

Many years passed until the Spanish were able to accomplish their dreams of colonization. By this time many Mayas were encountering problems with famine, drought and illness in their towns. The Spanish however, arrived with a strong and forceful push. The advance into the interior of the Yucatan peninsula was headed by the son of Captain Francisco de Montejo, also named Francisco. They entered through the port of Campeche in June of 1541 and by January of 1542 the city of Merida was founded. Once this conquest had begun the next step for the Spanish was to distribute the indigenous land among themselves and form *encomiendas*, systems of tributory labor that were developed as a means of securing an adequate and cheap labor supply. It gave the conquistador control over the native populations by requiring them to pay tribute from their lands, which were "granted" to deserving subjects of the Spanish

crown. The natives often rendered personal services as well. In return the *encomendero* was theoretically obligated to protect his wards, to instruct them in the Christian faith, and to defend their right to use the land for their own subsistence. Very few *encomiendas* were formed in Quintana Roo due to the dense forests and fear of the rumored rebel natives of the region. As time passed, the region that is now Quintana Roo became virtually untouched by the Spanish and according to the famous anthropologist Manuel Villa Rojas it was populated only by "untamable Indians that remained clenched to their own traditions". Apparently for centuries, central Quintana Roo was an area filled with such dense jungles that very little permanent populations thrived there. There are local stories that say the only Mayas in this central region of Quintana Roo were dedicated strictly to hunting and gathering and were called "huitob" (Reed, 2001). These native populations were sparsely spread out among the thick jungles. Thus, such was the situation when the Caste War began in 1847.

2.4 The Caste War

The set of events known to historians as The Caste War of Yucatán began July 30, 1847 at night when a group of Mayans from the eastern region of the Yucatan Peninsula, lead by a Maya peasant, named Cecilio Chi, arose and slaughtered the white population of Tepich. According to the Mayas, the war was caused when authorities in Valladolid murdered the *cacique* of Chichimilá, Manuel Antonio Ay, days before the night of July 30, accused of conspiring against the white race (Villa Rojas, 1978). Suddenly, rebellions broke out in the area and spread throughout the peninsula. The Maya people had suffered injustice for 300 years since the arrival of Spanish

conquistadors and later from the *criollos,* Spanish descendants born in Mexico, but historians say the massive uprising was also due to unjust ecclesiastical taxes on the Maya and dispossession of their lands by expanding sugar cane plantations across the region (Dumond, 1997, Reed, 2001). The total loss of population was devastating, one fifth of the population of the state of Yucatan was killed or fled as a result of the war (Reed, 2001). Thousands of criollos were captured and massacred during the attacks on the towns and plantations throughout the Yucatan. Any criollos that could escape such wrath fled to Merida. By 1848 only the cities of Merida and Campeche were in the hands of the criollos. The Mayas were about to completely take over the peninsula, charging through towns in fierce war. They arrived 30 kilometers from Merida and 8 kilometers outside of Campeche, when they decided to stop their final attack. Legend has it that the Mayas began to observe the activity of a type of insect, called *sh'mataneheeles*, associated with the onset of the rainy season. At this point, already running low on food, they decided to return to their *milpas* (subsistence agriculture fields) and plant corn during this optimum seeding time of the year. They would have had no food to supply them through the year if they wouldn't have returned to their fields to plant corn (Carreaga, 1998, Dumond, 1997). With the rebel withdrawal, the criollos then regained control of the cities and towns in the region, and pushed the rebel Mayas further south to the unpopulated jungles of what is now central Quintana Roo. It was in this area in 1850 when rumors began to circulate that on the banks of a cenote, deep in an uninhabited forest, three miraculous wooden crosses appeared fastened to a mahogany tree (Reed, 2001).

These apparently miraculous crosses appeared in Chan Santa Cruz, what is now called Felipe Carrillo Puerto, courtesy of Jose Maria Barrera, a *mestizo* who had united with the Mayan rebellion. With the help from a ventriloquist named Manuel Nahuat, they made three wooden crosses that came to be called the *Cruz Parlante* (Talking Cross). Nahuat was able to project words as if they came from the cross for everyone to hear. This technique, although a deliberate manipulation, was an effective way of rallying the demoralized Mayas to counterattack and resist the Mexicans. Thus, belief in the miraculous Talking Cross was added to the syncretic Mayan Catholicism that had developed during the colonial period, creating a unique religious configuration which still distinguishes the Mayas of this region today. They began to adore and worship these crosses with offerings and candles, little by little forming a united religious cult in Chan Santa Cruz and neighboring villages. What had once been a rebellious movement now turned into a religious crusade and began to strengthen internal ties among the Maya. The followers of the Talking Cross became known as the *Cruzob* or "Santa Cruz Mayas" (Allan Burns, personal communication) and they believed that the "whites" would never take over their region and that they should continue to rebel against them. During the years that followed, periods of relative tranquility were interspersed with sporadic Mexican efforts to regain the territory, while the Santa Cruz Mayas developed diplomatic ties with the British in what is today Belize. The members of the Santa Cruz religion formed a military authority, through which they organized their religious obligations, political power, and defense of their autonomy and territory (Dumond, 1997, Reed, 2001). The caciques of Chan Santa Cruz demanded independence from the Mexican government and a huge area of central and southern Quintana Roo as their

territory. Other Maya groups in the southern part of Quintana Roo had accepted Mexican authority and became enemies with the Santa Cruz Maya. The Mexican army began to enter the area, massacring Maya people and burning their agricultural lands. The Maya fought back against the army and managed to capture many prisoners as slaves. This battle between the Mayas and the Mexican army lasted for twenty years, resulting in a total of 54 years of successful Mayan resistance against the "white men" from 1847 to 1901 (Reed, 2001).

In 1901 the Mayas were finally defeated when a road stretching from Peto, Yucatan to central Quintana Roo was built by Mexican troops. When they arrived they found a deserted settlement, with resistance having melted away. The Mayas had moved north of Chan Santa Cruz and founded many new villages, including those that make up the major case study of this thesis, ejido X-Maben and its communities. In the end, the rebel Mayas had lead the longest and most successful indigenous uprising in the Americas and formed what was essentially an independent state that lasted over fifty years, including establishing somewhat testy diplomatic relations with the British in the south, to whom they constantly appealed for arms. (Sullivan, 1989)

However, the first Mexican victory was relatively short-lived, since with the advent of the Mexican Revolution in 1910, they abandoned the area to the Santa Cruz Mayas once again. Without the presence of Mexican authorities, the Mayas proceeded to burn locomotives and railroad cars, rip up the railroad tracks that had been laid, and tear down telegraph lines, all in hope to reestablish the isolation of Santa Cruz so that the Mexicans would never return (Reed, 2001). This complex and unique history of the resistant Santa Cruz Mayas has only recently begun to be exploited for tourism

purposes, and is another element that local communities can use to distinguish themselves within the tourist market place.

2.5 The Rise of Chicle and Agrarian Reform

It was not until the 1920s that Mexico would begin to regain a measure of control over the region, this time through markets for chicle, a resin from the chicozapote tree (*Manilkara zapota*) used to make chewing gum. This new market brought many foreigners to the region in search of work. At first the Maya killed many of the foreign *chicleros* that entered central Quintana Roo. However, in 1917 a foreigner named Julio Martín proposed to pay a fee in order to extract chicle from land owned by General Francisco May. General May accepted the deal and became the most famous and richest Maya leader to control the chicle trade in the region of Santa Cruz. Soon after, many other Maya leaders gained control of the chicle extraction in their villages and began to generate profits for themselves (Konrad, 1991, Reed, 2001). Chicle is harvested similar to the way rubber is. A series of diagonal cuts are made in the bark of the chicozapote tree, each connected to the one above so that the sap can flow down and be collected in a canvas bag. In order to make these cuts, the *chiclero* climbs up thirty or forty feet up the tree held only by a rope around the trunk. The life of a *chiclero* was lonely and dangerous and had been of no interest to the Mayas, but the pay was good and the Mayas soon learned the techniques in order to extract their natural resources to supply a market in demand. The market for chicle was on the rise throughout the 1920s and reached its peak in 1929 when production soared to two million kilograms that year (Reed, 2001). However, by the 1930s the chicle markets and

prices began to decline and many Mayas were not enjoying the same benefits from chicle extraction and production as they had in previous years.

In 1934 Lázaro Cardenas (1934-1940) was elected president of Mexico. He deepened and extended the agrarian reform that had resulted from the Mexican Revolution. The Mexican Revolution, which lasted from 1910-1917, was fought largely by landless peasants whose goal was to challenge the large estates that dominated rural Mexico in order to gain land for their own families. The main hope of the revolution was to allow peasants the opportunity to own land instead of merely working on a plot for high-class plantation owners (Winn, 1999). Cardenas, a revolutionary general and reforming governor, set out to fulfill the revolution's promise of "land for the peasants" which was made two decades before. He pledged to distribute twenty million hectares of land to peasants during his six years in office, and by 1940 a third of Mexico's twenty million people had been awarded their land.

This agrarian reform extension started the establishment of a series of institutions across Mexico that can be regarded as innovative (Bray et al., 2002). The ejido system, a collective land tenure system in which common pool resources are communally managed, was shaped during this period. Under Mexican agrarian law each ejido is a legal entity that is governed by an ejidal assembly made up of all the *ejidatarios*, members of the community that receive land titles. Administrative responsibilities are assigned to two main committees, each one having three members that are democratically elected by the general assembly. These positions are to be filled only by *ejidatarios*, which are generally men. Land titles are retained by the federal government, which gives the *ejidatarios* certificates that assure them lifetime usufruct

rights of a parcel of land within their ejido. A general assembly is held once a month in order to discuss the social, political, and economic matters of the ejido. Along with the establishment of ejido lands across Mexico, came the creation of community cooperatives and grassroots institutions that organized production of forest resources under community management. In later years these cooperatives and institutions would serve as the basis for promoting community administrative organization and sustainable extraction of their forest products. This continuum of innovations within the institutional structure in central Quintana Roo has resulted in a sustainable land use in the region. The Mayas of this region have been practicing slash and burn agriculture for centuries, the extraction of chicle since the early 1900s, railroad tie production since the 1970s, and sustainable community-based logging since the 1980s (Bray et al., 2002). The combination of these activities has increased economic security within the ejidos by providing farmers different options and alternatives for generating livelihood. Having multiple land uses has also presented less stress to the ecosystem instead of the overuse of one single resource, which would lead to degradation (Cairns, 2002). These changes and innovations were all made possible by the expansion of the agrarian reform in the 1930s.

The process of forming ejidos in central Quintana Roo was, however very complicated and even controversial among the Maya. During the 1930s as Mexican authorities had returned Santa Cruz, the Maya moved into new territory, outside of Santa Cruz, and had taken the sacred cross with them. The new home of the cross was in Tixcacal-Guardia, about 30 kilometers from Santa Cruz. The Maya continually felt threatened by the strong Mexican presence in Santa Cruz, which was renamed Felipe

Carrillo Puerto in 1935, and there were many tensions between the two concerning chicle gathering and forest use. The Maya felt that their forests were being exploited by chicle contractors who gave them poor terms of exchange for the chicle, pigs and maize they traded with them (Sullivan, 1989). General Rafael Melgar was appointed governor of the territory of Quintana Roo in 1935 and was heavily promoting the agrarian reform in Quintana Roo. Melgar recommended that these tensions could be settled if the Maya applied for legal land titles in order to form ejidos.

I have chosen to describe the events of the establishment of ejido X-Maben because it is important to understand the specific land tenure history of this community for different reasons. The ejido as an institution has been a dominant influence on forest use in central Quintana Roo. Therefore, the knowledge of political structure and relationships within the ejido are essential when researching a community enterprise which is based on the exploitation of forest resources. The ejido structure is a basic unit for the organization of forest exploitation, and due to a variety of different markets that have been created over the years, there have been great advances in forestry development and management, along with other advances, such as ecotourism, that will be addressed later in this thesis.

Throughout the 1930s, the Santa Cruz Mayas had been in close contact with the anthropologist Alfonso Villa Rojas, who was living and conducting research in Tusik, a village near Señor. Villa Rojas was very well trusted by the Maya and he also served as a sort of liaison between the Mexican government and the Maya during the establishment of the agrarian reform. Villa Rojas recommended that the Maya apply for legal land rights in order to guarantee local Mayas full rights to gather chicle in their

own forests. Many Mayas around Felipe Carrillo Puerto accepted Melgar's offer and petitions for land grants soon followed. However the officers of Tixcacal-Guardia were wary of the government and did not feel that they should ask for land grants. "We do not need anyone to grant lands to us since all these forests are ours." (Sullivan, 1989). However, after much contemplation, the officers of Tixcacal-Guardia decided to accept a land grant in order to guarantee no outsiders exploiting their forests. The officers demanded that the land grant encompass a huge territory in central Quintana Roo, a guard service of the sacred cross at Tixcacal-Guardia by all residents of all villages, and prohibition of chicle gathering by outsiders. Tixcacal-Guardia was to be the center of the ejido and all surrounding villages of Chunculche, Tusik, Tixcacal, Señor, Xmaben, Yaxkax, San Jose and Chan Chen were to be united under this newly established ejido. However, to the dismay of the Maya, the resulting ejido was not as originally planned.

In May 1937 General Melgar arrived at the village of X-Maben carrying the official papers for the ejido X-Maben. Maya officers asked that the ceremonial establishment of the ejido be held at the shrine site in Tixcacal-Guardia. Thus, on a table outside of the main church the official map of the ejido was spread out for the officers to view. As they studied the map they realized that Tixcacal did not even appear on the map. The Maya were infuriated that the shrine site was not incorporated into the ejido. General Melgar ordered the grant to be corrected and to include Tixcacal-Guardia, however the ejido of X-Maben was never expanded to include Tixcacal-Guardia. In fact, the residents of Tixcacal did not receive legal land grants until the 1960s. Ejido X-Maben was formed with a total of 73,400 hectares and was named after the main village Xmaben. However, in the 1940s the village of Xmaben was abandoned

when the local well failed. The residents moved and formed the village of Señor, which is now the largest population center in the ejido.

The expansion of the agrarian reform was extremely significant for the Maya of Quintana Roo because by the year 1944, twenty one percent of the area was distributed as ejidos to them by the agrarian reform agency. The aim of this reform was to provide peasant families with land to serve as a secure base for their subsistence. These ejido formations provided the Maya of the region with autonomous communally shared lands that would enable subsistence farming and forest exploitation. The unique feature of the land reform in Quintana Roo was that each ejido was given a large amount of land, in comparison to other areas of Mexico. Each ejidatario was given an average of 420 hectares (Sullivan, 1989). The size of these ejidos were large due to the government's view that only chicle gathering could provide peasant households enough income to survive. The amount of granted land was based on the density of chicozapote trees and their ecology so that the forest resources would be exploited sustainably (Hostettler, 1996). Presently, the large size of the ejidos in central Quintana Roo plays an important role in the establishment of ecotourism enterprises because it has provided the large biophysical framework in which an ecotourism project can take place today.

Ejido X-Maben currently has three towns, Señor, Chan Chen Comandante, and Pino Suarez, with a total population of approximately 3,000 inhabitants. The principal economic activity is based on timber production of valuable tropical wood species, such as mahogany (*Swietenia macrophylla*) and Spanish cedar (*Cedrela odorata*) in the form of round wood and plywood. Railroad ties are also produced within the ejido from other tropical hardwoods such as, chechen (*Metopium brownie*) and jabin (*Piscidia*

piscipula). Both logging and railroad tie production are carried out within the ejido's permanent forest area (explained below) and are done strictly by men. Another economic activity within the ejido is the extraction of chicle, which has continued to be important within the ejido, although not as commonly practiced as it was during the chicle boom in the 1920s. The process of chicle extraction and the lifestyle of the *chicleros* is yet another interesting element that can distinguish the ejidos of central Quintana Roo within the tourist market. Apiculture, introduced in the 1960s, is another form of economic gain within the ejido. Beekeeping with native stingless bees (*Meliponinae*) is called *xunan kab* and is a very rare form of beekeeping compared to the Africanized honeybee (*Apis mellifera scutellata*) beekeeping. Xunan kab honey has a much higher market value than Africanized honey and is used locally for medicinal remedies for colds, sore throats, and eye problems. The process of beekeeping and the marketing of native honey in the Maya Zone can also be very appealing to the tourist market. Finally, subsistence agriculture (milpa) is the main source of food consumption for all ejidos in the Maya Zone, with maize being the main crop in addition to beans, fruits, and root crops.

2.6 The Rise of Community Forestry Enterprises

In 1954 a presidential decree created a parastatal enterprise called Maderas Industrializadas de Quintana Roo (MIQRO) in order to exploit the vast forests of the region. 550,000 hectares of forest was granted to MIQRO for logging purposes. This concession had exclusive logging rights over both ejidal lands and national territory in southern Quintana Roo. In central Quintana Roo small private contractors carried out

logging in the forests with very little government regulation and absolutely no management plan or reforestation efforts. Local peasants throughout Quintana Roo were not benefiting from the logging concessions, as ejidatarios were paid a very minimal stumpage fee for any timber extracted by the contractors from ejido forests. Some ejidatarios were employed by MIQRO and the private contractors as laborers, however, ejidos did not control the timber harvesting on their lands (Kiernan, 2000). In the early 1970s various forest ejido unions were created with the mission of logging for railroad ties to sell to FerroMex (National Railways of Mexico). However, the ejidos continued to receive very little benefits from the extraction of timber from their lands, and there was a lack of coordination between the ejidos and the logging contractors in matters of profits earnings and decision-making processes. The uncontrolled logging during this period produced impoverished forests and reduced benefits to the populations who lived in the forests.

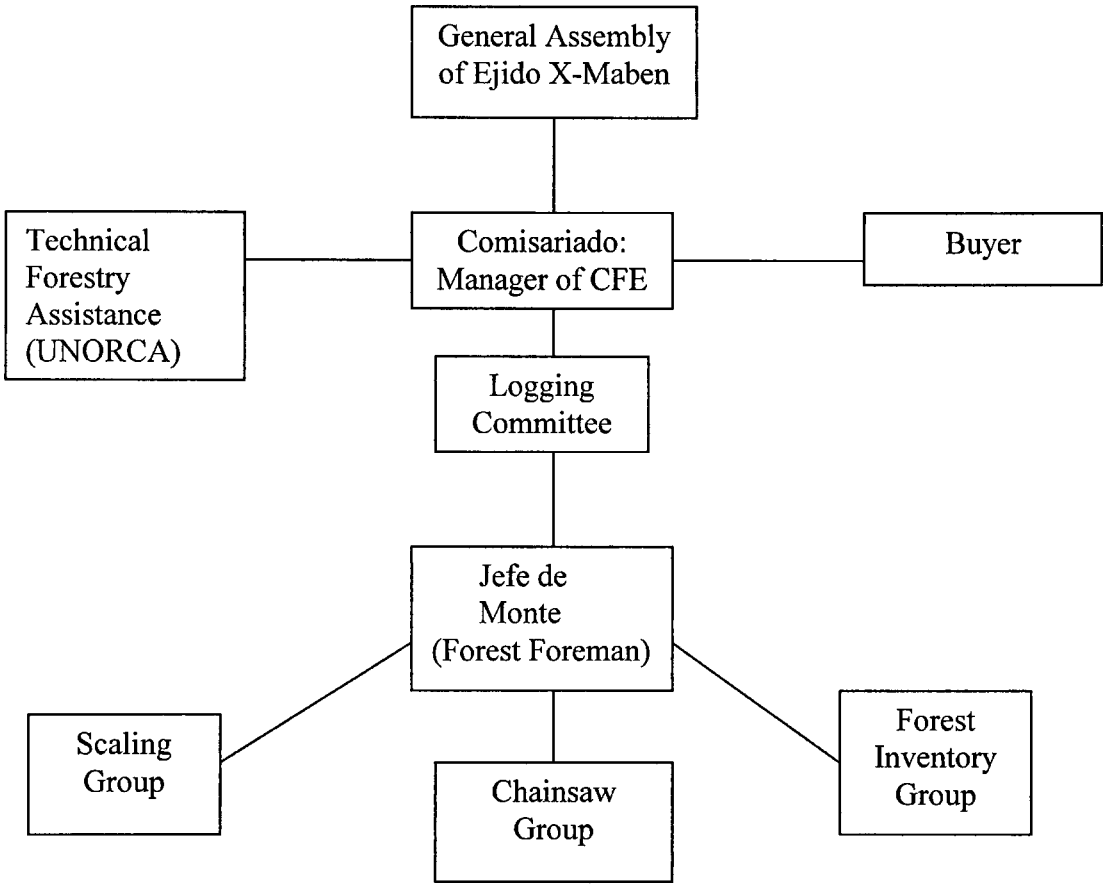
During the late 1970s and early 1980s Mexico continued the devastation of hundreds of thousands of hectares of tropical forests with the establishment of the Land Clearing Program (*Programa Nacional de Desmontes*). This program was a trust fund set up to transform forest lands of "little economic use" into agricultural or pasture lands. The program was responsible for destroying almost twenty-eight million cubic meters of timber during the 1970s (Bray and Wexler, 1996). However, while government programs were establishing huge industries and ripping down tropical forests, a new division of the government was plotting a different strategy. In the mid 1970s an effort began, through a new division of the Forestry Subsecretariat called the General Directorate of Forestry Development, to empower forest communities all over

Mexico to manage their own forests and forest industries. Forest communities throughout Mexico, frustrated with private concessions and state control of forest production, began to organize themselves by using intense pressure tactics and uprisings in order to protest the government's actions. Many grassroots organizations against concessions of forest land also formed and worked together with forest ejidos to oppose unjust forest exploitation in Mexico and eventually created what is probably the "most extensive sector of community-managed forests anywhere in the world" (Bray and Wexler, 1996).

In 1983 MIQRO's forest concessions expired and the Plan Piloto Forestal (PPF) was created, funded by the Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ or German Association of Technical Cooperation) under an agreement with the Mexican government referred to as the Acuerdo Mexico-Alemania (AMA). The PPF was created with the main goal of empowering ejido residents and increasing the economic returns they receive from the forest (Kiernan and Freese, 1997). The PPF used strategic planning techniques and allowed many local ejidos to work together with participating institutions in creating sustained-yield forest exploitation. The PPF was based on the fact that the forest needs to provide an economic alternative for the local populations in order not to be destroyed and that when the forest owners are the ones most interested in the conservation of the forest for economic reasons, the forest will be used sustainably (Galletti, 1998). In 1984 the state established the coordination of the Plan Piloto Forestal in the heart of the Zona Maya in Felipe Carrillo Puerto. The PPF initiated a series of programs with the purpose of technical training, community organization, forest inventory and management, and the direct sale of forest products

(Murphy,1990). With this being acknowledged, the first step of the Plan Piloto Forestal was for the ejidatarios to set aside part of their land as permanent forest areas. Then, the farmers began to administer the forestry activities themselves instead of by outside logging enterprises. The extraction activities continued as they had before, but were now being controlled by the local farmers. The ejidos participating joined together and began to sell mahogany and other hardwoods and softwoods (*corrientes tropicales*) directly to sawmills and private buyers. They also developed the capability of processing the timber at local sawmills and the means to deliver logs to the factories (Galletti, 1998, Kiernan, 2000). Members of the ejidos learned how to calculate productions costs and perfected their negotiation skills within the market. The ejido's incomes increased massively as they began managing their own forests themselves. This resulted in the formation of a community forest enterprise (CFE), which allowed the ejido to be in complete control of the logging process. This formation of the CFE is extremely important because it provides a model for the establishment of a community ecotourism enterprise (CEE).

Figure 2.2: Organigrama of a CFE



In 1987 the Organización de Ejidos Productores Forestales de la Zona Maya (OEPFZM) was established in Felipe Carrillo Puerto. The OEPFZM is supported by the Dirección Técnica Forestal (Office of Technical Assistance for Forestry) which has a staff of foresters and technicians who work closely with and support the 21 ejidos that are involved. The OEPFZM has also become the political voice that represents the interests of the ejidos and helps to successfully incorporate them in to local markets. All decisions about forest use and marketing are made in the ejidal assembly. There are approximately 542 ejidatarios in ejido X-Maben and each ejidatario is required to attend assembly meetings that are held once a month or more variably (Murphy, 1990).

Usually, representatives from the OEPFZM attend these monthly meetings as well. There are two main committees that deal with the administrative responsibilities. The *comisariado ejidal* is an executive committee with a president, a secretary and a treasurer. The *consejo de vigilancia* (vigilance committee), also made up of three members, is responsible for overseeing the work of the comisariado ejidal and monitoring the ejidatarios to ensure that they comply with the assembly's rules and regulations. The ejido makes many decisions about the CFE autonomously, but there are also regulations and harvest production volumes set by Mexican forestry law and the Mexican environmental agency, the *Secretaria de Medio Ambiente y Recursos Naturales* (SEMARNAT). The president of the *comisariado ejidal* is also the manager of the community forestry enterprise. He works together with the OEPFZM in order to survey the forests to determine which trees can be harvested. Forest technicians from the OEPFZM train community members how to measure the trees and mark them for approval. There is a minimum of 60 cm dbh for cutting precious hardwoods, such as mahogany, and a minimum of 33 cm dbh for cutting common woods, such as gumbo limbo (Don Felix, Jefe de Monte-personal communication). The community cuts and processes the logs, which are then sold to an outside buyer in Mérida. When the logging is done, the manager reports to the general assembly and each of the ejidatarios are paid a share of the profits. This year each ejidatario was paid 800 pesos (80 US dollars). However, because Señor is one of the largest communities in the area, with over 500 hundred ejidatarios, there are frequently tensions and conflicts within the community. The greatest tensions in the ejido have been over control of the CFE. Tensions became so great that in the mid 1990s the community split into two separate CFEs, only one

possessing a sawmill of its own. This division, along with other occasional conflicts, is merely part of the political and economical contests in which the ejido members operate (Belsky, 1999).

The ejido X-Maben also has several committees responsible for administering chicle production, the sale of railroad ties, logging and recently, now that ecotourism has emerged as a new form of forest management, there have been plans to establish an ecotourism committee to oversee this new activity in the ejido. However due to the large size and certain conflicts within ejido X-Maben, the plans for creating a CEE have been very difficult to implement.

The ejidos in Quintana Roo have relied on forest exploitation as an economic alternative in addition to agriculture production. This variety of means of generating incomes from the forest has resulted in an array of community cooperatives and enterprises within a common property regime. The community forest enterprise forms a stable basis for the formation of other community enterprises (Galletti, 1998), such as ecotourism which is currently in demand. The ejido structure allows timber production and forest exploitation to be located in the shared permanent forest areas, separate from the private agricultural plots (Shoch, 1999). These practices and structures are now being challenged in a way to establish a community ecotourism enterprise (CEE).

CHAPTER 3

Tourism, Ecotourism, and Community Ecotourism Enterprises (CEEs) in Mexico

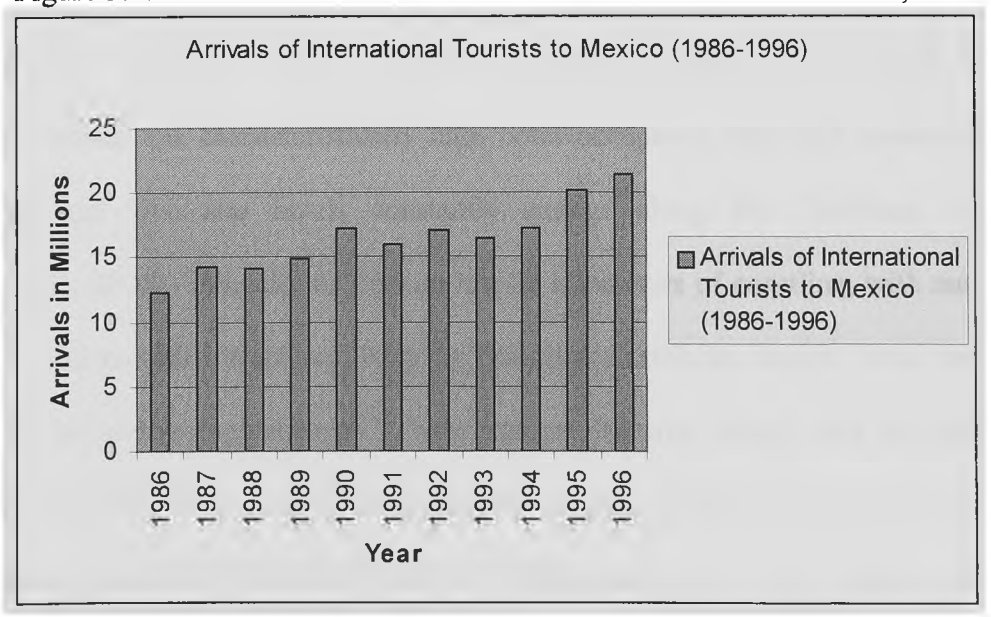
Tourism is one of Mexico's largest industries however, there has been a small transition of the traditional mass surf and sand beach resort tourism to a lower impact and sustainable tourism, which is termed ecotourism. Ecotourism is generally lumped together in the same category as adventure tourism and nature tourism. However, as mentioned in chapter 1, ecotourism is different from the two in that local communities must be benefited and included in all planning and administration processes along with generating sufficient income for environmental conservation. In this chapter I cover beginnings of traditional tourism development in Mexico and how this transition to ecotourism has gradually emerged.

3.1 Tourism Development in Mexico

Prior to the 1960s, few international tourists were familiar with Mexico and the diverse natural and cultural attractions it possesses. Of the tourists that did travel to Mexico, most confined themselves to border regions of the country, such as Tijuana, or the central region of the country, such as Mexico City. Tourism first took off in the 1970s as a result of a plan by the Mexican government to increase tourism growth as a means of promoting economic development within the country. By marketing Mexico's beaches, cities, ruins, and cultures to attract foreign tourism, they could create new jobs, enhance regional development, and earn a significant amount of foreign capital. Thus, Mexico began heavily promoting tourism in the late 1960s. In 1969, the National Trust Fund for

Tourist Infrastructure (INFRATUR and later known as FONATUR), was created by government officials as an institution that was responsible for planning, provision of infrastructure, entrepreneurship, and finance for future tourism projects. The Mexican government was determined to gain foreign investment by "exporting" tourism services to international tourists. By 1970 Mexico was receiving 2.25 million international tourists annually, compared to the 761,000 received in 1960 (Clancy, 2001). Over the years Mexico continued to benefit from its proximity to the large US market, with the majority of Mexico's international tourists coming from there. Today over 21 million tourists visit many areas of Mexico each year, generating over 8 billion dollars for the national economy (Barkin, 2001,Clancy, 2001). Tourism is now the third largest source of income in the country, accounting for roughly 3.5 percent of Mexico's gross domestic product and is reported to support every one out of ten jobs (Healy, 1997, Weiner, 2001).

Figure 3.1: Source: Barkin, 2001

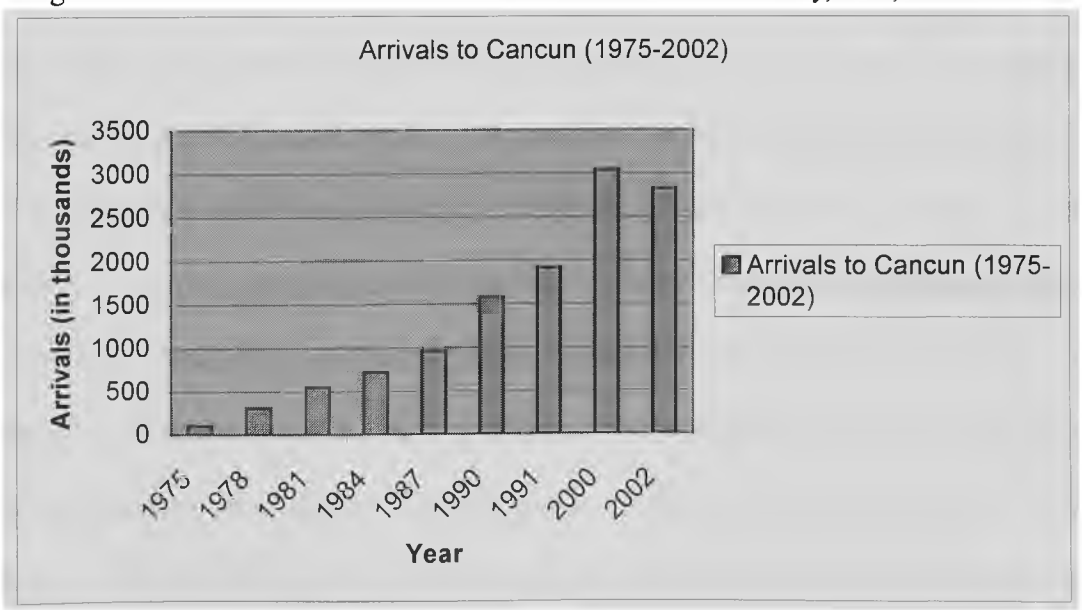


Mexico's tourism policy began by emphasizing its historical and cultural attributes throughout the country, however, as new roads were built to coastal areas, tourism began to boom in areas such as Acapulco and Puerto Vallarta on the Pacific coast. Furthermore, between 1974 and 1992 Mexico's tourism policy became focused on the promotion of large "megaprojects". These megaprojects were huge beach resorts funded by the Fondo Nacional de Fomento al Turismo (FONATUR), a government planning and financing agency. FONATUR has invested huge amounts of money into projects in Cancun, Ixtapa, Loreto, Cabo San Lucas, and Bahías de Huatulco, which together now account for 40 percent of Mexico's foreign tourism revenue (Healy, 1997). Thus, as a result of government policy, the main tourism attractions in Mexico became the major beach resorts along the coasts.

Currently, the country's most popular international tourist destination is the area along the northern Caribbean coast of Quintana Roo in and around Cancun. Once a mere fishing village during the 1960s, Cancun has now exploded into a famous resort town that receives over 2.5 million tourists a year, far more than any other coastal resort town in Mexico. Cancun has characteristically high hotel occupancy rates and construction of new four and five star hotels constantly emerge along the Caribbean coastline (FONATUR, 2002). The city of Cancun has 22 kilometers of coastline, with numerous activities and natural attractions, such as beautiful Caribbean waters, coral reefs and proximity to archaeological ruins. These natural features, along with an enormous tourism infrastructure, have attracted millions of tourists to this area, many of which are now venturing south of Cancun to other developing resort areas. The corridor stretching for 130 kilometers from Cancun to Tulum, called the "Riviera Maya" is now one of the

largest tourist markets in the world. The importance of tourism to the Mexican economy is expressed by the fact that government agency in charge of tourist marketing and promotion, and the compilation of statistics is a cabinet-level agency called the *Secretaría de Turismo (SECTUR),* which is the main government institution in charge of the Riviera Maya. SECTUR reports that 49.25 percent of tourism in Quintana Roo is done by international tourists. It is also reported that in the state of Quintana Roo there were 3.9 million international arrivals in the year 2002 (SECTUR, 2002). As the above statistics indicates, about half of all tourism to Quintana Roo is also domestic, and domestic tourism is also important in other areas of the country as well, contributing to the massive tourist arrivals. This is very alarming considering that the entire population of the state of Quintana Roo is only 874,963 (INEGI, 2003). Within just fifteen years the arrivals to Cancun have increased from 99.5 thousand in 1975 to 3.04 million in 2000 (Clancy, 2001). The influx of tourists undeniably presents a dilemma for the society and environment of Quintana Roo.

Figure 3.2: Source: Clancy, 2001, SECTUR 2003



When large beach resorts began to develop along the coasts of Mexico, they were seen by the government as a labor intensive and environmentally clean activity. However, these perceptions were quickly proven erroneous. In order for a small town to host such large beach resorts there are many amenities that are required. For example, in Cancun a large-scale airport capable of accommodating international jetliners was essential in order to receive international tourists. In addition, modern sewage, water and electrical facilities were required to host such a wide incursion of tourists. This proved to be a complication in the long run, because environmental issues received little attention when the megaproject was underway. Today SECTUR and FONATUR officials openly admit to overbuilding Cancun without considering the environmental and social impacts that would be caused by the two million plus tourists in the area each year (Clancy, 2001). Sewage problems, urban congestion, water pollution and threats to native plants and animals have been reported in Cancun and are often serious problems among all the towns that host large beach resorts in Mexico. In addition, there are many social impacts that have been caused by the tourism industry in this region. Mass tourism has affected the small fishing communities on the Riviera Maya, many whom have been displaced by the establishment of hotels and private beaches. Large beach resorts have offered many communities a small sum of money, irresistible to most fishermen, in order to construct hotels and create private beaches that later exclude these same communities that once owned the land (Carlos Meade-Yaxche, personal communication). The mass tourism along the Riviera Maya has also contributed to the out-migration of Mayas from their communities in the interior of Quintana Roo to these coastal hotel zones in search of higher wages. This migration results in the loss of their traditional ways and lifestyle as

many Mayas become employed by large resorts or restaurants, usually as maids or construction workers. The Riviera Maya is indeed not "Maya" in the sense of cultural preservation when one examines the fact that most Mayas involved in the Riviera Maya mass tourism circuit are not the ones receiving direct financial benefits through high ranking or managerial positions. While the Mexican government has pumped money into the creation of mammoth beach resorts, focusing on beaches and sun and targeting international tourists, very little of these revenues have integrated into the local economy or local communities. The environmental and social problems related to mass tourism have recently influenced the new desire among many tourism officials and conservationists for sustainable tourism throughout Mexico (Rioja, 2000). Many tourists are now expressing the desire to visit natural areas that include interaction with wildlife and various forms of outdoor recreation. Mexican authorities are discovering that sustainable ecotourism can in fact be a means of preserving nature as well as local economic development. The Mexican tourism secretary, Leticia Navarro, expresses that the current administration's tourism policy are to ensure sustainable destinations. The government has applied and developed Agenda 21 for tourism, which guarantees that each tourist destination have certifications of sustainable development in order to prevent pollution and to ensure protection of local communities (Saliba, 2003).

3.2 The Emergence of Ecotourism in Mexico

While Mexico hosts some of the most diverse ecosystems in the world, ecotourism is just beginning to emerge as an alternative to the dominant traditional tourism sector. A recent study done by the SECTUR reports that foreign tourists spent

US$51.2 million dollars on ecotourism activities, which included adventure tourism and nature tourism as well, during 2000. However, that represents only 0.62% of the US$8.2 billion spent by foreign tourists on traditional tourism that same year (O'Boyle, 2003). However, tourism officials are said to be determined to increase tourism to colonial cities, archaeological ruins and ecological reserves, and to diversify Mexico's stereotype of sun and sand tourism (Healy, 1997) in order to raise money and protect Mexico's cultural and natural treasures (O'Boyle, 2003). Tourism officials know that there is a large market of international tourism that seeks ecotourism, and they want to open up this new tourist market. Both SECTUR and FONATUR have begun to shift focus from the mega beach resorts to more cultural and environmental tourism themes. On SECTUR's website there is currently a section devoted to ecotourism projects and surveys at www.sectur.gob.mx and FONATUR is now involved in new projects that plan to integrate both nature and cultural tourism (SECTUR, 2003, FONATUR, 2003). For example, FONATUR is now working on a project in Colima where 80 percent of the property will be designated for a nature reserve (Healy, 1997). FONATUR is also working on a project in Barrancas de Cobre in the state of Chihuahua that will promote ecotourism within a canyon area of 2.4 million hectares. Throughout Mexico, local nature guides are being trained by state tourism offices such as SEDETUR (Secretariat of Tourism Development), and the marketing of these smaller yet "low impact" eco- tourist destinations is increasing. Ecotourism is gradually becoming a powerful marketing tool, appealing to a new demand for responsible tourism that contributes to conservation. A recent article in Business Mexico (2003) states that the demand for ecotourism and adventure tourism is rapidly increasing. Many tourists want more than just a beach

vacation and a suntan, they are looking for natural and cultural experiences. Kenneth Johnson of the Asociación de Turismo de Aventura y Ecoturismo (AMTAVE) states that the demand for ecotourism is very high, and currently there are over 400 nature tourism organizations in Mexico. Although Costa Rica is currently the most popular and well-known country for its success in ecotourism, Mexico hosts a larger and more diverse ecosystem with enormous potential for successful ecotourism.

In recent years many new developments in ecotourism projects have been emerging throughout Mexico. However, because the term "ecotourism" is so well misused there is frequent mislabeling and greenwashing of tourism projects. This has been the case in certain areas in Mexico. One example is Xcaret in Quintana Roo. Xcaret is located about 80 kilometers south of Cancun and is an elaborate recreational park that involves snorkeling, swimming, nature hikes, horseback rides and musical performances.

Admission is 49 US dollars and busloads of tourists arrive each day to visit the park. It is advertised as an eco-development, however the underground river feature of Xcaret was actually created by altering the natural area and using dynamite to strategically place lighting and ventilation inside (Mader, 1998). This development is far from ecotourism. Tourists are convinced that they are having a "natural" experience in what is actually a highly artificial and constructed environment. There is a danger in disguising mass tourism in natural areas as "ecotourism" because of the destructive situations that mass tourism can present. However as tourism policy switches its emphasis from mass tourism

to ecotourism many difficulties are prone to appear while Mexico discovers and elaborates the new concept of ecotourism.

As mentioned in Chapter 1, most literature defines ecotourism as sustainable tourism within national parks or protected areas with local communities living within or on the edges of the protected area. Mexico has many protected areas and communities living around them, however, because most of the land in Mexico is in the hands of local communities, many natural areas of potential tourist interest belong to ejidos. Thus, community based ecotourism (CBE) could present an ideal scenario for many ejidos by generating economic benefits for local people by giving control of tourism development and management to the residents, while conserving the environment. CBE can also merge ecotourism, which aims to expose tourists to natural environments in a low impact way while benefiting the local communities, with cultural tourism which involves firsthand contact with people of distinct ethnic backgrounds from that of the tourists (Anderson, 1994). In the context of Quintana Roo and many other areas of Mexico, it can also involve archeological tourism, since many communities have notable pre-Columbian ruins on community lands.

There are currently many CBE projects underway in several different regions of Mexico. In order to research how widespread CEEs are in Mexico, I searched the literature (Mader, 1998, Guía Mexico Desconocido, Business Mexico) and various websites (planeta.com, sectur.gob.mx, fonaes.gob.mx) and found approximately 26 ecotourism projects that are clearly CEEs. There are also other CEEs within Quintana Roo that I encountered during my research, which will be further addressed in chapter 4. According to SECTUR, there are seven states in which ecotourism activities are highest.

These states are: Baja California Sur, Jalisco, Distrito Federal, Oaxaca, Veracruz, Chiapas and Quintana Roo. SECTUR also reports that there are approximately 442 private ecotourism and adventure tourism operators throughout Mexico however, there are only 15 registered community ecotourism enterprises.

In Oaxaca, the well-known Pueblos Mancomunados is composed of eight communities with a single collective landholding in the Sierra Norte of Oaxaca, about 60 kilometers northeast of Oaxaca City. Together they host over 100 kilometers of rural footpaths and trails for hikers and mountain bikers designed for tourists to appreciate the beautiful forests, while using the income for preservation. There are also camping areas throughout the nature routes, as well as cabins in each community for lodging. There are a variety of tours ranging from 1-day ($65) to 4-day ($350) packages including camping, learning about medicinal plants, community museums, mountain biking and traditional ceremonies. The communities of this region formed an association in 1997 called *Proyectos de Desarollo Sierra Norte de Oaxaca A.C.* with a goal to organize local efforts and raise funds for sustainable development projects. The members of the association consist of community members, and all proposals and plans are presented for approval to the ejido's general assembly. The association recently received 50,000 dollars from the Environmental Cooperation Commission, a organization created by Canada, Mexico and the U.S. to solve environmental problems that occur in North America. This funding will allow the association to continue to preserve the biodiversity of the natural areas within the Pueblo Mancomunados by successfully implementing community-managed ecotourism. Pueblos Mancomunados has a long history of community organization around community logging, and this has undoubtedly provided essential social capital

that has allowed them to diversify into a CEE. However, an outside promoter was essential in helping the community organize this effort in order to succeed in the tourist market. Pueblos Mancomunados also received the Conde Nast Traveler Ecotourism Award in 2002 (www.sierranorte.org.mx).

Another example is on the coast of Oaxaca in the community of Mazunte, 50 kilometers east of Puerto Escondido, which has declared itself a "Reserva Ecológica Campesina" with 25 families participating in protecting the sea turtle population. The community provides lodging for tourists and has turned their economic livelihood from turtle fishing to ecotourism after the government banned sea turtle fishing in 1990. The small village is home to the Mexican National Turtle Center, an aquarium dedicated to the study and protection of sea turtles, and which was built by the federal government as an economic alternative after shutting down the turtle fisheries. Mazunte has also formed a cooperative called "Cosméticos Naturales de Mazunte", that has received support from The Body Shop, which makes shampoo, hair conditioner, body oils and deodorants from locally cultivated agricultural products.

The neighboring community of La Ventanilla, also on the coast of Oaxaca, is working towards providing tourists with an unforgettable ecotourism experience. The community has set aside a large area for environmental protection and wildlife conservation. There are 25 families in this community and approximately 110 people are participating in the ecotourism project. The project was first initiated in 1990 as a restoration project when a hurricane destroyed the community. As they began rebuilding they received funding from Bioplaneta, a Mexican organization that helps a network of rural sustainable companies and cooperatives to market its products and services in the

local, regional, national and global markets in a fair and equal way. Working together with Bioplaneta, the community developed an ecotourism project, wildlife breeding centers, organic agricultural products, and a restaurant which serves locally grown organic food. The community also provides communal house style lodging for tourists and has been very successful for over ten years (Mader, 1998, www.bioplaneta.org).

In Chiapas, the Ejido Emiliano Zapata has begun an ecotourism project that provides hiking trails through the Montes Azules Biosphere reserve with local guides. The community is located near Lake Miramar southeast of Ocosingo. The ejido offers traditional style communal houses and local camp areas for travelers. Travelers can explore caves, archaeological sites, and hiking through the tropical rainforest. The ejido also sells local handicrafts in order to provide financial resources for the protection and conservation of the Lacandon rainforest (Mader, 1998).

Ecoturismo Kuyimá is a community ecotourism company located in the town of San Ignacio in the middle of El Vizcaíno Biosphere Reserve in the state of Baja California El Vizcaíno Biosphere Reserve was established in 1993 and is Latin America's largest biosphere project. The reserve, which was designated a World Heritage Site by UNESCO, receives about 12,000 visitors each year. The local ejido of Luis Echeverría Alvarez has been operating for over ten years and is dedicated to promoting an ecological culture through ecotourism. This community runs tours on the San Ignacio Lagoon, a large bay frequented by calving gray whales. Most tourists arrive to watch the gray whales nurse their young in the shallow waters of the lagoon. Boat tours with licensed guides are about 40 dollars. The community also offers 10 rustic cabins for accommodations built with regional materials, and using solar techniques to heat water

for the guests. Each cabin is designed for two people, with a maximum capacity of 20 people in the camp simultaneously. Besides whale watching *Ecoturismo Kuyimá* offers camping, nature walks, use of bicycles and kayaks, library and video services, trips to the salt fields, and trips to local caves. The community is also involved in teaching kids, participating in local cooperatives, and organizing educational events. They offer conferences about the conservation of the zone's natural resources at the schools of San Ignacio Pueblo and La Laguna, and each year they offer local students from all grades trips to the area of reproduction of the gray whale. *Ecoturismo Kuyimá* strives to teach tourists the importance of natural surroundings and how to better care for them (www.kuyima.com).

Many communities throughout Mexico have created community enterprises based on ecotourism. These new initiatives of stimulating ecotourism within local communities is a way to promote development and supplement their traditional income from agriculture or timber harvesting with new revenues from tourism. This, in turn, benefits both the environment and the community itself (Barkin, 2001). Table 3.3 below shows additional CEEs identified in the review of the literature.

Figure 3.3: CEEs in Mexico

Community	Location	Features
San Juan Nuevo Parangaricutiro	Michoacán	Cabins, hiking tours, volcano treks
López Mateos	Los Tuxtlas Biosphere, Veracruz	Bird watching, interpretive trails, camping, river rafting
Angel de la Guarda, San Esteban, San Marcos	Islas del Golfo de California Protected Area	Dolphin, sea lion, whale watching and camping

Xpujil	Calakmul Biosphere Reserve	Wildlife observation, archaeological ruins, hiking
San Pedro, Nueva Esperanza, Tres Brazos	Pantanos de Centla, Tabasco	River tours, wildlife observation, camping
San Nicolas Totolapan	Ajusco Park	Mountain hiking, fish farming, plant nursery
Ara Macao	Lacandon Rainforest, Chiapas	Plant and wildlife observation
Sociedad de Solidaridad Social Escudo Jaguar	Ocosingo, Chiapas	Cabins, camping, archaeological ruins, jungle tours, boat rides
Ejido San Ignacio Arareko	Bocoyna, Chihuahua	Cabins, camping, museum, boating on lake
Cueva de Leones	Creel, Chihuahua	Cave tours, cabins, camping
Paraíso Peñitas	Sierra Tarahumara, Chihuahua	Cabins, camping, fishing, archaeological tours
Barrancas de Uruachi	Uruachi, Chihuahua	Camping, trekking, hiking
Ejido San Alonso	Otéviachi, Chihuahua	Hostal accommodations and hiking
Isla Yunén	Pátzcuaro, Michoacan	Cabins, boat trips, fishing, traditional dance, handicraft
Taselotzin, Sociedad de Masehual Siuamej Mosen Yolchicauani	Cuetzalan del Progreso, Puebla	Cabins, archaeological ruins, waterfalls, caves, hiking
Ejido Jacinto Paat	Dos Palmas, Tulum, Quintana Roo	Swimming, snorkeling, diving, Maya cooking school
Punta Laguna	Punta Laguna, Quintana Roo	Spider Monkey sanctuary, hiking, paddle boats
Ejido Chunyaxche	Muyil, Quintana Roo	Kayaking, hiking, swimming
Tres Garantías	Southern Quintana Roo	Bird watching, hiking
Ejido X-Maben	Señor, Quintana Roo	Camping, hiking, canoeing, swimming, Mayan ruins
Ejido Chacchoben	Chacchoben, Quintana Roo	Mayan Ruins, chicle camp, hiking

Sources: (Guía Mexico Desconocido, Mader, 1998)

The availability of information on community ecotourism enterprises is very low. These 26 different CEEs that I have uncovered reveal little or no information about the details of their enterprise, such as tourist numbers and revenues. There was also little information about what each enterprise offers and how they market themselves. I believe the challenge of marketing is a very common problem among CEEs. Although ejido communities have built upon social capital and some have much experience in organizing themselves into forestry enterprises, there exists a great challenge for an ejido to enter into the new ecotourist market. Because ejidos exist within a common property regime, a formal Ecotourism Committee is established to oversee the function of the enterprise, just as other committees are formed to oversee other forest enterprises like forestry. This committee handles finances and ensures that the proper resources are allocated to the maintenance of the enterprise. However, when first establishing an enterprise that requires an increase in human capital, such as training, and an implementation of tourist infrastructure within the community, many ejidos do not have adequate resources to initiate the process. Therefore, a number of ejidos are funded by non-governmental and government organizations. For example, SECTUR reports that 15 community enterprises are formally registered and these have received funding from *Fondo Nacional de Apoyo a las Empresas en Solidaridad* (FONAES). This organization provides support to small firms that help develop the local economy, and provide services in rural areas. The funding encourages productive investment and technological development, along with training. It is estimated that about 80 percent of these projects persist (Wodon, 2001). Some of the challenges and issues that arise in the creation of a CEE, such as marketing, common property and social politics, will be further discussed in chapter 4.

3.3 Mundo Maya and the Emergence of CEEs in Quintana Roo

The most famous initiative to merge sustainable tourism with local communities is the large scale *Mundo Maya*, formally known as *Ruta Maya* which is a regional project designed to preserve the cultural, historical and environmental heritage of the Maya. The project unites five nations that share a Maya heritage: Mexico, Belize, Guatemala, Honduras, and El Salvador in an effort to use sustainable tourism to boost local incomes and raise money for the conservation of protected areas and archaeological areas. The project aims to establish a 1,500-mile route connecting Maya sites and providing visitors with access to remote areas. In order to minimize road building through remote areas, planners suggest using low impact modes of transportation, such as horseback, hiking, or cable car on existing roads (Garrett, 1989). The *Mundo Maya* project was initiated in 1988 with the first regional meeting consisting of representatives of the five countries involved and many international organizations all coming together to plan the development and marketing strategies of the project. During this meeting the representatives insisted on the need to involve local communities in all aspects including, tourism, environmental conservation, and sustainable development. They also made a strong emphasis on the fact that if sustainable development were to succeed in this region, careful planning and cooperation between authorities, the tourism industry, and the local communities would be crucial. In 1990, the project changed its name from *Ruta Maya* to *Mundo Maya*, based on the fact that "mundo" better describes the abundance of attractions in the region. During the same year, the fourth regional meeting was held in Guatemala City and the official logotype for *Mundo Maya* was accepted and approved to be used for all promotional materials in Mexico, Belize, Guatemala, El Salvador,

Honduras, the U.S., Canada, and Europe. In the following years the regional meetings organized the coordination of the development of natural and cultural tourist areas; the marketing of these tourist areas in domestic and international markets; and information for local communities about the importance of preserving their environment and culture in order to receive economic benefits from tourism. The *Mundo Maya* project attempts to achieve long-term benefits by boosting local income through sustainable tourism and the harvesting of non-timber forest products such as, fruits, honey and natural medicines. The project seeks to promote community enterprises to provide tourist services and ensure community development. Counterpart International is working along with Conservation International, National Geographic Society and the Inter-American Development Bank to promote community development, technical assistance, and environmental conservation within the *Mundo Maya* project. Currently, one of the main gateways into the *Mundo Maya* is Quintana Roo, due to its large influx of tourists. Many international tourists use Cancun as an entry point to Mexico and the Maya Zone. There are many archaeological ruins and Maya communities throughout the state and currently the towns of Cobá, Tulum, and Chacchoben are some of the main Maya sites in the *Mundo Maya* route in Quintana Roo.

Presently along the Riviera Maya, the flagship of traditional international tourism in Mexico, there are emerging efforts to create tourism experiences that are more nature-based and provide the opportunity to observe or interact with authentic local cultures. At the level of Quintana Roo, after successfully packaging The Riviera Maya and the Costa Maya, the southern coast of Quintana Roo, local state tourism officials have now focused on the traditional Maya area of central Quintana Roo which they have proposed

packaging as the "Provincia Maya" (Yam Pool-SEDETUR, interview). This region is home to many small, traditional Maya communities who live off combinations of agriculture, forest management, and occasional labor migration to the tourism corridor, and packaging it for tourism is still a novel concept with which the region is trying to cope. The biodiverse semi-humid tropical forests, traditional lifestyles, and archaeological ruins found on many community lands are now seen as commodities that can be sold to tourists. But it is essential that we better understand the community and regional institutional processes that will allow communities to take advantage of these new income-generating possibilities without sacrificing their environments or their cultures. Because the ejidos of central Quintana Roo have experience in managing community enterprises, such as forest enterprises, the establishment of ecotourism enterprises is not a foreign concept. The dynamics and organization of CFEs provide a potential model for the success of CEEs in the ejidos of central Quintana Roo. However, the question arises of how do these traditional Maya communities adjust their current institutions and knowledge to tailor them to the demands of ecotourism enterprises? Furthermore, how does the community successfully incorporate ecotourism within a common property regime and assure that it is sustainable? In order to answer these questions, and many others, it is essential that I explain the processes of establishing a CEE in X-Maben and compare this model to other existing CEEs in Quintana Roo. I have researched three distinct types of ecotourism models within Quintana Roo:

1) community based and managed/ with various stakeholders
2) private sector contract model
3) public sector investment model

These models provide insight to establishing CEEs within common property regimes and the successes and challenges involved in the process. The following chapter highlights CEE experiences in X-Maben, Pac-Chen, Chacchoben, and few others in central Quintana Roo.

CHAPTER 4

A Case Study of Community-Based Ecotourism in Quintana Roo

The small town of Felipe Carrillo Puerto is the main turn off point for visiting small Maya communities in the *Provincia Maya.* Because there is a huge tourist market along the Cancun-Tulum corridor and an emerging one further south in the "Costa Maya", many small Maya communities within proximity to the Riviera Maya have already begun receiving tourists in search of nature and cultural experiences. Many tourism officials are now anticipating a greater influx of tourists to the ejido communities of central Quintana Roo, in search of a new variety of tourism that differs from the traditional sun and sand seekers. The main focus of my research was the CEE in the ejido X-Maben, about 25 kilometers from Felipe Carrillo Puerto. The ecotourism enterprise of X-Maben was the first sustained effort to establish a genuine community-based tourism project in central Quintana Roo. The main attraction is a beautiful clear lagoon about 9 kilometers from the main town of X-Maben, Señor. Laguna Azul (Blue Lagoon) offers diverse natural attractions to tourists and residents of ejido X-Maben. The area offers over 100 species of birds, about 20 species of orchids, 5 species of tropical cactus, crocodiles, beautiful bromeliads, palms and other plant species. The lagoon itself is incredibly beautiful with blue-green crystal clear water that can be appreciated by canoe trip, swimming or snorkeling. There are also ancient Mayan ruins close to the lagoon that can be visited, in addition to camping facilities, and interpretive hiking trails.

As discussed in chapter 1, community based ecotourism has recently emerged with the attempt to center tourism development in local communities in natural areas,

maximizing the communities stake in environmental protection by allowing them to profit from tourist interest in these areas. Many ejidos in Quintana Roo have formally organized community forest enterprises (CFEs) for the commercial production of timber, and many also undertake a wide variety of traditional natural resource extraction activities, as well as traditional subsistence activities. In the case of many ejidos in central Quintana Roo, there exists a rich social capital in the political organization of the ejido community, as well as experience in managing CFEs, which can provide a model for the creation of a CEE. This chapter focuses on a case study in the ejido X-Maben, which analyzes the development, training, economic issues with the current CEE. The chapter also highlights other models of CEEs in Quintana Roo that were visited during the research, including examples of a community collaboration contract model, and a public sector, private sector and community collaboration model.

4.1 CEE in Ejido X-Maben

The idea of a CEE in X-Maben first arose in December 2000 with an announcement from the Instituto Nacional Indigenista (INI), a government organization dedicated to the support and development of indigenous communities in Mexico, of a grant competition for 200,000 pesos (about 20,000 US dollars) towards a community ecotourism project in the Maya Zone. A forest coordinator from the Organización de Ejidos Productores Forestales de la Zona Maya (OEPFZM) named Ofelio Guatemala had first seen the lagoon in X-Maben while surveying forests and speculated why there was not access to the lagoon for recreational use. When INI announced the grant competition for the ecotourism project months later, the idea of using the lagoon in X-Maben was

suggested by the OEPFZM. The director of INI, Jesus Aguilar, and the forest coordinator from OEPFZM approached Arturo Bayona, a biologist and ecotourism specialist, for help on writing an ecotourism proposal for INI. Bayona, originally from Chihuahua, has lived in Felipe Carrillo Puerto for many years, runs a local NGO called Econciencia and teaches at the local university. He has also designed other ecotourism projects in the state of Quintana Roo. With Bayona's help, a proposal for an ecotourism project in X-Maben was written and sent in to INI. The three then attended a General Assembly of X-Maben and presented the project idea to the community. At the assembly it was mentioned that because X-Maben has such a rich cultural history, beautiful ecosystem, and advanced forest management, it would be ideal to show ecotourists this unique community, and in return the community itself would benefit from income created by new tourism jobs. The concept of ecotourism was explained, although it remained a foreign concept for most in the community. However, the initial reaction from the community leaders was positive. Details of the project as developed by Bayona were explained: INI might provide 200,000 pesos to designate a forest recreational area, build huts and trails and to clear camping grounds. The ejido needed to agree to designate an area of forest adjacent to the lagoon for the strict use of ecotourism purposes. It was cautioned that it was likely that the community would not immediately generate a significant income from the project. This enterprise could take many years to produce a steady income for the ejido, however it would help to protect and conserve the forest area designated for ecotourism, as well as Maya culture and traditions. Some of the community *ejidatarios* remained skeptical and wanted no part of the new enterprise if it did not generate immediate benefits. However, the *comisariado* Silvano Poot and the majority of *ejidatarios*, agreed to designate 100

hectares of forest area adjacent to the lagoon for the ecotourism enterprise. On June 17, 2001 an Acta de Asamblea, or ratified community agreement, was signed by the ejido committee, which declared 100 hectares of forest area next to the lagoon for an ecotourism reserve. The only access to the lagoon had been a small path from Señor, however apparently in 2001 the timber purchaser constructed a road from Señor to the lagoon area. Soon after, a team of four men was paid a daily salary of $7 dollars by the ejido to clear paths in order to formally designate the ecotourism reserve. This task took a total of four days and although 100 hectares were supposed to be delineated, only a total of 10 hectares were actually delineated (Angelica Navarro, personal communication). In the Acta de Asamblea, no formal rules were made that prohibit the hunting and harvesting of flora and fauna, nevertheless the ecotourism group claim that subsistence activities are prohibited with in the reserve, although during field research evidence of animal traps were found.

Among the people interested in this new community project was a group of 10 young men, sons of *ejidatarios,* who all offered to be in charge of the enterprise and dedicate their time for training and working in ecotourism. However, as we shall see, tensions would arise over the fact that none of the young men interested in running the project were legal community members, yet they had been ceded use of a common property that belonged to the community.

Training: Building Human Capital In X-Maben

Neither the young men, nor anyone else in the ejido, had knowledge of tourism; they were beginning from zero. Thus, the most immediate need was for training. INI

allocated 20% of the 200,000 peso grant to the biologist, Bayona, in order to work with the group of young men over a period of six months, providing training for the identification of flora and fauna, interpretive trails, ecotourism activities, and ecotourism etiquette and customer services. The forest area was studied and a species inventory was conducted along with the training process. Bayona organized the project into 6 different phases described below.

Figure 4.1: Training Phases

PHASE I

- Initial meeting with ejido authorities to present project idea
- Establishment of an Ecotourism work group
- First visit to the ecotourism project area
- Initial trails are made and proper marking of the reserve area
- Course #1: Written Elaboration of the Ecotourism Project
- Course #2: Learning the Biodiversity of Quintana Roo
- Visit to Chunyaxche ecotourism project to view a dock and a residence house
- Start of the videotaping for the phase I process

PHASE II

- Tour of the reserve area to determine optimal places for interpretive trails
- Observation and identification of bird populations to begin the species inventory
- Purchase of binoculars and field guides for the work group. Training and practice use.
- Course #3: Experiencing Ecotourism Through Interpretive Trails
- Continuation of videotaping the training process

Continued below

PHASE III

- Construction of trails
- Observation and identification of orchids, bromeliads, palms, cactus, and tree species.
- Search for mammal traps
- Observation and identification of local reptiles
- Determination of an area to construct a large hut
- Determination of an area for the dock on the shore of the lagoon
- First transportation of building materials
- Course #4: Orchids of the Maya Zone
- Continuation of the videotaping

PHASE IV

- Continuation of species inventory
- Locating points of environmental interpretation and carrying capacity planification (max. 75 persons)
- Activity planning
- Course #5: Environmental Interpretation Techniques and Ecotourism Etiquette
- Continuation of videotaping

PHASE V

- Begin construction of the huts
- Begin construction of the dock
- Purchase of three canoes for aquatic activities
- Purchase of ten lifevests
- Purchase of six snorkel gear
- Classification of wood to build signs for the trails
- Purchase of building and painting materials
- Design and construction of the signage
- Course #6: Canoe Techniques and Formation of an Aquatic Route

PHASE VI

- End of construction
- Trail organization
- Design of a web page and advertising pamphlet
- Contact with ecotour agencies
- Draw map of the area
- Course #7: Practice Tour Guided by the Ecotourism Group
- Begin paperwork to legalize the enterprise
- Inauguration of the final project (Source: Bavona)

The training process and preparation lasted for six months between July and December 2001 with seven courses conducted on every Saturday, which included the following:

Figure 4.2: Specific Courses

1) Written Elaboration of the Ecotourism Project- July 14, 2001
2) Learning the Biodiversity of Quintana Roo- July 22, 2001
3) Experiencing Ecotourism Through Interpretive Trails- August 25, 2001
4) Orchids of the Maya Zone- September 8, 2001
5) Environmental Interpretation Techniques and Ecotourism Etiquette- October 13, 2001
6) Canoe Techniques and Formation of an Aquatic Route- November 3, 2001
7) Practice Tour Guided by the Ecotourism Group- December 8, 2001

Over the course of the training four of the group members lost interest and quit and only six of the remaining members completed the training. These six members then voted on responsibilities within the group and named the group "Laguna Azul" after the main attraction. A young Mayan from one of X-Maben's wealthier families, Marcos Canté became president of the group. His responsibilities are to hold meetings, write proposals, tour guide and maintenance of the ecotourism area. Santos Pool Ek is the vice-president and is in charge of guided trail tours, bird watching and animal observation, and maintenance. Clemente Varela Chan is the secretary and is in charge of organizing group documents, maintenance and canoe tours. Pascual Pool Ek, the older brother of the vice president and the only ejidatario in the group, was asked to take position as treasurer in order to involve at least one ejidatario in the ecotourism project. He is in charge of the group finances along with maintenance. Juan Ciau Cavich is in charge of security,

maintenance and canoe tours. Jorge Cavich Varela is in charge of the advertising and marketing of the project. The group meets once a week in order to discuss events and responsibilities. Each of the members also has other jobs within the ejido, including subsistence activities in addition to other jobs. For example, the president is also a photographer and a music teacher and the vice-president repairs bicycles and grows chilies.

By December of 2001 the ecotourism group of Laguna Azul was trained, the ecotourism reserve area was organized with interpretive trails, information signs, huts, a dock and a camping area. The next step was to establish entrance fees and tour packages. Bayona and the ecotourism group developed the following packages:

Package Name	Description	Cost
1) Popular Package	Entrance Fee	$5.00 pesos
2) Economical Package	Entrance fee, 2 huts, trail tour, guide fees, access to the lagoon	$70.00 pesos
3) Special Package	Entrance fee, 2 huts, 3 trail tours, guide fees, canoe tours, lifevests, swimming	$100.00 pesos
4) Laguna Azul Package	All of the above plus transportation to and from F. Carrillo Puerto	$130.00 pesos
5) Supernatural Package	All of the above plus camping equipment for one night	$180.00 pesos

OTHER SERVICES:

Tours around the entire lake (2 persons + guide)	$100.00 pesos

Crocodile Watching (2 persons + guide)	$200.00 pesos

Bird Watching (max. 10 persons)	$ 80.00 pesos (P/P)

Over time, newer members joined the ecotourism group. Angel Garrido Canul, Luis Salazar Canul, Miriam Varela Coba, and Virgilio Cuxim Pat joined, restoring the group to its original number. Although they had not been formally trained by Bayona, as the other 6 members, most of the newer members were put in charge of maintenance and security and work as auxiliary guides.

After the training by Bayona was completed, the next significant training opportunity was offered by RARE Center For Tropical Conservation, an Arlington, Virginia-based NGO specializing in ecotourism in protected areas. In September of 2002 the Ecotourism and Community Development Program of RARE began a program in Quintana Roo to train ecotourism guides working in the Sian Ka'an Biosphere Reserve. Although ejido X-Maben does not directly border the Biosphere Reserve, members of the Laguna Azul group were invited to participate because they were an organized group and near the Reserve. Only one member of the Laguna Azul group decided to attend the RARE training courses. There were two separate courses; one for guide certification and one for promotion and marketing certification. The Laguna Azul representative joined the ecotourism promotion course. Part of his duty was to educate the entire ecotourism group

in Señor about what he had learned throughout the courses .The training consisted of a one-year program and three distinct phases. The first phase began on October 6, 2002 with a one-month stay in Santa Teresa, a training and research facility owned by SEMARNAT within the Sian Ka'an Biosphere Reserve. Workshops on computer technology, ecotourism marketing and promotion were held everyday until November. RARE covered all room and board expenses and the costs of training. After the one month of training he returned to Señor with the assignment to conduct workshops with the other group members in order to educate them on ecotourism marketing and promotion, however group members reported that the workshops were never conducted. Phase number two began in January and lasted for one month in Carrillo Puerto. This course was on developing projects and proposals. The Laguna Azul representative learned how to do financial analyses, market research studies, and marketing techniques. He had homework assignments and research projects to complete. Phase three began in April and lasted for one month as well. This course consisted of advertising techniques, such as web page design, postcard design, and brochure design. He completed all requirements and graduated as a certified ecotourism promoter from RARE training on July 17, 2003.

Additional training was provided by SEDETUR (Secretaría de Desarollo Turístico), the state tourism development agency. On July 18, 2003 the president of the group, Marcos Canté completed a five-day tour guide training course offered by SEDETUR, which included guide training and first aid training. He is now a nationally licensed tour guide. Canté and a couple others had also received a previous training opportunity by INI in 2001 to travel to Oaxaca in order to visit and learn about other

community ecotourism enterprises in action. Although the group was given opportunities for training, some of the group is currently not very well prepared in terms of guiding and managing the enterprise. The longest and most intensive training workshop was conducted by RARE, but only one of the group members took advantage of this opportunity. Furthermore, this same person recently left the ecotourism group due to tensions and disagreements with the other group members. While the original six members were trained by a biologist, the other four members have received no training at all. Training workshops for tour guides, management skills, promotion, and environmental conservation have not been sufficient within X-Maben. The original training session was over two years ago, for this reason further training is needed for the entire group. A variety of training workshops need to be conducted on a regular basis in order to cover all aspects of developing and maintaining a successful CEE.

The ecotourism reserve area has strict rules about respecting the surrounding nature by not littering, and following all paths with a guide. There is also a carrying capacity of 75 people, which was defined by Bayona, therefore the area must not exceed this amount. However, many problems have arisen due to lack of cooperation and disrespect of the rules. For example, during Easter holiday in 2002 the lagoon had over 300 visitors within one week. This clearly violates the carrying capacity established by Bayona. Furthermore, there is not a full time staff on the reserve premises and many times visitors enter the lagoon area without paying an entrance fee. There is not permanent surveillance either, due to the fact that the lagoon is 9 kilometers from the main village of Señor and transportation is not readily available. In turn, there is a large problem with garbage in the ecotourism reserve from visitors that disrespect the rules of

the area. Scattered litter surrounding the dock area is visible on a regular basis. There is not a designated trash pickup in the lagoon area, the ecotourism group usually picks up garbage whenever possible. The ecotourism group has to pay for local truck transportation to and from the lagoon in order to take out the garbage. The garbage is then dumped in small landfills outside of Señor. The CEE has not generated a sufficient income, therefore maintenance and upkeep of the project has suffered. Infrastructure in the area is lacking as well. A large hut was built to shelter visitors, and a dock was built for easy access to the lagoon. However, problems with overcrowding on the dock occur often, and the area is in need of another dock in order to disperse the concentration of visitors from that one area. In addition, a very poor attempt to construct two composting toilets was carried out in 2002. The original plan was to hire a local NGO to plan the construction of the toilet, however complications arose when the comisariado decided to hire a less expensive construction designer. The composting toilets were built with concrete and cinder blocks instead of using local material. Two separate toilets were installed, one for women and the other for men. However, the toilets are badly designed, do not function properly and uncomfortable. Local people prefer to use the bathroom outside instead of the composting toilet. Thus, the unsuccessful attempt to use composting toilets, along with a lack of training and little infrastructure are some of the major complications associated with the creation of this CEE, which in turn can also be linked to economic issues.

Economics of CEE in X-Maben

In the original conception, all profits were to be divided between the ecotourism group and the ejido, due to the fact that this reserve area is on communal property, which belongs to the entire ejido. The profits were to be divided as follows:
60 percent of the total profits are given to the ejido, which means that the profits are divided among all of the 542 ejidatarios. 40 percent of the profits are collected by the ecotourism group, and are used for maintenance, salaries, and marketing. However, the distribution of the profits, along with other difficulties within the enterprise, created many problems between the ejido and the ecotourism group.

Because the ecotourism project is located on communal property, it is extremely difficult to charge residents of ejido X-Maben an entrance fee to the lagoon. The lagoon and the ecotourism reserve belong to all residents of the ejido. All ejidatarios are exempt from paying an entrance fee. Therefore, only tourists coming from outside of the ejido are charged a $5.00 peso entrance fee.

During the first year of operation, the first influx of visitors occurred during Easter break in April 2002. Within two weeks 379 visitors were recorded, the maximum amount of visitors ever recorded. However after April the number of visitors dropped, resulting in an average of 165 visitors per month during the 2002-2003 year. Records were very inconsistent and information is only available for the months of April through July 2002, September 2002, and March 2003. The average workdays were calculated to be 50 throughout the entire year. This shows that for many days of the year there was no one present from the ecotourism group to register visitors, collect entrance fees or rent equipment.

The sporadic flow of local recreational users and tourists led to low levels of income. Records from 2002-2003 show that there was a total of 990 visitors to the lagoon with a total income of $4,850.00 pesos ($485 dollars) generated from entrance fees, guided tours and water activities. $2910.00 pesos ($291 dollars) were collected by the ejido and the ecotourism group collected $1940.00 pesos ($194 dollars). This means that over the course of one year, the ecotourism group generated $194 US dollars total, which is barely $20 dollars for each member per year including maintenance costs.

The Common Property Dilemma

The ecotourism group also has had many problems with the ejido because of the fact that all of the group members are not *ejidatarios*. The group is not entitled to manage and make money from the land because they themselves are not formal community members. Furthermore, the ejido authorities have implied that if the ecotourism group wants to work in the reserve area they must be legally registered as a cooperative that provides tourism services. The ecotourism group felt it would be best to legally register themselves as a private cooperative in order to avoid conflicts and criticisms. In X-Maben, there is an official saw mill enterprise, a greenhouse enterprise, and a fruit growers enterprise that have all legally formed a cooperative in order to operate without criticism from the ejido (Berenice Gonzalez, personal communication). Many people within the ejido complained that it is not fair for one small group to make money from ecotourism using the common property. The ejido authorities felt that they should be making more money from this project because the lagoon belongs to the entire ejido, however the ecotourism group felt that because they are the only ones in charge of it,

they should hold on to most of the profits from the enterprise. There has also been a lack of communication about the organization and financing of the ecotourism enterprise between the ecotourism group and the comisariado. The comisariado was not supportive of the ecotourism group due to the fact that they were young and most were not ejidatarios. The comisariado would not cooperate with trash pickups and support of the project, and the ecotourism group did not feel acknowledged by the ejido. Many ejido residents are still not aware of what ecotourism is exactly and what its role is in X-Maben. There has not been a widespread cooperation between the ecotourism group and the ejido because many ejido residents have not seen the benefits of creating a CEE.

These problems, misunderstandings, lack of organization, and lack of sufficient training resulted in an ecotourism project with great potential but no successful development. Between December 2001 and May 2003 there had been very few foreign tourists, a lack of organization within the ecotourism group, and a lack of cooperation and support from the ejido. The lagoon and ecotourism reserve had turned into a local bathing pool and picnic area with scattered garbage and frequent overcrowding on holidays. The goal of the ecotourism group was to develop a project that would attract both national and international tourists, however the lagoon area was being mainly used for local recreation. These many tensions and complications brought about the idea to disperse the focus from the lagoon to the town of Señor and the Maya culture. Although the lagoon had been the initial attraction for the CEE, the ecotourism group began to realize that if more residents of the ejido were involved in the project, more support would be given to the new idea of a CEE. Because the ecotourism group is young, better educated, and more aware of the outside world and its opportunities than older generations, the group

recognized that in fact, ecotourism could be a new source of income for the ejido, however they knew they needed to involve more residents of X-Maben.

In May 2003, when I arrived to research and work with the ecotourism group in Señor I encountered a discouraged project. The ecotourism group was frustrated with the enterprise, members were disagreeing and threatening to quit the group, and money was very tight. The group was trying desperately to raise money in order to legalize themselves as a Sociedad Cooperativa (cooperative) and attain a *figura jurídica,* the legal document necessary for this formality. The group had applied for grants through United Nations Development Program (UNDP) and local organizations such as, Secretaría de Desarollo Social (SEDESOL, a cabinet-level federal government development agency) in order to receive funding to provide infrastructure and more training for the ecotourism enterprise. The project has not yet received additional funding; however proposals for UNDP have been approved and $300,000 pesos will be awarded to the ecotourism group of X-Maben for infrastructure, training, and trails. SEDESOL has also approved funding in the amount of $88,110 pesos for infrastructure and supplies. The *figura jurídica* process has also very recently been accomplished thanks to a donation of $1000 US dollars from the Hewlett Foundation and FIU in January 2004. The ecotourism group formally changed their name from "Laguna Azul" to "X'yaat", which is a type of palm found in central Quintana Roo. This is their legal name as a tourism services cooperative.

Frustrated with problems around providing services at the lagoon, the group decided to start developing one of the ideas they had been discussing for months, a cultural tour of the community itself. In June 2003, the ecotourism group decided to begin a new tourism package that would involve residents of the ejido, bring profits to a

wider range of individuals and focus on traditional Maya culture. The "Cultural Package" involves walking tours through the town center of Señor, which is the largest town in X-Maben. In order to gain participation within the ejido for this project, a workshop was held on June 15, 2003 in Señor. Carlos Meade, president of Yaxché, a community development NGO, Stephanie Cohan, a research assistant from FIU, and myself, conducted the workshop. The workshop aimed to inform interested participants the role of cultural tourism in their community, along with the benefits that tourism can bring. About ten people attended the workshop, and as the day advanced others stopped in to attend. The objective was to present the tour schedule, devised by the ecotourism group, to the community and assign activities with respect to the interests of participating ejido members. After designating activities and positions, salaries and costs were discussed. The tour schedule that was developed follows:

Figure 4.3: Cultural Tour Schedule

TIME	ACTIVITY	PARTICIPANT
9:00- 9:15	Arrival/ Welcome	Marcos Canté
9:15-10:15	Mayan Breakfast	Doña Cecilia
10:30- 10:50	Sewing Techniques/ Traditional Mayan Huipil	Doña Casilda
10:55-11:15	Hammock Making	Doña Mari
11:15-11:50	Visit to Mayan Kitchen and Garden	Doña Cuxim Ek
12:00-12:45	Histories and Legends	Don Abundio Yama
12:50-1:30	Visit to Home Garden/ Traditional Medicine	Don Lucio Pot Ek

1:30-2:00	Walk in Park	Santos Pool
2:00-3:00	Mayan Lunch	Don Canté
3:00-3:30	Music Workshop	Don Aniseto Pool
3:30-4:00	Traditional Honey/ Xunankab	Don Pedro
4:00-4:15	Farewell	Marcos Canté

The new cultural tour can give tourists an insight on traditional Maya activities such as, traditional food and medicine that is grown locally, as well as how traditional dress, hammocks, and local musical instruments are made. Many women were very interested in participating in this project and showing others how to sew traditional materials. This package spreads benefits more widely within the ejido and among ejidatarios than the activities in the Lagoon. It also opens up the possibility of selling artisan products directly to tourists. The cost of the Cultural Package is about $250 pesos per person. Each ejido member that participates is paid a salary of between $30 and $50 pesos, depending on the time spent at each activity. There is one main guide who is paid $200 pesos, an auxiliary guide who is paid $100 pesos, and the coordinator who is paid $200 pesos per tour.

The Cultural Package has raised an interest in ecotourism among the community. It has increased community participation and cooperation in the project by creating new sources of income for many ejido residents, while focusing on the value of conserving the traditional Maya culture and surrounding natural resources. The X'yaat ecotourism group is also currently planning mixed two-day packages that include the cultural tour and camping at the Laguna Azul. These prices have not yet been determined.

CEE Models in Quintana Roo

There are currently many other efforts to create community ecotourism enterprises in central Quintana Roo. The OEPFZM has written proposals to SEDESOL, which has recently approved infrastructure grants for projects in Nueva Loria, Laguna Kana, and Tres Reyes, all located in the municipality of Felipe Carrillo Puerto. All three communities are in beginning stages, however Nueva Loria has already begun construction and organization. Nueva Loria consists of 3,300 hectares and 40 ejidatarios. The community is both Mayan and mestizo and hosts some of the largest Maya ruins in the area, along with dense forests and a small lagoon. The ejido has formed an ecotourism committee that is in charge of developing the project. The ejido is currently constructing trails through the forest to the ruins, and they are planning tours on horseback. However, no funding for training has been considered or planned to this date. The OEPFZM is also working together with Tres Reyes in order to start a CEE. Funding for infrastructure has been approved, however in August 2003 the community was just beginning the process of organization and establishing a group that will be in charge of the CEE development. Laguna Kana is also starting to organize the development of the CEE along with help from Balam Nah and the OEPFZM, and currently has a small group of five young men that wish to be in charge of the project. CEEs are a new concept among the ejidos in Quintana Roo, and when entirely managed by the ejido they require many years of planning, training and development in order to operate smoothly.

4.2 Ejido Tihosuco: A State Government Supported Museum

In the town of Tihosuco a community tourism project was created based on historical and cultural tourism rather than ecotourism Tihosuco is a large ejido with 850 ejidatarios and a total population of 8000. The town is very rich in history because of the many important events that took place here during the Caste War. In 1993 the state government built a Caste War museum in Tihosuco to illustrate the events of the famous Maya resistance. The museum is run by a full-time Director paid by the state government, and works with the community, offering courses and workshops in Mayan language, religion and culture. They currently run tours in the museum, to the town church, destroyed during the Caste War but leaving a handsome ruin, work with a woman's artisan group, and support workshops on traditional medicine. They charge, on average $5 pesos per person per tour. They receive about 400 Mexican tourists and about 10 foreign visitors per month, which probably makes it the most successful community tourism project in the municipality of Felipe Carrillo Puerto. The museum staff has been very interested in increasing tourism in the ejido, however many ejido members are not interested and are reluctant to receive foreigners (Carlos Chan, personal interview). The museum group is not legally registered as a cooperative and is entirely supported by the government, thus have had difficulties getting resources to start tourism activities. In January 2003 Balam Nah, the tourism agency in Felipe Carrillo Puerto, began collaborating with the Tihosuco museum group. They have established a tourism package, which includes a visit to the museum, tour of the church, visit to the historical haciendas, tour of the sewing center, and meals. They are also planning bicycle routes and visits to local cenotes. They have received one large group of twenty students and

other small groups of tourists. The museum in Tihosuco is professionally done, and covers the history of the Caste War and its local impacts. The town itself features a statue of Caste War Mayan leader Cecilio Chi, and is very rich in history. Although tourism has been slow, the Museum Director and his group are committed to develop tourism in Tihosuco, while educating visitors on Maya history and culture.

4.3 CEE in ejido Pac-Chen: Private Sector/Community Collaboration Contract Model

In the municipality of Lázaro Cárdenas, north of Felipe Carrillo Puerto, the small community of Pac-Chen has developed a CEE in collaboration with a private ecotourism company called *Alltournative*. This company is based in Playa del Carmen and was formed in March 1999 with the purpose of conducting ecotourism and adventure tourism to natural areas. Alltournative's mission is to be recognized as the best adventure and ecotour expedition operators in Quintana Roo (Gavin Greenwood, interview). The company has established partnerships by signing contracts with four different Maya communities in northern Quintana Roo and offers activities such as, rappelling, cave exploration, kayaking, zip line, and snorkeling in cenotes. The company signs a contract with the communities for a specific number of years, usually between six and ten. This contract allows Alltournative to operate in the ejido and it controls all activities. However the company trains community members who are interested in working for the company and when the contract is over, the community can entirely run the operation if they desire. In Pac-Chen, Alltournative pays the ejido a monthly fee for using their land, and also provides employment for over 100 local people in the form of guides,

photographers, cooks, waitresses, and handicraft sales. The contract also includes rules for sustainable resource management, prohibits logging within the ejido, encourages alternative energy use as well as waste composting. Alltournative strives to promote sustainable development within the communities by raising family income levels, providing direct employment opportunities for the community so that young men do not emigrate in search of work, improving the quality of life, providing ecotourism training, preserving traditional Maya customs and culture, conserving nature, and creating an environmental awareness among community members (Alltournative Press Kit). Alltournative also offers scholarships to young students that wish to attend secondary school. They have provided the communities with telephone service, radio communication, emergency vehicle service, hurricane refuges, ecological composting bathrooms, and solar panels, which provide alternative energy sources. Within the communities, all natural and local materials are used for the construction of huts and hammocks. Each day a maximum of 110 visitors are allowed in the community in alternating groups of ten per visit, in order not to exceed the carrying capacity. The use of chemical sun block and repellent is prohibited; only biodegradable products can be used in swimming areas. There are also waste management programs where organic and inorganic trash is separated and disposed of properly.

Pac-Chen consists of 4,650 hectares and only 25 ejidatarios. The main economic activity was subsistence agriculture and honey production, until May 1999 when the community began working with Alltournative, making tourism the number one economic activity in the ejido. On May 11, 1999 Pac-Chen signed a five-year contract with Alltournative that would allow the company to administer ecotourism and adventure

tourism activities in the ejido. The ejido is paid $40,000 pesos ($4,000 dollars) a month for the use of their land. This means that each ejidatario makes $1600 pesos ($160 USD) each month for allowing Alltournative to operate within the ejido. Furthermore, since the ejido is very small most of the community members are employed by the company. The male employees are divided into two groups of twelve men, which alternate workweeks. One group works one week and then has off one week to tend to other ejido activities, such as agriculture and honey production. Each employee is paid $60 pesos ($6 USD) per tourist group per day, therefore one worker that attends to three tourist groups can make $180 pesos ($18 USD) a day, which is much more than the average daily pay rate of $70 pesos ($7 USD). The women employees are also divided into working groups of two with eight in each group. The women work as cooks and waitresses and each group alternates workdays. The employee salary for the women is $15 pesos per tourist each day, which means if 85 tourists arrive throughout the day and leave a total of $1275 pesos, each cook would make $318 pesos (about $31 USD) a day. Again, this rate of pay is much higher than regular working wages or income generated from subsistence agriculture. The development of an organized CEE in ejido Pac-Chen has increased the local income dramatically. Almost every member of the community is involved in tourism and therefore it is now the principal source of income for each family. Due to the increase in income, ejido members have been willing to conserve their natural resources and use them sustainably in order to continue revenue generation from the community ecotourism enterprise.

However, there appear to be certain drawbacks from the success of the CEE in Pac-Chen. Although every local employee I chatted with expressed content with the

partnership with Alltournative, I did hear many criticisms from outside NGOs. It is rumored that many social impacts are not taken into consideration in Pac-Chen and that the large influx of foreign tourists can contribute to a change in traditional Maya culture. Even though Alltournative claims to conserve Maya traditions, you can easily observe many tourists in tiny bikinis walking around the ejido. This is something out of the ordinary for the small ejido and has created a social and behavioral change among some of the men. The most striking aspect of this project is the fact that Alltournative requires the ejido to present themselves as a traditional Mayan village, therefore houses must be constructed of only local material, no tin roofs, they must always dress traditionally, and TVs and radios are not allowed to be used during the day. Although this rule could be viewed as unfair, it could also be a possible way to encourage Mayan culture conservation by making it profitable. It is also rumored that other economic activities within the ejido have severely decreased and all effort is placed on the CEE. Therefore, traditional Maya practices such as milpa, religious ceremonies, and traditional medicinal treatments could gradually be replaced by tourist activities.

Although social issues will present themselves while developing these new CEEs within common property regimes, the success of the CEE in Pac-Chen has contributed to environmental awareness within the ejido. Each ejido is entitled to decide whether or not a CEE would be adequate for their ejido. There are a number of ejidos in Quintana Roo that do not choose to develop CEEs due to many factors, among them that a private company may not have offered them a contract yet. However, even when offered a contract to begin a CEE, the choice is up to each ejido whether to accept or decline.

The agreement of ejido Pac-Chen to rent their land to a private ecotour company has significantly raised income levels within the ejido, improved living conditions, and conserved nature. The enterprise has created many positive benefits within the ejido such as the prevention of out-migration to other areas in search of work, excellent waste management and sustainable use of their resources. I visited Pac-Chen on June 14 with a large group of ejidatarios from X-Maben, Nueva Loria and Laguna Kana, which was organized by the OEPFZM in order to show CEE options to other ejidos. Especially compared to ejido X-Maben, the cleanliness of the community was very impressive. Not a single piece of garbage was visible throughout the entire tour. However, part of the contract with Alltournative does include the prohibition of littering throughout the community. We also observed the ecological composting bathrooms and solar panels that some households use. The ejidatarios from the other communities were extremely impressed with the operation of Pac-Chen's CEE, which created a sense of excitement to develop CEEs within their own ejidos.

The CEE model of a partnership between an ejido community and a private enterprise can present many benefits in the creation of a successful CEE. When comparing Pac-Chen to ejido X-Maben, it is obvious that Pac-Chen has been more successful. One major advantage of the contract with Alltournative is that there is only one major stakeholder apart from the ejido. This allows the project to develop smoothly and with more organization. Alltournative has provided all sources of funding and training for this enterprise. Alltournative is also in charge of marketing and promotion, which is something that the ejido itself is not familiar with. When interviewing the guide director of Alltournative, he told me that "Alltournative is an expert in sales and

marketing, the community is an expert in managing their natural resources, however they do not know how to market and promote their new CEEs, that is the importance of the partnership between the two". After the five-year contract is completed, ejido members will be familiar with the operation of a CEE; they will be trained in ecotourism and adventure tourism, and will be given a choice to manage the CEE entirely on their own, including marketing and promotion. Forming a partnership with a private company provides a model and a safety net that enables an easier success of a CEE. There is an analogy between the contract established with Pac-Chen and Alltournative to the establishment of community forest enterprises (CFEs), which began with private logging companies that operated in the ejidos and eventually showed the ejidos how to operate and manage it (Galletti, 1998). This could be the case for establishing successful CEEs throughout Quintana Roo.

4.4 CEE in Ejido Chacchoben: A Tripartite Collaboration: Public Sector Investment Model

Ejido Chacchoben is located in the municipality of Othon P. Blanco, just south of Felipe Carrillo Puerto. Chacchoben consists of 18,000 hectares and has two small towns; Chacchoben is predominately Maya and Lázaro Cardenas is mestizo. The ejido has 310 ejidatarios and a total population of around 2000. Chacchoben is a very unique example of a CEE because it involves the first ever co-management plan with INAH (Instituto Nacional de Antropología e Historía) around the substantial Mayan ruins (also called Chacchoben) on community lands. The idea to begin tourism arose four years ago, when the government began to develop the "Costa Maya" as a new tourism destination along

the Quintana Roo coast south of the Sian Ka'an Biosphere Reserve. The Costa Maya development model is to have smaller hotels further apart, and thus is intended to be a lower-intensity more "environmentally-friendly" alternative to the Riviera Maya. The main beach town along the Costa Maya is Majahual and this town was scheduled to receive cruise ships from a very early period, creating the problem of where to take tourists from the cruise ships. As it so happened, the closest community with large Mayan ruins was Chacchoben, 75 kilometers from Majahual. SEDETUR has been in charge of developing this area and began to pressure INAH to restore the ruins in Chacchoben for tourism purposes. INAH had been working in Chacchoben for ten years, however was working merely for research purposes, not for tourism development (Rene Petrich, interview). There are approximately 80 large pyramids within the archaeological site. The ruins in Chacchoben are estimated to be from the late Pre-Classic period (300 B.C-250 A.D.), but the city-state reached its peak between 250 A.D.- 600 A.D. The structures are very large, numerous and cover an area of 72 hectares. Because archaeological sites throughout Mexico are all considered national patrimony, communities do not own the archaeological sites present on their property. INAH administers all of Mexico's archaeological sites and all ticket sales are collected by the Mexican government. Communities normally have little to say, the land on which ruins are present are basically expropriated by the government, and ejido members are limited to operating parking lots, guide, and artisan store concessions. However, things proved to be somewhat different in Chacchoben. Chacchoben had been a founding member of the Sociedad de Productores Ejidales Forestales de Quintana Roo (SPEFQR) and had long experience in managing a community forest enterprise. Its current comisariado had

recently stepped down from being President of the SPEFQR for several years, and thus had substantial leadership experience. The combination of the social and human capital acquired in administering forest management activities apparently translated into demanding a new kind of relationship with INAH, to be partners in administering the ruins. The ejido believed it was unfair for INAH to manage the ruins and earn all of the economic benefits. The ejido pushed negotiations farther and bargained to form an enterprise that would involve a partnership between INAH, a private tourism operator in Majahual, and the ejido itself. In August 2001 the general assembly decided to support the creation of a tourism project in the ejido. Soon after, the ejido negotiated a contract with INAH, and by August 2002, the archaeological ruins were ready for tourism. The ejido signed a twenty five-year contract with INAH where INAH is in charge of maintenance and restoration and all ticket sales go directly to the federal government. However the ejido is in charge of tourist services, restaurants, guides, handicrafts, and parking. All activities are coordinated with INAH and the tour operator in Majahual, whom contributes with tourists from the Costa Maya. Furthermore, INAH paid the ejido a total of $450,000 pesos for the twenty five-year use of the archaeological zone, which encompasses 72 hectares. These 72 hectares belong to INAH and no agriculture or any other ejido activity is allowed in this area. Thus this is the first time in Mexico that a contract of this nature was formed between INAH and an ejido community, creating a form of "co-management" of archaeological sites that could be a model for other communities.

By August 2002 cruise ships were disembarking in Majahual and tourists began to arrive in Chacchoben. The CEE has an administrative ecotourism committee made up of

ten people who monitor the management of the enterprise. There is a general manager of the enterprise who reports to the administrative committee. Within the enterprise there are 30 employees, with positions varying from maintenance to handicrafts. There are also seven guides, trained and certified by INAH and Universidad de Quintana Roo. 80% of the total revenue is collected by the enterprise and 20% is given to the ejido. According to the comisariado who is also the enterprise manager, the enterprise has generated $700,000 pesos (about $70,000 dollars) since the project started in August 2002. During high season, there is up to 9000 tourists a month in Chacchoben. This high rate of tourist influx can potentially present a problem with environmental sustainability and therefore, can technically place the enterprise into the category of "mass community-based tourism"; INAH prefers to call the tourism in Chacchoben "cultural tourism". In order to diversify activities and provide a complex of attractions for tourists, the ejido has developed a chicle camp, which portrays the old camps and processes that were used during the harvesting of chicle. SEDETUR helped finance the chicle camp by donating 2 million pesos in order to expand the tourist services available in the ejido. All of the labor was done by ejido members. The chicle camp has interpretive trails, a chicle extraction area, an orchid area, a honey producing area, a theatre with traditional dances, a museum and handicraft sales. At the time a visit was made to the chicle camp in July 2003, it was still under construction and not yet open to the public. Plans are to have a maximum of 300 persons per tour, however this divides tour groups between the archaeological zone and the chicle camp in order to alleviate environmental pressures. Both enterprises have waste management projects that divide organic and inorganic waste. Before establishing the community enterprise, Chacchoben was dedicated to forestry as a main economic

activity, however many people were not generating sufficient income and there was a high rate of out-migration to other towns in search of jobs. Now with the establishment of the CEE there are more opportunities for employment within the ejido and out-migration has ceased. For example, one of the guides at the ruins is a Chacchoben resident who spent many years working as a guide at the ruins in Tulum. Now he has been able to return home to do the same work.

Furthermore, due to the experience in establishing and managing CFEs, the ejido had a base for creating its CEE. This allowed greater organizational skills in forming committees and managerial positions. Chacchoben has become a model for many ejido communities across Mexico that host archaeological ruins and wish to form partnerships with INAH. Chacchoben also proves that experience in CFEs can provide a base for creating new CEEs within ejido communities. Chacchoben is a great example of a successful community enterprise supported by governmental institutions but managed by the ejido. Its success has led to a designation as the gateway to the Mundo Maya project throughout Mesoamerica (National Geographic, 2003).

Although CEEs are a new concept in the state of Quintana Roo, many communities have embraced this new idea and are successfully developing ecotourism projects. It is evident from this chapter that there are many social, environmental and economic issues involved in creating a CEE. However, it is also apparent that human and social capital acquired from CFE experience can provide a model for the creation of CEEs, as is reflected in the case of Chacchoben. In the case of Pac-Chen, the existing contract between a private company and the ejido provides the community with the essential training and basic skills in order to run a successful CEE. However, in the case

of ejido X-Maben it is clear that many complications and tensions have slowed the development process. In the next chapter I will further address how a large variety of stakeholders can actually create tensions and complications when creating a CEE. For this part of the research many interviews were conducted in order to carry out a stakeholder analysis for the CEE in ejido X-Maben.

CHAPTER 5

Stakeholder Analysis of CEE in Ejido X-Maben

For a small community ecotourism effort, the X-Maben project has a rather large community of stakeholders. As mentioned in chapter 1, a stakeholder can be defined as anyone who has an interest in the topic or project, and wishes to participate in the decision-making (Meffe et al, 2002). As a part of my research, I interviewed all major stakeholders in the X-Maben project. I used semi-structured interviews to obtain information from all of the stakeholder groups. Three distinct formats were made up for interviewing NGOs, private agencies, and federal institutions (appendix 2). The challenge of effective stakeholder involvement is to help people with conflicting views understand their common interest in working together. In ejido X-Maben, there are at least a dozen stakeholders in several different categories, as shown in the table below. These include: 1) international NGOs and institutions, such as RARE Center for Tropical Conservation and Florida International University, 2) National federal tourism agencies and national indigenous organizations, 3) Regional and local stakeholders involved that include state NGOs, such as Yaxche, grassroots or inter-community organizations like the OEPFZM, private tourism agencies, and local tourists, and 4) Stakeholders at the local community level involve the General Assembly of the ejido, the local supplier businesses, and finally the group directly in charge of the ecotourism project. The goal is to assess the differing interests and different solutions to environmental problems that the various stakeholders may have, and use them to create partnerships that work towards a common goal.

Figure 5.1: Ejido X-Maben Ecotourism Enterprise Stakeholders

INSTITUTIONAL LEVEL	***STAKEHOLDERS***	***ISSUES OF INTEREST***
Global & International	-FIU - RARE Center for Tropical Conservation -International Tourists	Biodiversity Conservation Research Study Cultural Experience
National	-INI (National Institution of Indigenous Peoples) -INAH -SECTUR (Secretary of Tourism)	Community Empowerment Tourism Development
Regional / State	-Yaxche (NGO) -OEPFZM -Balam-Nah (private) -Local Tourists -Econciencia (NGO) -Mots Maya -SEDETUR	Community Empowerment Ecotourism Development Recreation
Local Community	-General Assembly -X'yaat -Local Suppliers	Income Generation and Conservation

The international stakeholders of the CEE in X-Maben have a strong interest in community development and environmental conservation. FIU has an interest in CEE development in common property regimes, particularly in ejido X-Maben and throughout Quintana Roo. FIU became a stakeholder of the CEE in X-Maben in 2002 during the

beginning stages of development. An ecotourism research team of three FIU students, including myself, was formed in August 2002. In September 2002, two FIU students arrived in Felipe Carrillo Puerto in order to work as participant action researchers in X-Maben. The role of the two students can be considered an action research role because there was no effort made to be merely observers of the CEE process. The students' goal was to support and document the organizational process. The two FIU students worked closely with the ecotourism group as advisors through December 2002. The FIU representatives began documenting the existing stakeholders that were involved with the CEE in X-Maben. They attended meetings, seminars and workshops in order to understand the organizational process of the ecotourism effort. The students also worked closely with the OEPFZM and other organizations in order to grasp the local concept of community based ecotourism and visited other projects that were being developed throughout central Quintana Roo. They frequently attended the ecotourism group meetings in X-Maben, eventually becoming friends with the group and helping with management ideas and coordination of workshops. The students helped organize an informational workshop that addressed environmental issues and the progress of the CEE in the ejido. The comisariado and ejido authorities were invited to attend; however after three invitations, only the comisariado appeared. FIU also had set a goal to install a composting toilet in the ecotourism reserve area. However, as mentioned in chapter four, the original plan for hiring a local NGO to design the toilets was dismissed by the comisariado and a cheaper designer was hired instead. This resulted in an unsuccessful effort to use ecological bathrooms in the reserve area. Another effort attempted by the FIU students was the process of attaining the *figura jurídica*.. The ecotourism group was

eager to legalize themselves as a private tourist services cooperative within the ejido in order to receive grants for training and infrastructure from national and international programs. The FIU students met with a lawyer and helped organize the paperwork needed to apply for this legal title. However, as noted in chapter four, this process was extremely long and was not completed until January 2004 when FIU donated $1000 USD for legal fees. In December 2002, the two students returned to FIU after a two-month stay in Felipe Carrillo Puerto. A return trip was planned for March 2003, however only one of the students was able to return. From March to June 2003 the FIU representative became more involved in the CEE process in X-Maben by further networking among the stakeholders and by participating in numerous workshops that focused on ecotourism planning. In May 2003 I joined the other FIU student in the field and together we worked closely with the ecotourism group in X-Maben in order to understand all elements of forming a CEE. During a ten-week research period, I interviewed all stakeholders of the CEE in X-Maben in order to assess differing strategies and interests among them. I also visited other community tourism efforts throughout Quintana Roo, which allowed me to compare and contrast distinct CEE efforts. FIU is a main international stakeholder of the CEE in X-Maben and has contributed to the development of the CEE by providing consistent personal and financial assistance. When interviewed, the ecotourism cooperative president stated that of all of the stakeholders, FIU has been one of the most closely involved institutions in the project.

The other main international stakeholder of the CEE in X-Maben is RARE Center for Tropical Conservation. RARE is based in Arlington, Virginia and works with the aim to protect natural areas and conserve biodiversity. RARE was originally formed 30 years

ago and receives an average of 1.2 million dollars each year from donations from private organizations and from the Packard Foundation. They specialize in training for ecotourism promotion, nature guides, enterprise development, and conservation education. Their goal is to work together with local communities and train local people so that environmental awareness within the community will grow and conservation will be a success. RARE became involved with the CEE in X-Maben in September 2002. Although RARE's goal was to train community members within the Sian Ka'an Biosphere Reserve, ejido X-Maben's close proximity to the reserve created an opportunity for the ecotourism group to participation in RARE's workshops. However, only one member of the ecotourism group took the opportunity offered by RARE, and as discussed in chapter four, this member has ceased to work with the group due to tension and conflicts between other members. Therefore, RARE provided training for ecotourism promotion during the course of one year, but after one year the program ended and RARE is no longer involved with the CEE in X-Maben.

There are stakeholders on the national and federal level involved in the CEE in X-Maben as well. INI (Instituto Nacional Indigenista) was one of the first stakeholders in the development of the CEE in X-Maben. INI specializes in indigenous community development and empowerment. The office in Felipe Carrillo Puerto receives about 1 million pesos (100,000 dollars) of funding from the federal government each year, which is used for the financial support of local ejido communities in the municipality of Carrillo Puerto. They support indigenous rights, women and children's rights, and civil registry. INI first became involved in community ecotourism three years ago when the federal government allocated funding for ecotourism development. This is when the former

director of INI in Felipe Carrillo Puerto announced a grant competition for $20,000 dollars towards a community ecotourism project in the Maya Zone. Because INI does not specialize in training, biologist Arturo Bayona was hired for the naturalist training of the ecotourism group in Señor. As a stakeholder, INI provided the CEE in X-Maben with financial support in order to organize the effort to establish an ecotourism project, however after the initial support they have not been closely involved with the CEE.

Federal government institutions such as INAH (Instituto Nacional de Antropología e Historia) are interested in archeological sites and cultural patrimony throughout Mexico. Many ejido communities in Quintana Roo have ancient Maya ruins within their property; therefore INAH works with these communities to improve and restore these sites. However, when interviewed INAH stated that they are currently not planning to restore the ruins in X-Maben because they have to make other larger ruins in Quintana Roo their priority.

"*En Quintana Roo no existen menos de 2000 sitios arqueológicos y no se puede trabajar en todos los sitios. Si las comunidades tienen unos pequeños sitios arqueológicos, es probable que no van a ser trabajados totalmente por el INAH*" (Rene Petrich, INAH).

Therefore, INAH is currently not a major stakeholder of the CEE in ejido X-Maben due to the fact that they are not conducting restoration processes. However, in the future it may be possible for INAH to restore the archaeological ruins within the ejido and similar issues as to what Chacchoben experienced may arise.

Another stakeholder on the federal level is the national tourism agency, Secretaría de Turismo (SECTUR). SECTUR has recently expressed an interest in new community

ecotourism projects as an alternative to the mass traditional tourism that they have deeply supported over the past decades. However, in the state of Quintana Roo the state tourism development agency, Secretaría de Desarollo Turístico (SEDETUR), is more directly involved with community ecotourism projects. For example, SEDETUR worked closely with Chacchoben and is now very interested in supporting emerging CEEs throughout the state. SEDETUR is based in Chetumal, the capital of Quintana Roo. The agency is in charge of promoting tourism development and providing infrastructure for the developing tourist areas. SEDETUR was formed 35 years ago and has been focused on promoting the Riviera Maya and its large beach resorts. The agency receives about ten million dollars annually to support large-scale tourism development. However, about ten years ago SEDETUR began to notice an increased interest in low impact tourism among some tourists. They are currently promoting the Provincia Maya as a new form of lower impact tourism that involves Maya culture and forest ecosystems. SEDETUR became interested in X-Maben in 2000 when the ejido first began development, and although they have not provided direct financial assistance to the ejido, they have provided guide training for the president of the ecotourism group in X-Maben.

Other state level organizations such as Yaxche and Econciencia are interested in environmental conservation and community ecotourism development. They also work with other communities throughout Quintana Roo. Yaxche is an NGO that works with local communities in issues of development, waste management, and ecotourism. The NGO was formed in 1995, but the director has been working with Maya communities since 1985. Yaxche receives funding from government institutions as well as international organizations. They receive anywhere between 6000 to 30,000 US dollars

annually. Yaxche began working with ejido X-Maben in June 2002 and has conducted various workshops that include topics on ecotourism marketing, planning methods and technical support. Currently Yaxche is working with five other Maya communities in the area and is dedicated to empowering these communities and developing sustainable tourism in the Maya Zone.

Econciencia is a local NGO that was formed in September 1998 with the objective of biological education and then later became more focused on community ecotourism development. The organization works with a number of communities in Quintana Roo in the planning and designing of ecotourism projects. They receive about 60,000 US dollars annually from national and international institutions such as state government agencies, UNDP (United Nations Development Program) and INI. Econciencia became a stakeholder of the CEE in X-Maben in 2001 when INI hired Bayona, the director of Econciencia, to train the ecotourism cooperative. Training included a preliminary study of the ecotourism area, interpretive trail planning, flora and fauna identification training, and ecotourism customer service training. After eight months of training the ecotourism group, Bayona left ejido X-Maben and began work on other community projects. Thus Econciencia was a major stakeholder in the beginning stages of the CEE development, however is no longer closely involved with the current ecotourism processes in X-Maben.

The OEPFZM (Organización de Ejidos Productores Forestales de la Zona Maya) is another state level organization that is a major stakeholder in X-Maben. The OEPFZM began in the mid-1980s with a focus on community forestry enterprises but in recent years has diversified into artisan production, sustainable agriculture, agroforestry, honey

production and since 2000, into ecotourism. The objective of the OEPFZM is to support the sustainable management of natural resources among the Maya communities of central Quintana Roo. As highlighted in chapter four, the organization became involved with the CEE in X-Maben when INI announced the grant competition for ecotourism projects. The organization has provided technical assistance and has submitted various proposals to government agencies for additional funding for the CEE in X-Maben, however they do not provide ecotourism training workshops. The OEPFZM is currently working on creating an ecotourism team within the organization to be able to provide training for communities in the future.

Balam Nah and Mots Maya, based in Felipe Carrillo Puerto, are small ecotour agencies that are involved with many ejidos in central Quintana Roo. Balam Nah, a privately owned agency, was created in April 2002 with the purpose of developing tourist products, providing technical support and advice for local communities, and marketing packaged tours. They are interested in becoming more involved with the CEE in X-Maben in order to work together with the ecotourism cooperative and form tour packages that will bring tourists from Felipe Carrillo Puerto to Señor. Balam Nah has provided technical support and advice to the ecotourism cooperative, however has not been very consistent in promoting tour packages to X-Maben. Mots Maya, on the other hand has been more successful in bringing tour groups to X-Maben. Mots Maya is a cooperative that was formed in June 2001 with the objective of promoting sustainable tourism and emphasizing Maya culture. Mots Maya first became involved with the CEE in X-Maben by way of Arturo Bayona who suggested that the two cooperatives work together in order to promote community ecotourism in X-Maben. It was agreed that Mots Maya would

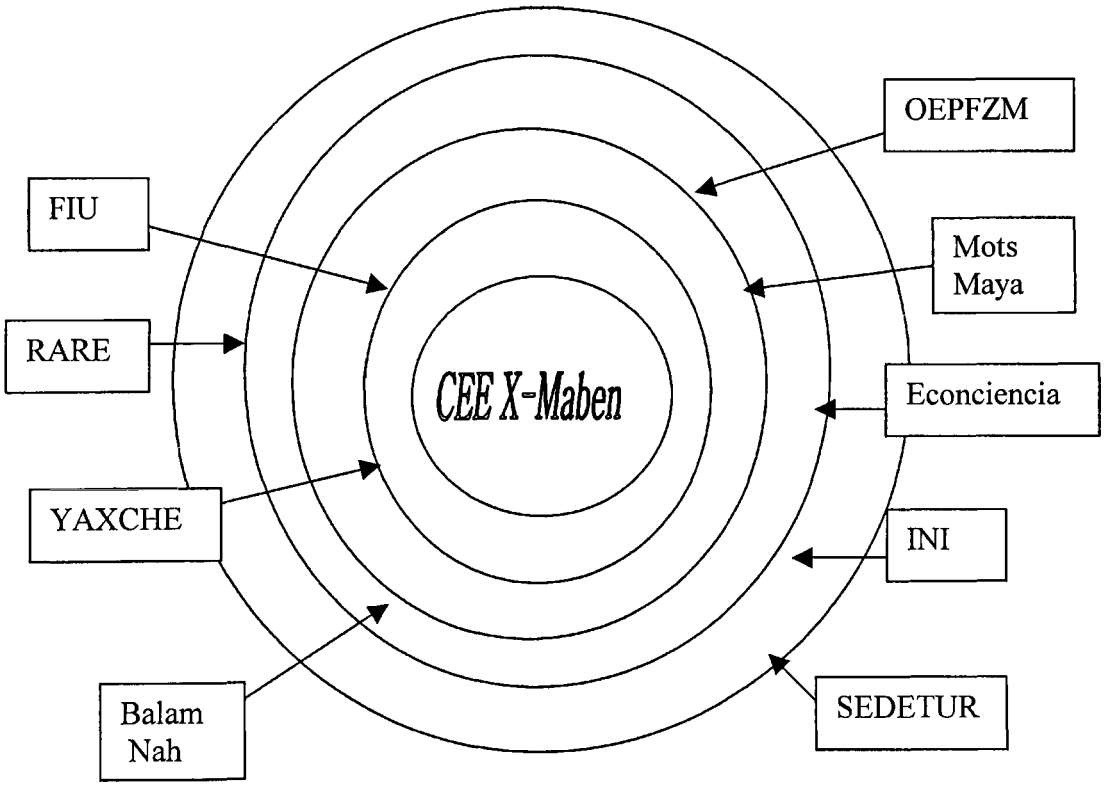
promote tour packages for X-Maben, along with other tours in the region, and provide English-speaking tour guides for tourists that did not speak Spanish. Mots Maya also agreed to lend X'yaat extra kayaks for tour groups, when needed. Mots Maya have participated in training workshops by RARE and are fully able to provide technical assistance, marketing advice and strategies, and kayaking instruction to the cooperative of X-Maben.

At the local community level, the main stakeholders are X'yaat ecotourism cooperative as the direct workers in the ecotourism enterprise, and the general assembly of the ejido, which involves all of the ejidatarios that own the land. As a stakeholder the local community is interested in income generation to supplement their subsistence activities, environmental conservation, and Maya culture preservation. Although there have been many obstacles and issues in the development of the CEE, as presented in chapter four, there is hope for greater community involvement and acceptance of ecotourism within ejido X-Maben through the new Cultural Tour that has been shaped recently, which encompasses cultural tourism and shifts focus from the lagoon, to the town of Señor and its unique history.

During the field research, as I carried out the interviews and became aware of what each institution's interests were, I began to notice a pattern among the stakeholders in respect to their communication between other stakeholders. Although all of the stakeholders have similar interests and goals for the success of the ecotourism enterprise in ejido X-Maben, the communication between most of the institutions is minimal. There is a general interest among all stakeholders that I interviewed in developing CEEs throughout central Quintana Roo in order to conserve the environment, preserve

traditional Maya culture, and to provide a new alternative to the unsustainable mass tourism found along the Riviera Maya. However, certain institutions are more tightly involved with the development of the CEE in X-Maben than others. The institutions that work closest with the CEE in X-Maben are represented as low orbits in figure 5.2. Low orbit stakeholders express a deep interest in the project and offer frequent attention. Higher orbit stakeholders are less interested and offer less attention to the project. The low orbits, or main stakeholders, are Mots Maya, Balam Nah, Yaxche, OEPFZM and FIU. Most of these are at the state level and are within the municipality of Felipe Carrillo Puerto, except for FIU, which is an international stakeholder.

Figure 5.2: Stakeholder Orbit



The interviews that I conducted were to gather qualitative data on each stakeholder and each organization, as well as to compare responses among all. For example, an important question that was asked to all stakeholders in order to determine the level of stakeholder interaction was "*What type of communication or cooperation exists with other stakeholders involved in X-Maben*?" Among the institutions that work closest with the CEE in X-Maben, there was communication between most of these institutions except for the OEPFZM. Based on my interviews, the OEPFZM did not communicate with other state level institutions. Many other state level institutions formed a group called Network of Sustainable Tourism (*Red de Turismo Sustentable*) based in Felipe Carrillo Puerto, which aims to coordinate all of the stakeholders in order to provide training, infrastructure and technical assistance. This network was formed in June 2002 and involves Balam Nah, Yaxche, Mots Maya, and X'yaat. This network unites these four major stakeholders and helps to clarify decision-making processes. At any time, if one of these institutions decides to submit a proposal for a grant for the CEE in X-Maben or any other community, all stakeholders are notified and the procedure is discussed. However, the OEPFZM does not participate in this network. When interviewing the ecotourism coordinator at OEPFZM, I asked why the organization was not involved with the network of other stakeholders. His response was "*The OEPFZM does not work with the network because we only work with the people in the communities, the ones that are truly involved in projects*". This statement appeared problematic due to the fact that the OEPFZM has submitted several grant proposals for ejido communities in central Quintana Roo with CEE potential, without presenting the project idea to the communities before hand, let alone communicating with the other stakeholders. Although

the organization has experience working with ejido communities in central Quintana Roo for over twenty years, their focus has been mainly on forestry and agriculture. Only recently have they become involved in community ecotourism projects. They have no experience in the ecotourism field, and employ only one person that has a degree in tourism management, who is now the ecotourism coordinator. Thus, the fact that the OEPFZM did not communicate with the other stakeholders who have more experience in ecotourism development was troubling. For example, Yaxche has over ten years of experience working with community ecotourism in central Quintana Roo but the OEPFZM chose not to communicate with this NGO due to historical tensions between the two organizations. From personal observations and interviews I became aware that the OEPFZM wrote proposals for new community ecotourism projects merely based on if the community had a lake, or a *cenote*, or a nice forest. They wrote the proposal before they presented the idea to the community, and then offered the community a chance to establish a new CEE and a chance to make more income. The community accepted, however the OEPFZM did not take into consideration the time and effort for proper ecotourism training and waste management. The proposals were only for infrastructure and the OEPFZM believed that simply building cabins and trails would attract ecotourists. The OEPFZM needs to first train themselves in ecotourism, gain experience, and perhaps follow the example that began with the Plan Piloto Forestal, and establish a 'Plan Piloto Ecoturístico' with help from another organization that has ecotourism experience.

Another major question that was asked to all stakeholders was "*What do you believe is the major obstacle for the CEE in X-Maben*?" A high percentage of the

interviewees stated that the obstacle is lack of organization and lack of training. For example, the director of Yaxche stated that the main problem was a lack of organization within the ecotourism group, and a lack of comprehension of the principles of ecotourism by the ejido. The director of Yaxche believed that the ejido needed to invest more time into the ecotourism project and establish a formal ecotourism committee within the community. The manager of Balam Nah stated that the main obstacle was the lack of communication and coordination between X'yaat and the ejido authorities, and the lack of training to properly develop marketable tourist packages. An interview with the director of SEDETUR also supported the opinion of a general lack of proper training that would allow successful marketing of their products. An interview with the chief of promotion of Mots Maya revealed that a major obstacle was the fact that X'yaat consisted of young people who were not ejidatarios, therefore the ejido did not give much importance to the ecotourism project. On the other hand, the director of the OEPFZM replied that the ecotourism group was well organized, however the people of the ejido needed to become more involved and more supportive of the ecotourism project.

The question of "*In your opinion, what is the dilemma with common property issues in the CEE in X-Maben*?" was asked to all stakeholders and surprisingly, a majority stated that there were no complications with common property issues. The director of the OEPFZM stated that there was no problem with common property access in the ejido because the CEE was well organized, however the ejido should receive all income generated from entrance fees to the lagoon and X'yaat should receive income from tourist services only. The director of Econciencia stated that there was not a problem with the common property issue because it is well known that the lagoon

belongs to the entire ejido, therefore the ejido must generate profits from entrance fees. Balam Nah and Mots Maya also believed that there were no major dilemmas with common property issues, however Yaxche and SEDETUR both expressed that there are many problems when dealing with common property regimes. SEDETUR suggested designating areas for public use and areas for tourist use within the lagoon, as well as establishing a formal ecotourism committee, in order to alleviate some of the conflicts between ejido authorities and X'yaat. Yaxche stated that although the ejidatarios are the true owners of the lagoon, they do not choose to cooperate with the younger people in the ecotourism cooperative, which is what results in the tensions between the two.

Another crucial question that was asked to all stakeholders was *"In your opinion do you believe the CFEs can serve as models for creating a CEE*?" The director of Econciencia believed that the ejido has the experience of managing a CFE, in which they generate profits by harvesting timber. However, a CEE is a new concept for the ejido and requires management skills that differ from those of a CFE. Balam Nah replied that a CFE is much different than a CEE in terms of marketing and sales and needs to be managed differently than a CFE. The director of the OEPFZM stated that because the ejido has experience with a CFE, the CFE could adequately serve as a model for the organization of a CEE. The director of Yaxche stated that because the ejido has experience in managing CFEs, along with other activities such as beekeeping and fruit production, the formation of a CEE can be based on the organization of a CFE and further supplement their forest activities.

Based on my research, it is evident that CEEs require an enormous investment in human capital in order for the enterprise to become a successful ecotourism project,

rather than a failed attempt. All of the stakeholders that I have researched have common interests of developing CEEs within ejido communities, however many have conflicting opinions of the issues of developing a CEE and a lack of communication between other stakeholders. It is essential that all of the stakeholders form partnerships in order to achieve their common goals. They need to communicate regularly in order to ensure a successful development of CEEs among the ejido communities. For example, because the OEPFZM has rich experience in working with ejidos, formulating proposals and dealing with governmental agencies, the organization could easily contribute to developing CEEs with adequate infrastructure, such as ecological compost bathrooms, trails, camping areas and equipment. Yaxche, due to their extensive experience in training and community ecotourism development, could provide intensive training and waste management workshops. Mots Maya and Balam Nah have experience in marketing and ecotour promotion, therefore could contribute with cost analysis, tour packages, and accounting and administration advice. It is evident that the CEE in X-Maben has a wide variety of stakeholders, however based on my research their support was episodic and uncoordinated so it did not provide sufficient support to the ejido. All major stakeholders need to participate together with the ejido community, establish specific roles and determine in what ways each stakeholder can do their part in order to assist in the development of the ecotourism enterprise.

In the next chapter I further my research by applying GIS to the CEE in ejido X-Maben. The research involved mapping, analyses, and generation of promotional materials, which were completed in August 2003 and will be further illustrated in chapter six.

CHAPTER 6

GIS Application in Ejido X-Maben

6.1 GIS and Its Role in Action Research

In this chapter the use of Geographic Information Systems (GIS) in developing community-based ecotourism and as a tool in community-based action research is evaluated. As stated in chapter 1, action research is an approach that has both practical and theoretical dimensions and encourages those designated as "subjects" in most research to participate directly in the research processes and benefit from these processes. The purpose of community based action research is to help people to broaden their understanding of their situation and resolve issues that confront them (Stringer, 1999). For this research, I worked closely with the ecotourism cooperative X'yaat, the General Assembly, authorities of X-Maben, and other stakeholders in helping to understand the institutional dynamics of CEE promotion in order to make the development process more effective. My research was part of a larger project between FIU researchers and students and the communities of the OEPFZM, where the explicit goal was to conduct research with local stakeholders whenever possible and to conduct research that would be useful to the land management problems they face. As noted earlier, two FIU students had been working with the ecotourism project off and on since September of 2002, and one of them continued working with me during most of my fieldwork. We participated actively as advisors of the ecotourism cooperative, while documenting and analyzing the course of action. Thus, there was no effort made to stand "outside" the process as an observer.

There is currently a research study being conducted by a PhD candidate from McGill University, which uses remote sensing images to determine land use change over time within ejido X-Maben. Satellite imagery is very useful for determining large-scale land cover change over time; however it is not the best option to explore small-scale use of an area, such as the ecotourism reserve area. Thus, a GIS application was used to generate a map of hiking trails and principal features of interest in the area designated for the ecotourism project, which has never been used before in X-Maben. Therefore, within the action research framework proposed in this research, how can GIS applications in the research project contribute to the goal of establishing a CEE in ejido X-Maben? In other words, how can GIS help locate potential areas for establishing trails, constructing cabins, distinguishing areas for bird watching, and developing archaeological sites?

GIS is a computer system that is used as a tool for manipulating, analyzing and interpreting geographic data (Ormsby et al, 2001). The role of GIS in the initial physical planning stages of an ecotourism enterprise is important in understanding all spatial aspects of the project. By locating key points of interest for tourists, such as concentration of flora, fauna, and archaeological sites, these ecotourism enterprises can be well planned and help in the goal of generating income for the Mayan villages, while protecting their surrounding environment. The members of the ecotourism cooperative expressed an interest in a GIS application for their project in order to establish and define trails and tourist interest points. Thus, part of the thesis research is to use GIS to help the ejido X-Maben in the physical planning processes of this ecotourism project. By incorporating this new technology, the community can become more informed about and more familiar

with the spatial aspects of the project, which is important when determining land uses and planning of the specific ecotourism reserve area.

The Yucatan Peninsula is very well known for its abundance of ancient Maya archaeological ruins. Quintana Roo alone hosts hundreds of ruins, most of which have not yet been excavated. The potential for combining archeological tourism and ecotourism is very high among these sites, numerous which host wildlife populations and unique geological features called cenotes. However, the potential for possible disturbance to these fragile areas from tourism exists as well. The use of GIS for the CEE in ejido X-Maben enables the community to easily record the boundaries for the ecotourism reserve in a database, and facilitates the formation of trails and tourist points. Although the GIS application for the CEE in this ejido is the first, the research provides a model for other developing CEEs in the area who want to use GIS to form trails and accommodations. Due to the action research nature of this thesis project, GIS plays an essential role in providing ejido X-Maben with a hands-on application of mapping and assessment of the ecotourism reserve area.

6.2 Methodology/ Metadata:

The data gathered for the GIS application in ejido X-Maben came from a variety of sources. The most valuable source was from the University of Quintana Roo (UQROO) Department of Geography. The university provided a great amount of data on Quintana Roo, including vegetation cover, political data, flora and fauna densities, archaeological sites and soil types. The data was already in a shapefile format and was easily attainable in ArcMap, which was the main software product used in the GIS

processing. The maps acquired from UQROO were generated from: INEGI Digital Cartography (Scale 1:250,000). The coordinate system used was: UTM 16 North. The datum: WGS 1984. The Universal Transverse Mercator (UTM) projection is conformal, so shape and distance are preserved, which is very important when analyzing short distances between points. An additional source of data was obtained from INEGI (Instituto Nacional de Estadística, Geografía e Informática). A 1:50,000 scale digital topographic map of the community Señor in the ejido X-Maben was purchased from INEGI for $110 pesos (10 dollars). The projection of this map was: UTM 16 North. Datum: WGS 1984 ITRF 92.

Another set of data was obtained March 16-19, 2003 during the first trip to Mexico. I worked with Gerardo García from the GIS department at the University of Quintana Roo gathering GPS points in Laguna Azul, X-Maben. We used a GeoExplorer 3 GPS device to collect points during a three-day camping trip at the Laguna Azul. We hiked for many hours each day through trails and recorded any points that would be of interest to tourists, such as tree species, wildlife sightings, cenotes and archaeological ruins. While hiking through the various trails we encountered various tree and plant species. Among the most frequently encountered species were the chicozapote tree (*Manilkara zapota*), which is used for the extraction of chicle. We also found many gumbo limbo (*Bursera simaruba)* trees, as well as Spanish cedar (*Cedrela odorata*). Only one mahogany tree (*Swietenia macrophylla*), which is highly valued for its precious wood, was encountered the entire time. We came across numerous species of orchids, and also found a unique species of cactus that was locally called "cactus trepador" or climbing cactus. The canopy throughout the forest ranged from medium height to low

height, including areas of secondary succession and regenerating milpa fields. Along the trails we also found various wildlife tracks from animals such as ocellated turkey (*Agriocharis ocellata*), tapirs (*Tapirus bairdii*), and jaguar (*Phantera onca).* In terms of cultural interest, we encountered an area containing ancient Maya archaeological ruins. A small path was made in this area by local farmers that had been using the area for subsistence agriculture. Along this path to the ruins, there was an old ranch that we came across with an abandoned well and a small plantation of prune trees and avocado trees. The owner of this ranch had been a Maya historian who kept records of important events throughout history and strived to keep the ancient written language alive. As we approached the ruins we noted many raised hills. These hills were the actual stone structures that had been densely overgrown with in vegetation. The stairs up to the tops of these structures were still visible and able to be used with caution. It is not known exactly how many structures are present in the ecotourism area, nor the details of the architectural history. In addition to the ruins, we observed many signs of cultural activities, particularly recent evidence of hunting, such as traps, snares, and hiding places for hunters. Wildlife traps were used for catching local species of wild rodents. We also found evidence of logging within the ecotourism reserve, which, along with hunting, presents evidence of land use conflict within the ecotourism area. As discussed in chapter 4, the ejido declared a reserve area of 100 hectares to be used strictly for ecotourism purposes. Although the ecotourism cooperative says that there is no hunting, logging nor agriculture allowed in the reserve, the formal reserve declaration written by the Ejidal Assembly does not mention this. This presents clear evidence of conflict between the traditional uses of common property and the ecotourism cooperative.

The numerous GPS points collected for tourist interest and potential trails as we hiked through the forest were collected in UTM NAD 1927 projection originally. However when transferring the data on to a topographic map with a different projection, the points had to be altered to UTM WGS 1984 to match the map projection. This procedure was completed in the GIS lab at the University of Quintana Roo. The points were downloaded to the computer, converted to dbf files, and then converted to a shapefile in order to use the data in ArcMap.

The last set of GPS points was taken on July 17, 2003 in the ecotourism reserve of ejido X-Maben. The points were collected in UTM WGS 1984 in order to match the original INEGI base map projection. This procedure was also completed in the GIS lab at the University of Quintana Roo (UQROO). These GPS points represent the boundary limits around the ecotourism reserve, which was established by the ejido in 2001. However once I processed the points I found that only 10 hectares had been delimited as the ecotourism reserve, as opposed to the 100 hectares that the ejido declared. I also compared these points to recent data collected within the X-Maben ecotourism reserve by ECOSUR (El Colegio de la Frontera Sur), a public graduate level research institute. Their data was identical to the data I gathered (Maps 5 and 6). Originally, when the ecotourism reserve was declared four men were paid to physically delineate the reserve boundaries. However it is now obvious that the 100 hectare reserve boundaries do not exist on the physical ground, only in theory. This shows an enormous discrepancy on part of the ejido, and gives further evidence of the issues and difficulties that the ecotourism enterprise has encountered discussed in chapter 4.

Once all of the data was entered in ArcMap, Arc Catalog was used to search for metadata. Within ArcMap I first displayed a map of the distribution of major towns, archaeological sites, and research sites throughout the state of Quintana Roo (Map 1). Next, a map was generated depicting the archaeological sites throughout Quintana Roo (Map 2), which was obtained from the UQROO. The data for this map was obviously incomplete given that the map does not depict any of the numerous ruins found throughout central Quintana Roo. This may be due to the fact that INAH has not formally registered many of the small archaeological sites in the region. I then decided to use selection by location within ArcMap to locate the archaeological sites that intersected with wildlife concentrations, such as birds and monkeys, based on data acquired from UQROO. From this query ArcMap generated certain areas throughout the state that would be optimal for conservation ecotourism projects (Map 3). Based on the analysis Chacchoben resulted in close proximity of the optimal conservation areas created by ArcMap analysis.

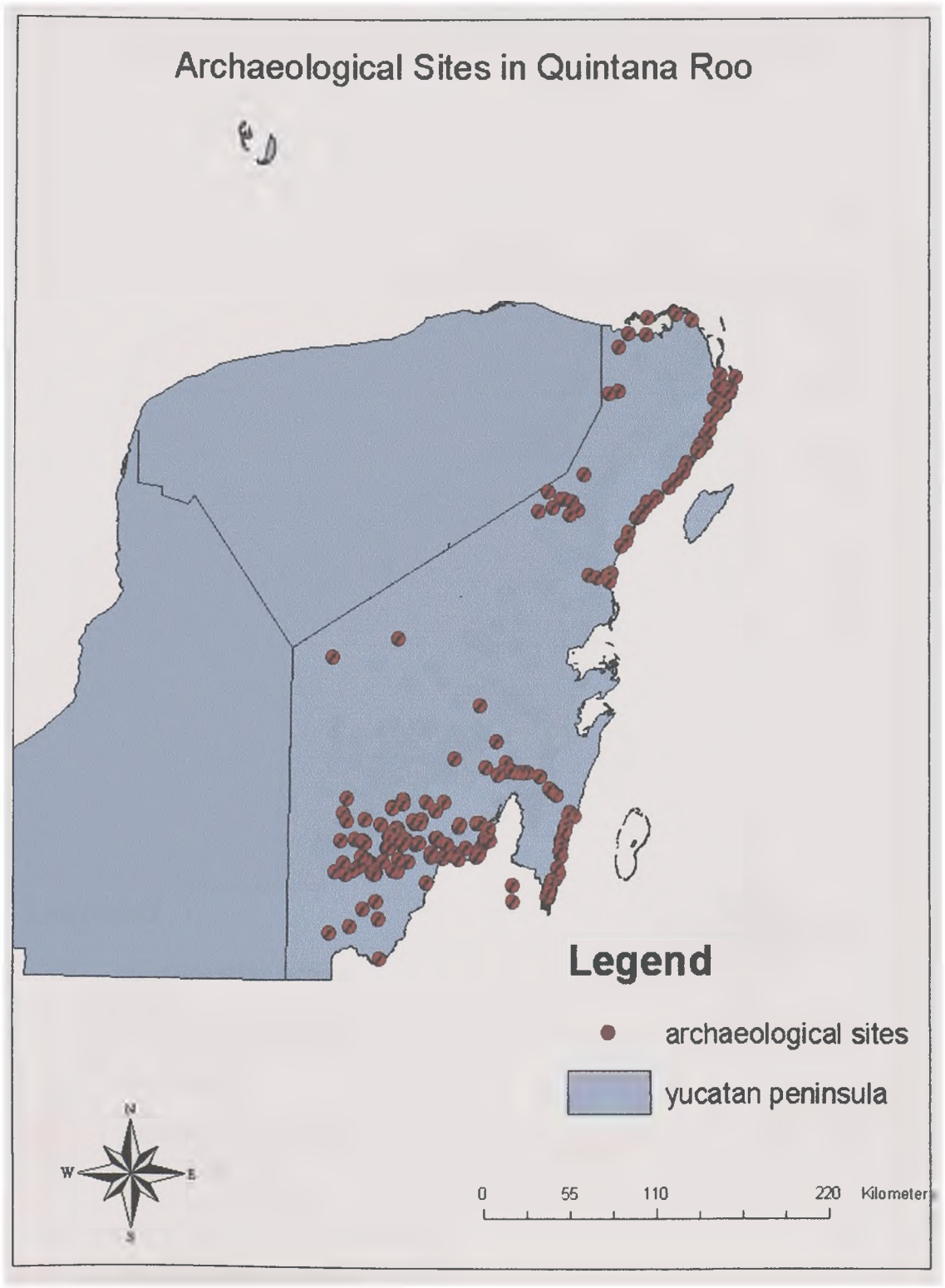
After determining the distribution of archaeological sites and optimal areas for ecotourism projects, a preliminary map was created from the GPS points taken in Laguna Azul (Map 7). This map consists of a main road represented by a yellow line, which stretches from the town of Señor (Map 4) through and beyond the ecotourism reserve area. On this preliminary trail map, many GPS points appear on the map representing exact points where information was gathered about a particular plant species, animal sighting, or geological feature. This map was first generated in March 2003. In July 2003 GPS points from the ecotourism reserve boundaries were processed in ArcMap in order to depict the exact spatial dimensions of the reserve (Map 5). Data from ECOSUR was

also acquired and a map of the projected ecotourism reserve was generated using their GPS points (Map 6). Both maps 5 and 6 show evidence that the ecotourism reserve consists of only 10 hectares, instead of the supposed 100 hectares.

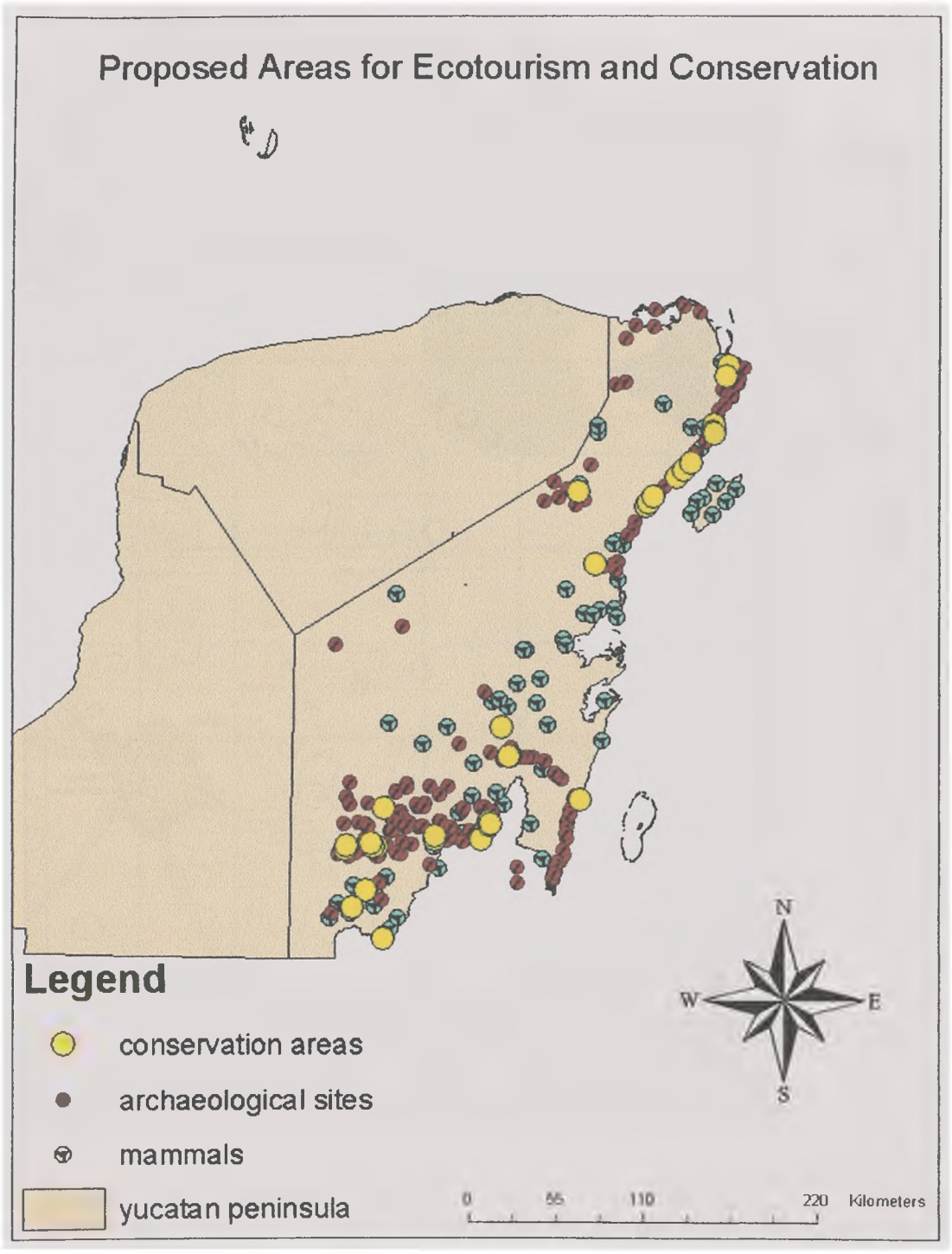
In July 2003 the original trail map (Map 7) was also updated and improved by selecting few GPS points to appear on the map, along with the distinct trails demarcated and color-coded. An official trail guide for the ejido X-Maben and visiting tourists was made, illustrating the four different trail options for hiking, along with numbered points of interest along these paths that can be matched to an explanation of each trail (Map 8). The four trails pass through and around distinct areas of the ecotourism reserve. The first trail, called the Orchid trail which is depicted in green on map 8, passes through an area with a high concentration of various species of orchids. The second trail, the Jaguar Trail which is depicted in red, winds through an area of secondary succession where old milpa fields and jaguar tracks are visible. The third trail, the X'yaat Reserve Trail depicted in blue, goes through the heart of the reserve and gives tourists the opportunity to view numerous tree species. The final trail, the Mayan Ruins trail depicted in yellow, brings tourists directly to an ancient archaeological site that has not yet been studied nor excavated. The official trail guide was completed in August with collaborations from the ecotourism group X'yaat, Gerardo García from UQROO, and Dr. David Bray. The trail guide was distributed among the ecotourism group and copies were left for visiting tourists to read and use throughout the ecotourism reserve (See appendix 1 for more detail).

MAP 1: MAJOR TOWNS, ARCHAEOLOGICAL SITES, AND RESEARCH SITES IN THE YUCATAN PENINSULA

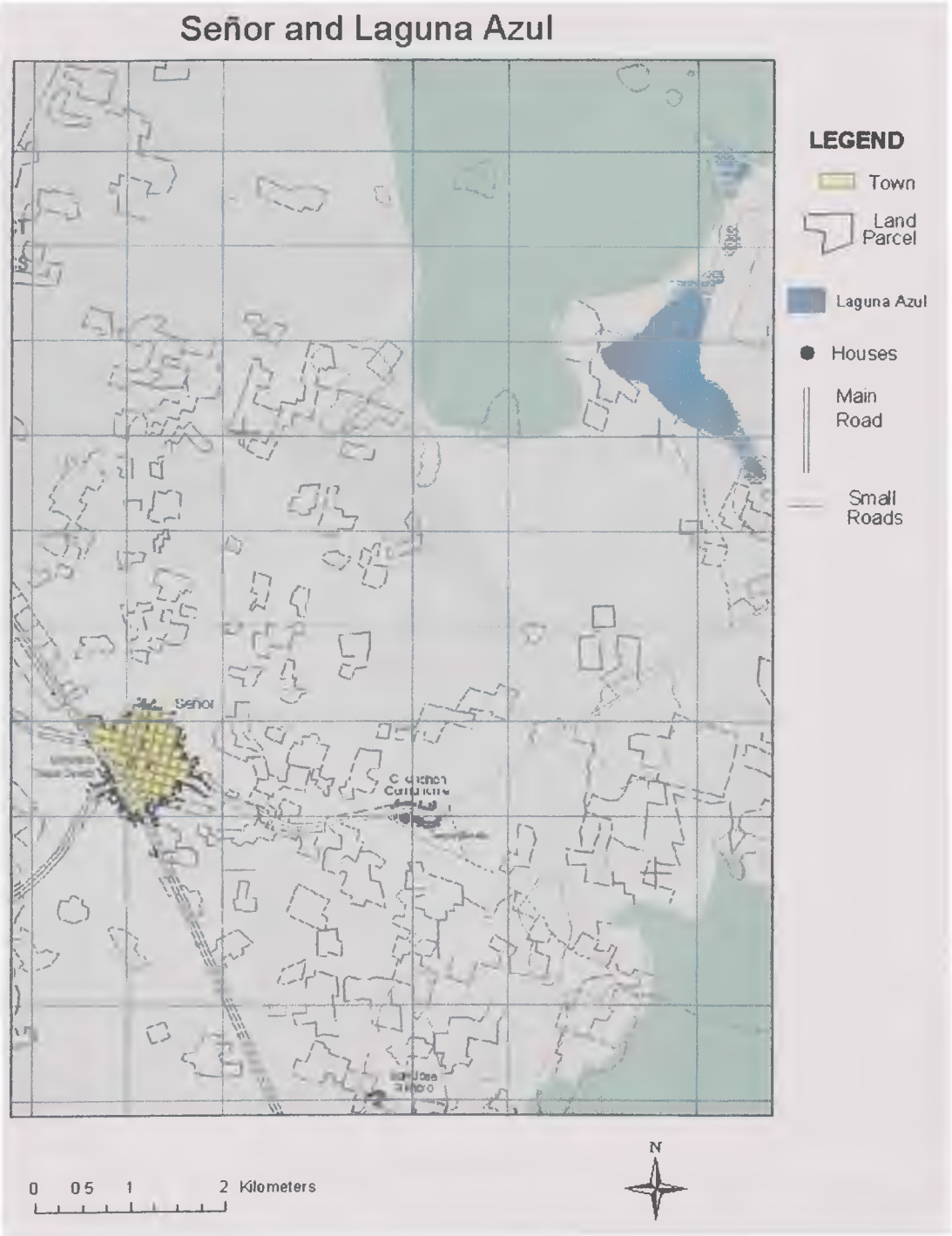
MAP 2: DISTRIBUTION OF ARCHAEOLOGICAL SITES



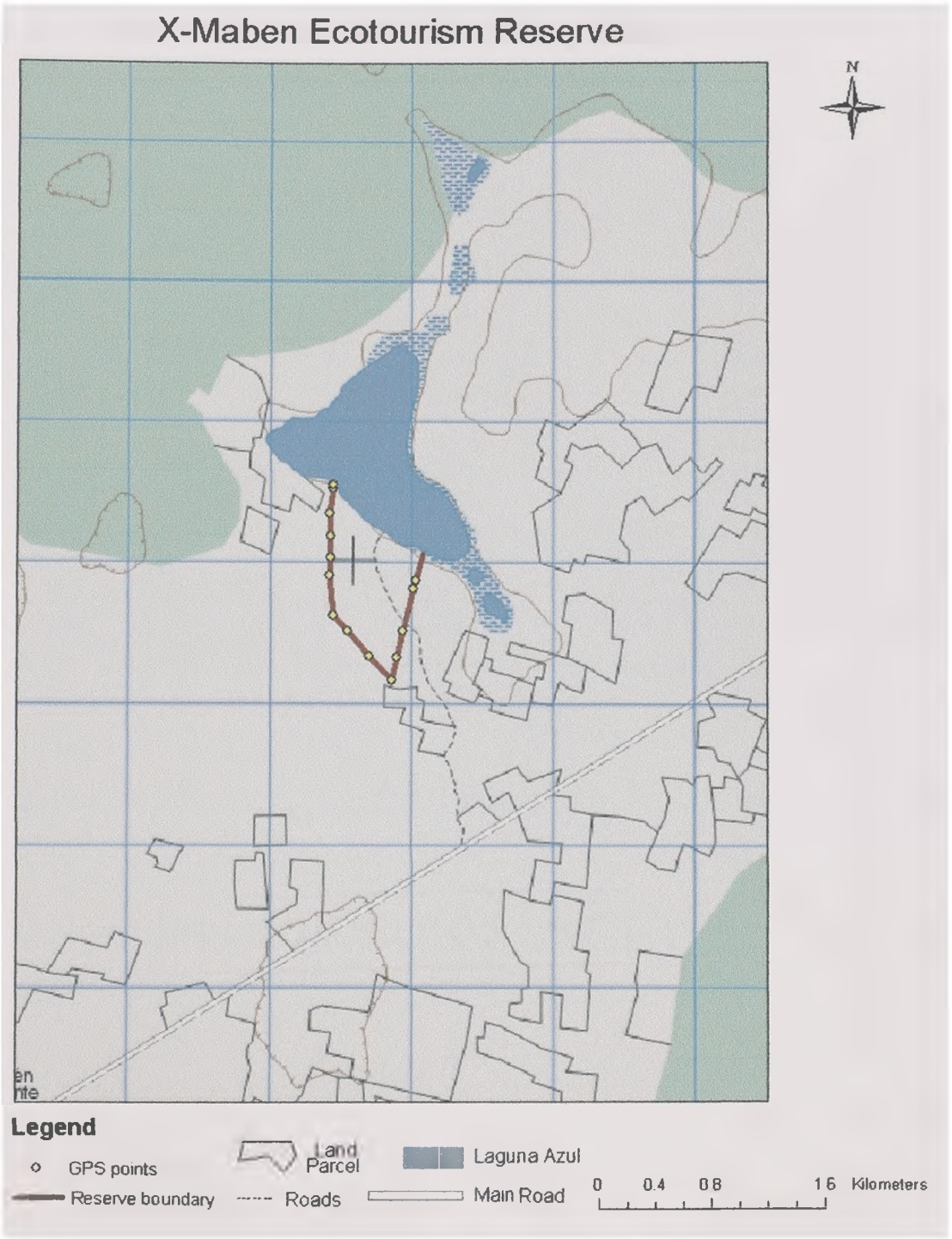
MAP 3:


Proposed Areas for Ecotourism and Conservation
Legend
conservation areas
archaeological sites
mammals
yucatan peninsula
N
W
E
S
0
55
110
220
Kilometers

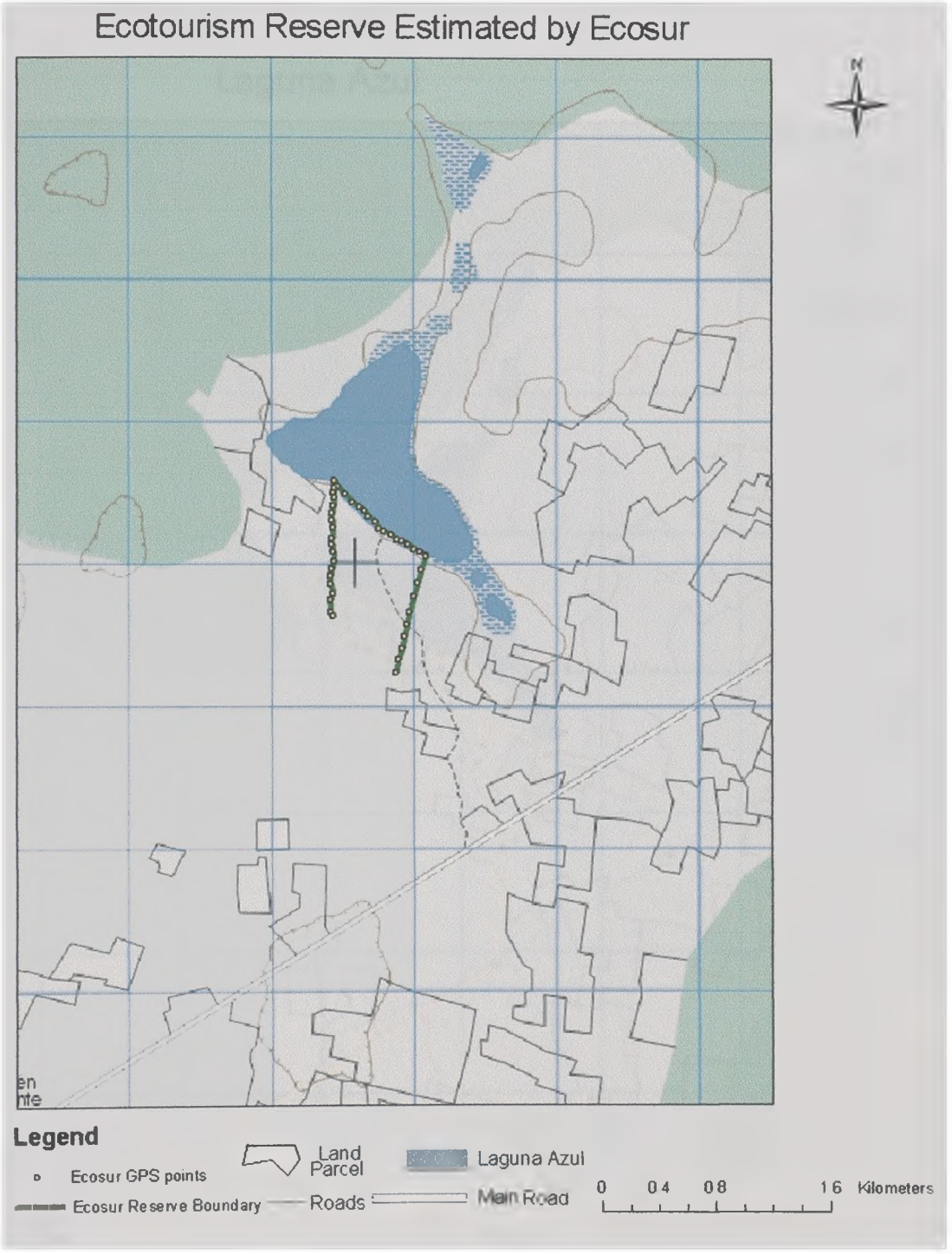
MAP 4:


Señor and Laguna Azul
LEGEND
Town
Land Parcel
Laguna Azul
Houses
Main Road
Small Roads
Señor
0 0.5 1 2 Kilometers
N

MAP 5:

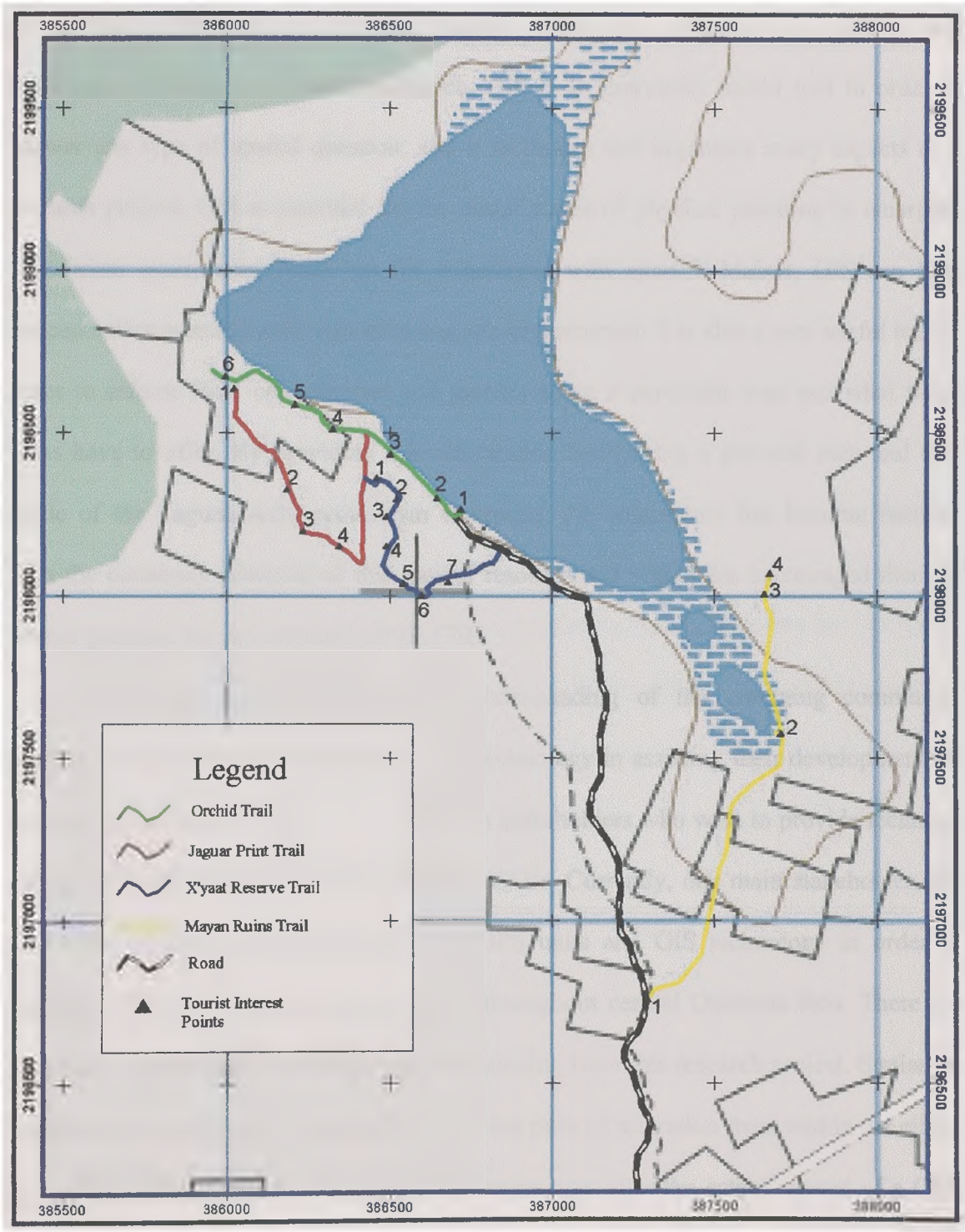

X-Maben Ecotourism Reserve
N
Legend
GPS points
Reserve boundary
Land Parcel
Roads
Laguna Azul
Main Road
0 0.4 0.8 1.6 Kilometers

MAP 6:


Ecotourism Reserve Estimated by Ecosur
N
Legend
Ecosur GPS points
Ecosur Reserve Boundary
Land Parcel
Roads
Laguna Azul
Main Road
0 04 08 16 Kilometers

MAP 7: PRELIMINARY TRAILS

MAP 8: TRAIL GUIDE FOR LAGUNA AZUL IN EJIDO X-MABEN



6.3 GIS Application Results:

The results obtained from this research project were exceptionally practical and contributed to the goal of action research. GIS is an extremely useful tool in order to answer any type of spatial question, and it facilitates and organizes many aspects of a research project. GIS is essential for the initial stages of physical planning in emerging ecotourism enterprises. Based on the experience with ejido X-Maben, GIS can help conceptualize possible trails and infrastructure organization. It is also a very useful tool in order to inform local communities and tourists about a particular area and what those areas have to offer. By providing this information and having a physical map and trail guide of the Laguna Azul ecotourism enterprise, the community has become familiar with the economic potential of this natural resource and which has encouraged them to further promote the development of the CEE.

This project contributes to our understanding of the emerging community ecotourism enterprises and the role of GIS technology in assisting their development. In the future, this work can serve as a model for stakeholders who wish to provide technical assistance to ejido communities developing CEEs. Currently, one main stakeholder, the OEPFZM, has recently gained access to GPS units and GIS technology in order to continue these applications in other ejidos throughout central Quintana Roo. There are also many possibilities for future studies continuing from this research project. Statistical analyses on population in Quintana Roo and the rates of migration from within the ejidos to northern areas could be compared with future rates after the establishment of a CEE within an ejido community to determine if the creation of a CEE can in fact prevent out-migration of young men in search of work. If ecotourism activities can generate enough

income within the ejido, young men may decide to stay in their community and work instead of searching for work in mass tourism destinations, such as the Riviera Maya. Another interesting continuation of GIS for this project would be to obtain data for individual wildlife species and their location throughout Quintana Roo, and relate the number of these species to the impacts of heavy tourism in northern Quintana Roo. Furthermore, remote sensing and satellite imagery could also be used to analyze the environmental impacts over a given time period by conducting a change detection analysis with satellite imagery from different years. The images would show physical evidence if, in fact, ecotourism in Quintana Roo does help to conserve the environment. I feel this project has a very high potential for conservation and economic development among the ejido communities in Quintana Roo. With the use of GIS for physical planning, and proper training and education provided by stakeholders for the community members, ecotourism can potentially be a true tool for conservation and protection of the environment and Maya culture.

CHAPTER 7

Conclusions and Recommendations

In Chapter 1 the analytic framework for this thesis project was presented. As previously discussed, some of the communities in central Quintana Roo have become well known for their accomplishments in community forest management (Bray, 2000). Many ejidos have formally organized community forest enterprises (CFEs), and also undertake a wide variety of traditional farming and natural resource extraction activities, at varying levels of sustainability, including commercial non-timber forest product (NTFP) harvesting and traditional subsistence extraction. The most recent proposed addition to this suite of farm and forest based income-generating activities is ecotourism.

Conventional ecotourism calls for the involvement and integration of local communities in ecotourism enterprises, but community-based ecotourism, implies the direct ownership of an ecotourism enterprise by the local community, which may be on community-owned or public lands, and represents a strategy whereby most income from the enterprise goes directly to community members and their suppliers. Although there is considerable literature that addresses the issues and importance of community based ecotourism, there has been little attention to the fact that a CBE entails the establishment of a CEE, which implies the emergence of new structures of organization and institutional transformations within traditional governance practices that allow the community to interact with the ecotourism market. Ejido communities of Quintana Roo have experience in establishing community enterprises, and are rich in social capital,

which can serve to create a successful CEE. The existing CFEs provide a potential model for the establishment of CEEs. However, a CEE requires a new and distinct set of institutions for natural resource planning, and the demand to provide a service that meets the expectations of foreign consumer. This is very different from community timber production and makes ecotourism a novel undertaking for these communities. The existing institutions within an ejido community have to adapt to an ecotourism market, in order for ecotourism to emerge as a new management option for the ejidos of central Quintana Roo. Further, there has been little attention in the literature to CEEs operating with a common property resource belonging to the entire community, as is commonly the case with Mexico's rural land tenure system. This presents new issues such as who in fact is allowed access to the resource for tourism purposes. Within X-Maben there are members of the ecotourism cooperative who are non-ejidatarios trying to promote a CEE on the basis of the common property, which presents many complications in the development of the CEE. As we saw in Chapter 4, this raises issues around access to the part of the common property to be used for ecotourism, and how communities decide on new institutional rules governing land use for ecotourism purposes.

Other complications emerge from an analysis of the large number of stakeholders involved in the ecotourism project. This thesis presents a stakeholder analysis with the aim of improving the understanding of natural resource management for ecotourism in order to help develop better and more adequate projects and policies. The goal is to assess the differing interests and different solutions to environmental problems that the various stakeholders may have, and use them to create partnerships that work towards a common goal. The stakeholders that are involved in this ecotourism enterprise range

from international levels to local community levels, which represent a wide array of differing interests and strategies introduced to the ecotourism project in X-Maben. For purposes of this thesis, four distinct research questions were proposed in chapter 1. The following chapters then address each question and provide an analysis for each.

1) What are the challenges faced by communities in common property regimes when developing a CEE?
2) Can community forest enterprises (CFEs) serve as a model for the development and success of establishing a CEE?
3) Who are the stakeholders involved in these efforts and what are their interests and strategies?
4) How can the role of GIS technology used in local communities contribute to the action research framework within this thesis project?

In Chapter 2, the complex and unique history of the geography of the Yucatan Peninsula, ancient Maya civilization, rebellious Santa Cruz Mayas, and the Caste War were discussed. This romantic history has begun to be exploited for tourism purposes, and has become another element that local communities use to distinguish themselves within the tourism marketplace. The key event that set the land tenure framework that still exists in the region was the agrarian reform of the 1930s, which allowed land throughout Mexico to be placed in the hands of ejido communities, giving birth to the ejido X-Maben and many others in Quintana Roo. These ejidos were primarily established for chicle production and thus were quite large, however by the 1970s excessive logging and exploitation of the forests in this area were apparent. Local

peasants throughout the area were not benefiting from the logging concessions, and frustrations grew within the ejidos. In 1983 the PPF was created with the main goal of empowering ejido residents and increasing the economic returns they receive from the forest (Kiernan and Freese, 1997). Through this effort community forest enterprises (CFEs) were created, and peasants began to administer commercial logging themselves. Members of the ejidos learned how to operate industrial logging equipment, calculated productions costs and perfected their negotiation skills within the market. This formation of the CFE is extremely important because it provides a model for the establishment of a community ecotourism enterprise (CEE). However, the two are very different. A CEE is a service-oriented industry, which requires interaction with people from other cultures and provides them with adequate service to meet their needs. On the other hand a CFE is based on commercial timber production that supplies a distinct market, which does not require extensive interaction with other cultures. Establishing these new CEEs involves a new and different set of demands for the community, very different from CFE management.

Chapter 3 describes tourism development in Mexico and more recent interest in more environmentally friendly tourism. Tourism first took off in the 1970s as a result of a plan by the Mexican government to increase tourism growth as a means of promoting economic development within the country. Today over 21 million tourists visit Mexico each year, generating over 8 billion dollars annually for the national economy (Barkin, 2001, Clancy, 2001). However, environmental and social problems related to mass tourism have recently influenced a new interest among many tourism officials and conservationists for lower-impact forms of nature and community-oriented tourism in

Mexico (Rioja, 2000). Mexican authorities are discovering that there is a new market demand for alternatives to the "sun, sand, and luxury hotel" tourism of Cancun and its kin. For example, the Mexican tourism secretary has said that the current administration's tourism policy is to ensure sustainable tourist destinations (Saliba, 2003). The emerging efforts throughout Quintana Roo to create tourism experiences that are more nature-based and provide the opportunity to interact with authentic local cultures can supply this new ecotourism market. CEEs are now arising as a new forest management practice that may enhance community development and empowerment, provide new income, and support environmental conservation.

The ejidos of Quintana Roo may be used to managing extractive activities, but the low-impact, high-knowledge activities involved in ecotourism require special support and training, which was highlighted in chapter 4. Traditional knowledge of ecosystem management must be complemented with training in scientific species identification of plants and animals and science-based knowledge of ecosystem functioning, as well as business management skills and skills in negotiating the complex institutional terrain of common property community politics.

The CEE in ejido X-Maben has been looked upon as the potential model for CEEs in central Quintana Roo in general. However, at end of this research in July 2003, after two years of operation, income levels were low and many ejido members were disillusioned with the project. Although a somewhat depleted natural capital was present, the financial capital for running an ecotourism enterprise was insufficient, and human capital was lacking. On the other hand, social capital is very strong within the ejido and can provide the structure and base for the success of an enterprise. However, many of the

problems discussed in Chapter 4 remain. For example, the lack of transportation to the lagoon has resulted in weak surveillance of the area by the ecotourism group. This results in persistent problems with solid waste disposal and inappropriate uses of the ecotourism area, such as continued subsistence hunting. In addition, the project has not generated sufficient funds in the past two years, and ejido authorities were not supportive of the effort. This last factor may be turning around with the election of new ejido comisariado in January 2004 who has been more supportive of the ecotourism project (David Bray, personal communication). There has been a problem with the organization of records and funding, which has also created conflicts between the ecotourism group and the ejido authorities. Furthermore, the lagoon itself currently attracts a mostly local recreational market, which often results in overcrowding, and does not fulfill the goals of the ecotourism group to attract a foreign market. The question then arises if the lagoon may not be a strong enough attraction for foreigners. In response to this issue and many of the current problems with the CEE, the ecotourism group has recently incorporated a "cultural package" that involves the participation of more community members, in order to increase interest among the ejido members. The cultural package involves a walking tour through the town of Señor that provides a taste of Maya culture. Tourists are served traditional Maya food, they are given explanations on how to sew traditional dress and hammocks, they are given a session on Maya history and legends, and they learn about medicinal plants and home gardens. The tour has appealed to many tourists, and it is hoped that it will begin to produce a steadier clientele than that of the lagoon alone. The model of community based and managed ecotourism shown by ejido X-Maben requires intensive amounts of training, dedication, and support from organized stakeholders.

Because the ejido has completely managed the project on their own and the many stakeholders involved are not well coordinated, the development has taken a long time as opposed to other models of CEEs. The stakeholder analysis in chapter 5 suggests that support from the many stakeholders has not been consistent throughout the development of the CEE. Furthermore, based on the interviews conducted, many stakeholders do not have sufficient coordination and communication between each other. This presents a major problem for the CEE in X-Maben because although all stakeholders have similar goals of successful ecotourism enterprises managed by ejido communities, there are many differing strategies and ideas that are proposed to the ejido. It is strongly recommended to coordinate efforts to support X-Maben by organizing meetings that all stakeholders can attend, along with the ecotourism group, in order to discuss strategies and suggestions for the ecotourism project.

Ejido X-Maben's model of a CEE is community managed with abundant stakeholder involvement. As discussed in Chapter 4, there are also other models for CEE development in Quintana Roo. We explored the "private sector contract model" as represented in Pac-Chen, which is community based but with a contract with a private company, and has resulted extremely successful in terms of tourist influxes, economic increase, and community development, in a shorter amount of time. This may be due to the fact that only one main stakeholder has been in charge of the training and business management for this CEE. It may also be due to the fact that the company knew exactly what it wanted for its tourist market, and was able to train community members with this specific market in mind. The community was also given a set of behavioral guidelines as part of the contract that established certain rules for the community, such as prohibition

of TVs and radios during the day, which creates the image of a traditional Maya community for the tourist market. As well, Pac-Chen is a very small ejido compared to ejido X-Maben and rules may be easier to follow and consensus more easily achieved in smaller communities. In Chacchoben a very different model was presented. This model may be called the "public sector investment model" since the ejido has received a large amount of financial capital and technical support from governmental institutions such as INAH and SEDETUR, which have facilitated the development process of their CEE. This also resulted in a tripartite agreement between INAH, the ejido, and a private tourism operator in Majahual, an unusual public-private-community collaboration that may be the first of its kind in Mexico. Chacchoben manages the CEE and has based the structure and organization on their CFE. They draw on the human capital personified in the ejido comisariado, who is a former President of the Sociedad de Productores Ejidales Forestales de Quintana Roo (SPEFQR), the major community forestry organization in southern Quintana Roo. This model is possible because the community and its Mayan ruins are the closest such site to the expanding cruise ship destination of Majahual on the Costa Maya. Chacchoben can receive massive amounts of tourists to the CEE on a given day, which suggests that Chacchoben may be a termed a case of "mass community-based ecotourism", as contradictory as this may sound. This could potentially present a future problem with carrying capacities and sustainability of the project, but also presents a very unique opportunity for the community to receive tourism and employ the first ever partnership with INAH and a private sector tourism operator in Mexico. The combination of experience from CFE management in Chacchoben, with financial capital and technical

support from SEDETUR and INAH has indeed provided a strong base for the establishment of a CEE in this ejido.

Chapter 6 explains the effort to provide new technical assistance within the research action framework. A GIS analysis of the Laguna Azul was carried out in order to identify natural features of interest and as an initial exercise in the mapping of interpretative and hiking trails. Because one of the main goals of CTEM is to make academic research useful to local land managers, a GIS application gives the people of the community an informed and detailed map of the project area. The coordinates gathered by global positioning system unit (GPS) during field research in March 2003 and July 2003 were applied to map the lagoon area and to produce a field guide for ecotourists (appendix 1). There is now more detailed information about the features of the natural area, along with nature trail information and cultural history, which is available to the entire community and visiting tourists.

Thus, the communities of Quintana Roo that are establishing ecotourism projects have in mind a new alternate source of income for their ejido members that will compliment other forest management practices. Sustainable community-based ecotourism may be a path to economic growth for many ejidos of Quintana Roo, while protecting and conserving the environment. However, it is essential to increase human capital by extensive training workshops and lasting efforts to maintain training opportunities available. It is also imperative to increase financial capital from government and non-government agencies, in order for CEEs throughout Quintana Roo to develop into successful enterprises that raise environmental conservation and heighten Maya traditional culture. Lastly, I feel that it is most important to establish a type of Plan Piloto

Ecoturístico for emerging CEEs in Quintana Roo. As the Plan Piloto Forestal ensured community development and sustainable timber harvesting, the Plan Piloto Ecoturístico could establish a system of certified sustainable ecotourism projects throughout Quintana Roo. Ecotourism needs to be developed cautiously, including pre-research of the area of interest in order to determine effects on the surrounding ecosystems, including plant, animal and human populations. A carrying capacity must be established and respected so that minimal impact is guaranteed. Because of the dynamic growth of ecotourism popularity within recent years, many ecotourism projects are green washed, claiming to be sustainable when in actuality are not accredited or proven to be. True ecotourism needs to be sustainable both for the environment and for local communities, and a Plan Piloto Ecoturístico that provides consistent training and technical support could potentially ensure sustainable ecotourism in the region.

Community ecotourism enterprises have potential to bring increased sources of income to ejidos, enhance environmental awareness, and conserve Maya culture. However, long-term sustainability of a CEE needs to be approved and certified by credible governmental or non-governmental organizations (Honey, 2002). The goal of community-based ecotourism is too benefit local communities, as well as the future of their natural resources. By providing adequate training and management skills, having organized stakeholder coordination and implementing certification, CEEs throughout Quintana Roo can expect to be immensely successful in providing the new demand for community-based ecotourism.

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APPENDICES

APPENDIX I:

Trail Guide For The Community Ecotourism Project

This guide was produced by Melissa Cornejo, a graduate student in the department of Environmental Studies at Florida International University in Miami, and with the collaboration of the ecotourism group X'yaat, the president of X'yaat Marcos Cante, and Gerardo García from the GIS laboratory at Universidad de Quintana Roo. This guide forms part of the Community Ecosystem Management Program in the Environmental Studies department at Florida International University under supervision of Dr. David Barton Bray.

Maya Culture, Ejido X-Maben and Laguna Azul

The Yucatan Peninsula forms part of the isthmus that unites North America to South America and that also separates the Gulf of Mexico from the Caribbean Sea. It is made up of flat land of tangled scrub in the drier northwest region, which then gradually merges into lusher semi-humid tropical forests and tall trees as you reach the southeast region. The peninsula is made up of three states, Campeche, Quintana Roo, and Yucatan and has a total area of 222,000 square kilometers of which 50, 843 corresponds to Quintana Roo. Throughout history, the Yucatan peninsula has been isolated from the rest of Mexico and Central America due to the extensive wetlands in the state of Tabasco that separate the peninsula on the west side, and the vast jungles of the Petén in the south. In colonial times, the Yucatan peninsula was literally imagined as an island. This geographic isolation has contributed to a type of social isolation as well, due to the fact that the Spanish colonists did not find many valuable resources, such as gold, in this region, thus there was not a strong Spanish presence and influence in this region as in other areas of Mexico. This contributed to the development of a distinct and unique culture on the Yucatan Peninsula.

The region that is now the state of Quintana Roo seems to have been an inhospitable place for the thriving of large populations due to its dense extensive forests. During the prehispanic period, the main centers of political and religious influence were always located in the northern part of the peninsula, which is what now corresponds to the state of Yucatan. The archaeological remains of prehispanic ceremonial centers and towns still hidden under the vast forest cover of Quintana Roo have not yet been thoroughly studied. The largest sites in Quintana Roo, located near the coast, were Tulum, Coba, and Chacchoben which are smaller when compared to such important sites as Chichen Itza or Uxmal in the state of Yucatan. This may indicate that the region of Quintana Roo was less densely populated than Yucatan before the arrival of the Spanish.

The Maya culture is said to have originated a few millennia B.C. and flourished in the area known as Mesoamerica, which extends throughout parts of Mexico, Guatemala, El Salvador, and Honduras. They arrived in the Yucatan in approximately 1200 BC and built huge monumental structures throughout the region, beginning in the Pre-Classic

period and then constantly building newer structures on top of older ones over time. The ancient Maya civilization was based on ceremonial centers and independent city states for example, the city of Tikal in Guatemala, Caracol in Belize, Palenque in Chiapas, and Uxmal in Yucatan. Each city-state was ruled by a distinct king, whom was considered a mediator between the heavens and earth. Most of the large Maya structures and temples were also originally built during the Pre-Classic period and later were rebuilt or added to in the following years. Maya civilization continuously grew and developed, and archaeologists mark the year 250 A.D. as an approximate date for a transition of styles from the so-called Pre-Classic period, which gave way to the Classic period, which lasted until approximately 900 A.D., when most of the great Mayan city-states entered into a catastrophic decline. The ancient Maya are well known for their art, architecture, astronomy, extremely accurate calendars and complex numerology, of which all were of major focus during the Classic period. After the Classic period, their culture suffered from a collapse where ceremonial centers were abandoned and their intricate studies of art and science diminished. There are various theories about the causes of this cultural collapse, one of them being due to an over-exploitation of natural resources compounded by a period of extreme drought in the region. Food scarcity and drought may have also led to an intensification of warfare between neighboring states, all of which contributed to the widespread abandonment of the cities in the southern lowlands; and the other due to the invasion of their lands by other non-Maya culture. In spite of the abandonment of ceremonial centers, documents from the Spanish colonial period show that in the sixteenth century Mayan society remained intact at the village level and very well organized, however their significant advances in art and science had come to an end. Over two million Maya still live in this area today, however different regions have different dialects and distinct attire. The Maya have been divided into two regional subgroups: those of the highland areas of Chiapas, Guatemala, El Salvador and Honduras and those that inhabit the Yucatan peninsula and Tabasco. The Yucatan peninsula is currently inhabited by a group of Maya called the Yucatec Maya.

The first Spanish that arrived in Quintana Roo were thirteen men who had been shipwrecked in 1511, of which only two survived the first encounters with the Maya.

Gonzalo de Guerrero and Jerónimo de Aguilar lived among the Maya over a period of many years. They adopted their language and their way of life. Aguilar was kept as a slave, but Guerrero captured the *cacique's* trust and affection to the point that he was allowed to marry his daughter. In October 1527 a first attempt occurred to colonize what is now Quintana Roo. The expedition, made up of 400 soldiers and 150 horses, was lead by Captain Francisco de Montejo. They reached land at a point that is two kilometers from the town of Xelha, not far from Tulum. The Mayas in this town were accommodating to the foreigners and even helped them to construct small huts for accommodation. But the Spanish soon became ill due to the new environment and lifestyle, so the captain decided to leave this small town. For many months they traveled along the coastline, discovering new villages and the Mayan culture. Many of the Mayas were hospitable toward the "white people", but in many towns battles would occur were many natives and Spanish were killed. Thus, after months of travel, sickness and battle, only about 10 of the original 400 soldiers were left. Their first conquest had failed.

Many years passed until the Spanish were able to accomplish their dreams of colonization. By this time many Mayas were encountering problems with famine, drought and illness in their towns. The Spanish however, arrived with a strong and forceful push. The advance into the interior of the Yucatan peninsula was headed by the son of Captain Francisco de Montejo, also named Francisco. They entered through the port of Campeche in June of 1541 and by January of 1542 the city of Merida was founded. Once this conquest had begun the next step for the Spanish was to distribute the indigenous land among themselves and form *encomiendas,* systems of tributory labor that were developed as a means of securing an adequate and cheap labor supply. It gave the conquistador control over the native populations by requiring them to pay tribute from their lands, which were "granted" to deserving subjects of the Spanish crown. Very few *encomiendas* were formed in Quintana Roo due to the dense forests and fear of the rumored rebel natives of the region. As time passed, the region that is now Quintana Roo became virtually untouched by the Spanish and according to the famous anthropologist Manuel Villa Rojas it was populated only by "untamable Indians that remained clenched to their own traditions". Apparently for centuries, central Quintana Roo was an area filled

with such dense jungles that very little permanent populations thrived there. There are local stories that say the only Mayas in this central region of Quintana Roo were dedicated strictly to hunting and gathering and were called "huitob". These native populations were sparsely spread out among the thick jungles. Thus, such was the situation when the Caste War began in 1847.

The set of events known to historians as The Caste War of Yucatán began July 30, 1847 at night when a group of Mayans from the eastern region of the Yucatan Peninsula, lead by a Maya peasant, named Cecilio Chi, arose and slaughtered the white population of Tepich. According to the Mayas, the war was caused when authorities in Valladolid murdered the *cacique* of Chichimilá, Manuel Antonio Ay, days before the night of July 30, accused of conspiring against the white race. Suddenly, rebellions broke out in the area and spread throughout the peninsula. The Maya people had suffered injustice for 300 years since the arrival of Spanish conquistadors and later from the *criollos,* Spanish descendants born in Mexico. The total loss of population was devastating, one fifth of the population of the state of Yucatan was killed or fled as a result of the war. Thousands of criollos were captured and massacred during the attacks on the towns and plantations throughout the Yucatan. Any criollos that could escape such wrath fled to Merida. By 1848 only the cities of Merida and Campeche were in the hands of the criollos. The Mayas were about to completely take over the peninsula, charging through towns in fierce war. They arrived 30 kilometers from Merida and 8 kilometers outside of Campeche, when they decided to stop their final attack. Legend has it that the Mayas began to observe the activity of a type of insect, called *sh'mataneheeles*, associated with the onset of the rainy season. At this point, already running low on food, they decided to return to their *milpas* (subsistence agriculture fields) and plant corn during this optimum seeding time of the year. They would have had no food to supply them through the year if they wouldn't have returned to their fields to plant corn. With the rebel withdrawal, the criollos then regained control of the cities and towns in the region, and pushed the rebel Mayas further south to the unpopulated jungles of what is now central Quintana Roo. It was in this area in 1850 when rumors began to circulate that on the banks of a cenote,

deep in an uninhabited forest, three miraculous wooden crosses appeared fastened to a mahogany tree.

These apparently miraculous crosses appeared in Chan Santa Cruz, what is now called Felipe Carrillo Puerto, courtesy of Jose Maria Barrera, a *mestizo* who had united with the Mayan rebellion. With the help from a ventriloquist named Manuel Nahuat, they made three wooden crosses that came to be called the *Cruz Parlante* (Talking Cross). Nahuat was able to project words as if they came from the cross for everyone to hear. This technique, although a deliberate manipulation, was an effective way of rallying the demoralized Mayas to counterattack and resist the Mexicans. Thus, belief in the miraculous Talking Cross was added to the syncretic Mayan Catholicism that had developed during the colonial period, creating a unique religious configuration which still distinguishes the Mayas of this region today. They began to adore and worship these crosses with offerings and candles, little by little forming a united religious cult in Chan Santa Cruz (now called Felipe Carrillo Puerto) and neighboring villages. What had once been a rebellious movement now turned into a religious crusade and began to strengthen internal ties among the Maya. The followers of the Talking Cross became known as the *Cruzob* or "Santa Cruz Mayas" and they believed that the "whites" would never take over their region and that they should continue to rebel against them. The caciques of Chan Santa Cruz demanded independence from the Mexican government and a huge area of central and southern Quintana Roo as their territory. Other Maya groups in the southern part of Quintana Roo had accepted Mexican authority and became enemies with the Santa Cruz Maya. The Mexican army began to enter the area, massacring Maya people and burning their agricultural lands. The Maya fought back against the army and managed to capture many prisoners as slaves. This battle between the Mayas and the Mexican army lasted for twenty years, resulting in a total of 54 years of successful Mayan resistance against the "white men" from 1847 to 1901.

In 1901 the Mayas were finally defeated when a road stretching from Peto, Yucatan to central Quintana Roo was built by Mexican troops. When the troops arrived they found a deserted settlement, with resistance having melted away. The Mayas had moved north of Chan Santa Cruz and founded many new villages, including ejido X-

Maben and its communities. In the end, the rebel Mayas had lead the longest and most successful indigenous uprising in the Americas and formed what was essentially an independent state that lasted over fifty years.

In the early twentieth century forest exploitation began in Quintana Roo. The new market for chicle, a resin form the chicozapote tree used for chewing gum, brought the arrival of many new foreigners to this region. The Mayas were not familiar with chicle extraction, however after many years they too began to extract chicle to sell on the market. Many of the local Maya leaders controlled the chicle extraction in their villages and learned to take advantage of their natural resources in order to supplement their livelihood of subsistence agriculture.

In 1934 Lázaro Cardenas (1934-1940) was elected president of Mexico. He deepened and extended the agrarian reform that had resulted from the Mexican Revolution (1910-1917). Cardenas, a revolutionary general and reforming governor, set out to fulfill the revolution's promise of "land for the peasants" which was made two decades before. He pledged to distribute twenty million hectares of land to peasants during his six years in office, and by 1940 a third of Mexico's twenty million people had been awarded their land. This was extremely significant for the Mayas of Quintana Roo because by 1944, 21 percent of the land in this region was distributed as ejidos and placed in the hands of the local indigenous people. In May 1937, ejido X-Maben was formed with a total of 73,400 hectares.

Ejido X-Maben

Ejido X-Maben was formed with a total of 73,400 hectares and was named after the former main village Xmaben. However, in the 1940s the village of Xmaben was abandoned when the local well failed. The residents moved and formed the village of Señor, which is now the largest population center in the ejido. Ejido X-Maben currently has three towns, Señor, Chan Chen Comandante, and Pino Suarez, with a total population of approximately 3,000 inhabitants of macehual Maya decendence. X-Maben has played a protagonistic role in the history of central Quintana Roo and is very linked to the

famous ceremonial center of Tixcacal Guardia, which is still used today by local Mayas to worship the religion of the Talking Cross which originated during the Caste War.

The principal economic activity is based on timber production of valuable tropical wood species, such as mahogany (*Swietenia macrophylla*) and Spanish cedar (*Cedrela odorata*) in the form of round wood and plywood. Railroad ties are also produced within the ejido from other tropical hardwoods such as, chechen (*Metopium brownie*) and jabin (*Piscidia piscipula*). Another economic activity within the ejido is the extraction of chicle, which has continued to be important within the ejido, although not as commonly practiced as it was during the chicle boom in the 1920s. Subsistence agriculture (milpa) is the main source of food consumption for the ejido, with maize being the main crop in addition to beans, fruits, and root crops. Apiculture, introduced in the 1960s, is another form of economic gain within the ejido, and recently ecotourism has emerged as a new form of forest management and economic income.

The Forest of X-Maben and Laguna Azul

The type of vegetation found in this area is dry tropical forest. There are many species of both flora and fauna present. For example, wildlife such as jaguars (*Phantera onca*), tapirs (*Tapirus bairdii*), howler monkeys (*Aluoatta pigra*), white-lipped peccaries (*Tayassu pecari*), great curassow (*Crax rubra*), ocellated turkey (*Agriocharis ocellata*), and white-tailed deer (*Odocoileus virginianus*) can be found in these forests. The number of plant species in this region is approximately 1500, including many species of orchids such as *Oncidium sphacelatum* and *Rhyncholaelia dygbiana,* which are very attractive to ecotourists. The ejido also has archaeological ruins, cenotes and a beautiful lagoon. The Laguna Azul (Blue Lagoon) is located about 8 kilometers from the town of Señor. In October 2000, the ejido X-Maben decided to designate a small forest reserve for the strict use of ecotourism. Presently the reserve consists of 100 hectares where logging, hunting, and agriculture are prohibited. Also in 2000 the ecotourism group X'yaat was formed by several young men from Señor. They have worked in the reserve making trails, huts, and a dock with financial help that they received from the Instituto Nacional Indigenista (INI). The recreational activities that are offered in Laguna Azul are : interpretive trails,

kayaking, canoeing, bird watching, and camping. X'yaat ecotourism group also offers a cultural tour in the community of Señor. This tour involves many families from the ejido, creating a new income source for these families and the whole ejido itself. The tour includes visits to different houses in the community, traditional meals, learning the traditional sewing methods, a Mayan history and story session, participation in music workshops, and learning about traditional Mayan medicine.

Trail Guide

Laguna Azul has 4 trails that allow the ecotourist to experience different aspects of the ecological, economical, and cultural uses of the Maya forest of ejido X-Maben.
The four trails are:

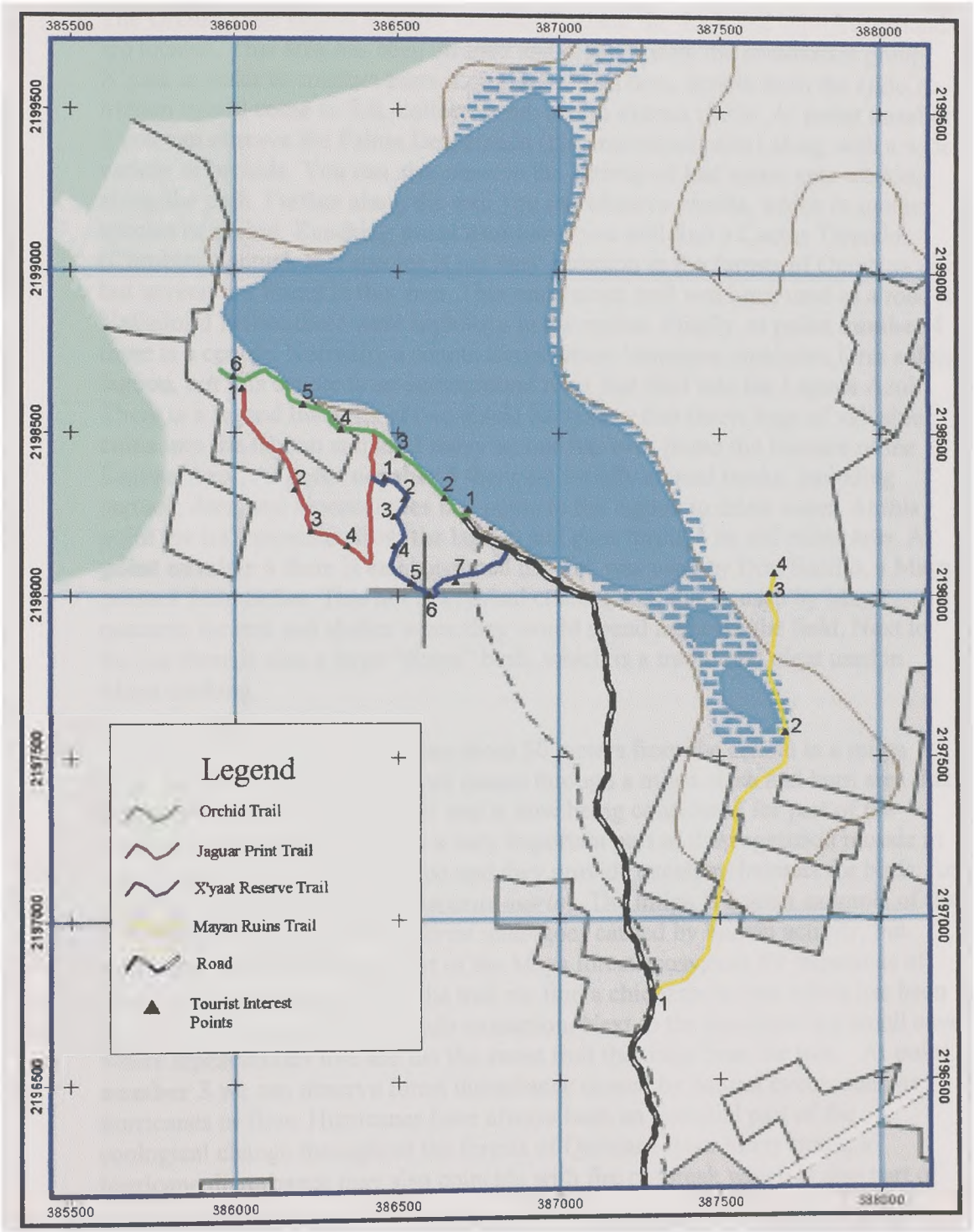
1) **The Orchid Trail** (Marked in green on map). On this interpretive trail there is an opportunity to observe 18 different species of orchids, for example the "cascada amarilla" (*Oncidium sphacelatum*) and vanilla (*Vanilla insignis*).

2) **The Jaguar Footprint Trail** (Marked in red on map). The hike on this trail lasts about 2 to 3 hours with frequent stops to observe birds, animal tracks, and an old milpa field that was left three years ago in order for the forest to regenerate after agricultural use.

3) **The X'yaat Reserve Trail** (Marked in blue on map). This trail forms a circuit throughout the reserve, which was declared by the community for exclusive ecotourism use. Here you may find dry tropical forest trees such as the chicozapote (*Manilkara zapota*), you may also find evidence of subsistence hunting, which is now prohibited in the area, and a small valley with an ancient Maya well, which is locally called a k'oop.

4) **The Ancient Maya Ruins Trail** (Marked in yellow on map). This trail extends through an old ranch that belonged to a Maya historian, and then ends up in an archaeological zone that has not yet been studied nor excavated.

LAGUNA AZUL TRAIL MAP



1) The Orchid Trail begins at **point number 1** where the dock and camping grounds are located. This area has been cleaned and organized by the ecotourism group X'yaat in order to conduct tours. Long ago in this area, people from the ejido X-Maben would come to fish, collect wood, and to extract chicle. At **point number 2** you can observe the Palma Despeinada (the uncombed palm) along with a wide variety of orchids. You can also observe the activity of leaf cutter ants working along the path. Further along the trail you can observe vanilla, which is another species of orchid. Reaching **point number 3** you will find a Cactus Trepador (Climbing cactus), this species is not very common in the forests of Quintana Roo but several are found in this area. This same exact trail was once used as a road to Valladolid before there were highways in the region. Finally, at **point number 4** there is a cenote. Normally a cenote forms where limestone sinkholes form a deep lagoon, but this cenote is an underground river that feed into the Laguna Azul. There is a legend that tells of two chicle harvesters that threw bags of valuable coins into the lagoon and until today no one has ever found the treasure of the Laguna Azul. At **point number 5** there are usually animal tracks, including jaguars, deer, and tepezcuintles that come to the lagoon to drink water. At this point the trail separates from the lagoon and goes through an old milpa area. At **point number 6** there is an abandoned hut that was used by Don Basilio, a Maya peasant from Señor. This hut is a typical construction that is used by Maya peasants for rest and shelter when they would spend nights in the field. Next to the hut there is also a large "chaya" bush, which is a traditional plant used in Maya cooking.

2) The Jaguar Footprint Trail begins about 50 meters from the cenote in a milpa area. At **point number 1** the trail passes through a milpa slash and burn area that was abandoned in the year 2001 and is now being considered for part of the reserve. Recovering milpas are a very important part of the vegetation mosaic in the Maya forest of Quintana Roo and they provide excellent habitats for birds, for example the Urraca Pea (*Cyanocorax morio*). The milpa is a great example of the anthropogenic changes that a forest undergoes caused by human activity, but which has been an intricate part of the Maya forest ecosystem for thousands of years. At **point number 2** on the trail we find a chicozapote tree which has been sliced on the outer bark for chicle extraction. Next to the tree there is a small cave where tepezcuintles live and eat the sweet fruit that falls from the tree. At **point number 3** we can observe forest disturbance caused by natural events such as hurricanes or fires. Hurricanes have always been an essential part of the ecological change throughout the forests of Quintana Roo. Many times, a hurricane disturbance may also coincide with fire outbreak which is also part of the natural ecosystem. From here the trail continues from the disturbance zone into a well preserved area at **point number 4**. Here there are a wide variety of tree species along the trail back to the camping grounds.

3) The X'yaat Reserve Trail begins from the orchid trail. Here you can observe what is actually the nucleus of the Reserve. There are many large trees in this area. At **point number 1** there is an old spy/lookout that was used for hunting tepezcuintle. This is evidence that there is still some hunting activity within the reserve. There have problems with people who come to the reserve area to hunt and capture exotic birds, which are then sold in Carrillo Puerto for 70 pesos or sold in Cancun for 700 pesos. As the trail continues there are many chicozapote trees and gumbo-limbo trees. At **point number 2** you will find an Acacia tree that hosts a symbiotic relationship with ants. The tree is full of poisonous spines that only the ants can tolerate. There is a Maya legend that if ever a snake is found in the area, it must be killed and hung from the poisonous spines so that the ants will eat the snake. If the snake is not hung from the Acacia tree, it will regenerate and come to life again. Following the path we come to **point number 3** where there is a very rare tree called the "siricote" which has highly valuable wood. The wood from this tree is even more valuable than mahogany. At **point number 4** there is a small water hole that animals use for drinking water, which is proven by the numerous animal tracks present. At **point number 5** there is evidence of old logging. There are still some cut tree trunks that were frequently used for railroad ties. At **point number 6** we find an animal trap made from a large stick and a fork that was probably used for trapping tepezcuintle. These homemade traps were often used when bullets were scarce. As the trail continues, there are many vines that are locally used for basket weaving. At **point number 7** there is a valley-like depression that is called "k'oop" in Maya. There are a few mahogany trees in this area, as well as an ancient well that was used to obtain water. The microclimate is much more humid and there are many animal tracks from deer and tepezcuintle. The trail then approaches an area with many different palms, cactus and wild pitaya fruits. The trail ends at the parking area.

4) The Ancient Maya Ruins Trail begins at **point number 1** just off the main road to the Laguna Azul. The trail winds through a former milpa agriculture area that is ideal for bird watching. This area was also formally used for logging trees. The beginning part of this trail is very wide, because it was originally used for vehicles to access the logs. There is also word from many locals that jaguar are present in this area. The trail brings us to a swampy wetland area from where you can observe the smaller Chan Laguna, which is adjacent to the Laguna Azul. The trail then passes through Don Alejandro Kan Tzak's ranch, where there are beehives and an old well at **point number 2**. There is a huge dead tree that towers above the other trees and is very intriguing. There are also many avocado trees that were planted by Don Cecilio Nah, an old Mayan historian that was the father of Don Alejandro. Maya historians keep written documents about the Maya culture and beliefs of the Maya religion. Many times they are the ones who know how to write ancient Maya hieroglyphics and they keep the old Maya culture alive among the newer generations. These historians are considered extremely

important and sacred. At **point number 3** the trail leads to the first archaeological ruin. It is a large hill that has been cleaned up by local people, revealing its stones and structures. Here it is very important to follow the guides' rules and not to climb the ruins, due to federal law. Here you can find various Maya ruins and ancient structures. There have not yet been any studies or excavations done by any formal institutions. Finally, there is a series of caves at **point number** 4 which seem to have been used to provide material and rock for building houses or small ranches. The trail ends at this point.

List of Orchids in Laguna Azul

COMMON NAME	SCIENTIFIC NAME
1. Maravilla	*Rhyncholaelia dygbiana*
2. Campana Verde	*Catasetum integerrimun*
3. Palomita	*Brassavola cucullata*
4. Vainilla	*Vanilla insignis*
5. Olorosa	*Prostechea alatta*
6. Oncidium	*Oncidium ascendens*
7. Terrestre Común	*Oeseoclades maculata*
8. Centavito	*Prostechea boothiana*
9. Epidendrum	*Epidendrum stamphordianum*
10. Cascadita	*Notylia orbicularis*
11. Purpurina	*Epidendrum flexuosuosum*
12. Oreja de Burro	*Lophiaris oerstedii*
13. Maculada	*Brassavola nodosa*
14. Miniorquídea	*Ornithocephalus inflexus*
15. Vara Larga	*Myrmecophila sp*
16. Dama Verde	*Sarcoglottis sceptrodes*
17. Elipse	*Messadenella petenesis*
18. Cascada Amarilla	*Oncidium sphacelatum*

APPENDIX II:

Semi-Structured Interview Questionnaires for X-Maben CEE Stakeholders

Semi-Structured Interview Questionnaire for NGOs:

1) What is the name of this organization?

2) What is the purpose of this organization?

3) What are the main sources of income for this organization?

4) How many people are employed here?

5) What is the annual budget?

6) How did this organization form?

7) How did you become involved with community ecotourism in Quintana Roo?
    a) In X-Maben?

8) What other activities is this organization involved in?

9) How important is the ecotourism project in X-Maben for this organization?

10) Have you provided any training for ecotourism guides in X-Maben? Explain the process.

11) What other type of assistance have you provided for X-Maben?

12) What type of communication or cooperation exists with other stakeholders involved in X-Maben?

13) What do you believe is the major obstacle for the CEE in X-Maben?

14) What are some possible solutions to this obstacle?

15) In your opinion, what is the dilemma with common property issues in the CEE in X-Maben?

16) In your opinion do you believe the CFEs can serve as models for creating a CEE?

17) What do you consider to be a model of community ecotourism in Quintana Roo?

18) What is your vision of the future of Laguna Azul and other CEEs in Quintana Roo in 5 years? 10 years?

Semi-Structured Interview Questionnaire for Private Agencies:

1) What is the name of this organization?

2) What is the purpose of this organization?

3) How did this organization form?

4) What are the main sources of income for this organization?

5) How many people are employed here?

6) How did you become involved with community ecotourism in Quintana Roo?
    a) In X-Maben?

7) What other activities are this organization involved in?

8) How important is the ecotourism project in X-Maben for this organization?

9) What type of assistance have you provided for X-Maben?

10) What type of communication or cooperation exists with other stakeholders involved in X-Maben?

11) What do you believe is the major obstacle for the CEE in X-Maben?

12) What are some possible solutions to this obstacle?

13) In your opinion, what is the dilemma with common property issues in the CEE in X-Maben?

14) In your opinion do you believe the CFEs can serve as models for creating a CEE?

15) What do you consider to be a model of community ecotourism in Quintana Roo?

16) What role does the CEE in X-Maben, or other CEEs in the region, play in your business plan?

17) How does this agency manage the fact that you want to make a profit, but you also want to help these developing CEEs. What is your strategy to do so?

18) What are the target markets for Laguna Azul?

19) What is your vision of the future of Laguna Azul and other CEEs in Quintana Roo in 5 years? 10 years?

Semi-Structures Interview Questionnaire for Federal Agencies:

1) What is the name of this organization?

2) What is the purpose of this organization?

3) What is the annual budget?

4) How did this organization form?

5) How, when and why did you become involved in community ecotourism in Quintana Roo? In X-Maben?

6) Where did the term "Provincia Maya" come from?

7) How important is the ecotourism project in X-Maben for this organization?

8) Have you provided any training for ecotourism guides in X-Maben? Explain the process.

9) What type of assistance have you provided for X-Maben?

10) What do you believe is the major obstacle for the CEE in X-Maben?

11) What are some possible solutions to this obstacle?

12) In your opinion, what is the dilemma with common property issues in the CEE in X-Maben?

13) What is the role of archaeological ruins within these CEEs?

14) What are the goals of this Institution for the state of Quintana Roo, specifically the Provincia Maya?

15) What is your vision for the future of Provincia Maya in 5 years or 10 years?

Semi-Structured Interview Questionnaire for X'yaat:

1) What is your name?

2) How old are you?

3) How did you become involved in community ecotourism?

4) What type of training have you received? When? From Whom?

5) What did you learn from the training?

6) What type of financial assistance has this group received?

7) Of all the stakeholders involved in this project, who has been the most important?

8) What other job do you have in the ejido?

9) Have you ever left X-Maben to look for a job elsewhere?

10) Since the CEE has developed, have you left the ejido in search of work?