THE INFLUENCE OF SOCIAL CAPITAL ON THE DEVELOPMENT OF NATURE TOURISM: A CASE STUDY FROM BAHIA MAGDALENA, MEXICO

by

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ABSTRACT

This paper provides an introduction to the concept of social capital, and reviews related empirical literature. It then builds on relevant nature-based tourism literature in a Mexican context. Nature-based tourism provides an opportunity for economic development and can act as an impetus for biodiversity conservation for coastal communities, depending on the community's ability to initiate and manage it successfully. A case study undertaken in three communities in Magdalena Bay, Baja California Sur, explores the institutional conditions, specifically social capital, present in the communities and uses this information to assess the prospects for nature-based tourism. The case study is primarily based on a large-scale household survey and is supported by semi-structured interviews and observation. Principal Component and Cluster Analyses are used to determine the extent of social capital present in the communities and amongst endogenously determined clusters. The research concludes that significant differences in types of social capital, such as bridging and bonding, may contribute to an explanation of the current organization of nature-based tourism and provide insights into future prospects for tourism. Implications of the social capital analysis are considered along with tangible recommendations needed to create an environment conducive to nature-based tourism development.

Keywords: Social capital, Nature tourism, Whale-watching, Magdalena Bay, Baja California Sur, Mexico

Subject Terms: Social capital, Tourism, Mexico, Natural resources-Management

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CHAPTER 1: INTRODUCTION

Conflicts are occurring in many coastal communities around the world over the use of natural resources, aquatic resources such as marine mammals and fisheries. Strategies are necessary for coastal communities to manage their marine resources sustainably, while at the same time promoting their economic development. 'Nature-based tourism' is one commonly used tool, defined as any form of tourism that relies primarily on the relatively undeveloped natural environment for its attractions (Goodwin 1996 cited in Wurzinger and Johansson 2006, Ceballos-Lascurain 1996, Kiss 2004). Frontier marine regions, where the uses of resources are highly contested due to pressures from growing populations, affect a community's ability to use their resources sustainably, especially in consideration of small-scale fisheries and nature-tourism development.

1.1 Location of the Study Area

One such case is Bahia Magdalena, in the Mexican state of Baja California Sur. Three communities are situated on the southwest coast alongside the largest natural deep-water bay in the state. Although Bahia Magdalena appears to be a series of separate bays rather than one system, the residents of the area consider the Bay to be one large ecological and cultural region; economic activities and social ties extend approximately 290 kilometres from north to south (Dedina 2000:127). The Bay is comprised of 117,397 hectares (Garcia Martinez 2005).

Puerto San Carlos (PSC) is the largest of the three communities and is located in the north-central coast of Bahia Magdalena. It is traditionally a small fishing town frequented by many transient residents who depend on fisheries. It is also an emerging hub for whale-watching (Flores-Skydancer 1999, Baja Quest 2006). The second community in the study area, Puerto Adolfo López Mateos (PALM), is situated in the northern area of the Bay. It is renowned as being one of the best sites for gray whale-watching due to its location close to the Bay's entrance. Lastly, Puerto Magdalena (PM), located in the northern area of the Bay on Magdalena Island, is the smallest and most isolated of the three communities. It is only accessible by boat and the most common form of transportation to the island is by *panga,* a small boat of approximately three metres. It takes approximately 30 minutes to travel by *panga* between PSC and PM.

The communities are located in the municipality of Comondu. The capital of Comondu is Ciudad Constitución and is located an approximate 30 minute drive from PSC and a 40 minute drive from PALM. It contains the closest banks and commercial centre for the smaller communities. The communities are located approximately 3-4 hours from the state capital of La Paz by car. (For a background on small-scale fishing in the region, see Appendix A.)

1.2 Resource Conflicts

Options are limited for future economic development in the Bahia Magdalena. While fisheries are decreasing, the growth in whale-watching tourism for gray whales (*Eschrichtius robustus*) is almost saturated. While the near recovery of the numbers of gray whales in the Pacific has been long-heralded as a success story, a recent study estimates their current population is still only one-third to one-fifth of their historic levels (Weiss and Kaplan, September 15, 2007). Resource conflicts on the western coastal zone in Mexico include access to artisanal fishing permits, and control over small-scale recreational whale-watching operations, among others (Seminoff et al. 2003, Young 1999, Heckel et al. 2003). In the region, an understanding of the capacity for people to work together to facilitate action and manage natural resources more effectively is limited.

1.3 Definition of Social Capital

In this context, social capital can help in shaping individual actions to achieve positive environmental management outcomes (Pretty and Smith 2004). A plethora of academic literature discusses social capital, a theoretical concept on which I base my research (Sabatini 2006, Durlauf 2002, Sanginga et al. 2007). The most comprehensive definitions of social capital are multidimensional, and incorporate different units of analysis (Woolcock and Narayan 2006:48). Four main features commonly define social capital: relations of trust, reciprocity and exchanges, common rules and norms, and connectedness in networks and groups (Pretty and Ward 2001, Pretty 2003, Perreault 2003, Berggren and Jordahl 2006, Svendsen and Svendsen 2004, Coleman 1988, Ostrom 2000, Grootaert and Narayan 2004, Woolcock and Narayan 2006, Dasgupta 2005). Relations of trust reduce transaction costs between people and liberate resources by reducing the required resources for monitoring others (Pretty and Smith 2004).

Reciprocity contributes to long-term obligations between people and is important for positive environmental outcomes (Pretty and Smith 2004). Common rules and norms, mutually agreed upon, ensure that group and individual interests are complementary and give individuals confidence to invest in the collective good knowing that others will as well (Pretty and Smith 2004). Lastly, the quality of social capital can be determined by reviewing the type of networks people are engaged in (Dasgupta 2005).

Social capital can be examined in terms of both its 'bonding' and 'bridging' elements (De Silva et al. 2007, Sabatini 2005, Owen and Videras 2006). 'Bonding' refers to relations between family members, close friends and neighbours, while 'bridging' refers to relations between more distant associates or cooperative relations among persons who are socio-demographically and/or economically unlike (Szreter and Woolcock 2004, De Silva et al. 2007, Sabatini 2005, Owen and Videras 2006). The combinations of both elements are said to contribute to the emergence of different types of social capital (De Silva et al. 2007).

1.1 Problem Statement

Assessing social capital is useful when considering how to strategically utilise and manage environmental resources, specifically since relations of trust, reciprocity and exchanges, common rules and norms, and connectedness in networks and groups are influential in defining resource users' relationships with resources and each other. For example, the emergence of a cohesive community with higher levels of the 'bonding' elements of social capital may lead to forms of interpersonal organisation similar to a community-based management framework. In contrast, communities with higher levels of the 'bridging' elements of social capital may have more entrepreneurial development driving their local businesses.

To date, social capital has not been studied in any of the communities, nor has its importance been considered in relation to current nature-based tourism activities and future tourism development. Young (1999) highlights the importance of considering social capital in a discussion of nature-based tourism and small-scale fisheries in the case study area of Bahia Magdalena; however, she does not focus specifically on social capital, nor does she make a comparison of social capital between communities. I hope to contribute to an understanding of the various possibilities for development that are available to manage marine resources, specifically nature-based tourism, and link these

possibilities with measurable indicators of social capital in the three contrasting communities in Bahia Magdalena, BCS, Mexico.

1.2 Research Objectives

My research will address three main objectives:

1. **To assess how social and institutional conditions, in particular social capital, vary across key communities in Bahia Magdalena.**

I aim to assess whether social capital varies between the communities in the study region and, if so, what explains the variation. If it is true that social capital is a multidimensional concept, then I would expect that different types of social capital will vary independently across key communities in Bahia Magdalena. Bonding social capital will be expected to be higher in smaller and more homogeneous communities, while bridging social capital will be expected to be higher in larger communities where people have more wealth, mobility and power. This hypothesis extends the existing literature by recognizing not only that social capital is a multidimensional concept, but by asserting that different types and mixes of social capital may exist in resource communities.

2. **To determine what community and institutional factors have contributed to the structure of tourism activities in each of the communities and ascertain how they explain the varying organization and success of whale-watching.**

I aim to determine what influence social capital and other community and institutional conditions have on the existing structure of tourism in the region. I hypothesize that institutional conditions, such as social capital, will partially contribute to the structure and organization of tourism activities. Entrepreneurial tourism enterprises may emerge in areas that exhibit lower bonding social capital. In contrast, community-driven approaches may be more likely to emerge in communities that exhibit higher bonding social capital. My research is unique in that its central aim is to examine types of social capital, and discuss whether combinations of social capital are related to different types of development, such as community-based or entrepreneurial tourism, in a region where social capital has not been assessed.

3. **To evaluate what an analysis of social and institutional conditions and attitudes towards new tourism activities suggest for future development of local nature-based tourism.**

I aim to assess what the existing social and institutional conditions suggest for future development of nature-based tourism, given that other factors also may be important

(e.g. physical characteristics of the resource, policy conditions, and tourism demand). This analysis can contribute to an understanding of what is necessary for successful nature-based tourism development in the future.

1.3 Organization of the Study

In Chapter 2, I review the existing literature on social capital, community-based management, and nature-based tourism, specifically focusing on nature-based tourism in Baja California Sur. I outline the methodology, including both quantitative and qualitative methods and statistical analyses in Chapter 3. I describe the study area in Chapter 4. Results are presented in Chapter 5; the first part of the chapter focuses on results between communities, followed by results specific to the clusters generated from statistical analyses in the second part. Chapter 6 compares the analyses of social capital in both the communities and clusters. Chapter 7 looks at the implications of the research and policy recommendations for nature-based tourism. Limitations are addressed. Chapter 8 concludes by summarizing key results of the research.

CHAPTER 2: LITERATURE REVIEW AND ANALYTICAL FRAMEWORK

In this chapter, I explore the role of social capital in research, considering both bonding and bridging social capital. I then address key empirical research involving social capital and focus on research related to tourism and fisheries. However, limitations exist in empirically assessing social capital, which I articulate. I then position social capital in an analytical framework related to the use of common pool resources. I define community-based management and nature-based tourism and address their relevance to my research. Lastly, I consider nature-based tourism in the regional context of Baja California Sur (BCS), with a focus on whale-watching.

2.1 Social Capital

2.1.1 Role of Social Capital

Communities endowed with a diverse stock of social networks and civic association – social capital - will be in a stronger position to confront poverty and vulnerability, resolve disputes or take advantage of new opportunities, contributing to higher incomes, better health and higher educational achievements (Woolcock and Narayan 2006:32, Fukuyama 2000, Pretty and Smith 2004). Social capital can also play an important role in coping with environmental change, and contribute to risk management; in particular networks of reciprocity can assist in coping with the impacts of catastrophic environmental events (Pretty and Ward 2001, Paavola and Adger 2002). The nature and forms of social capital change over time, shifting the balance between informal and formal institutions (Woolcock and Narayan 2006:48).

Social capital facilitates cooperation, thereby lowering the costs of working together (Pretty and Smith 2004) and has been considered a resource for action (Pretty and Smith 2004, Sanginga et al. 2007). Social capital supports wider social goals of equity, ecosystem health and vital economies and an understanding of its structure and context can contribute to community building (Flora and Flora 2004:529).

Nevertheless, social capital is often referred to as a "slippery concept" because it is intangible and elusive (Johnston and Percy-Smith 2003, Fine 2002). Stirrat (2004) describes social capital as an "easy concept that can be fitted into economist discourse".

It is often examined as an asocial and ahistorical concept (Fine 2002). This partly stems from the broad definition of the term, and partly because so little agreement exists on what it is, where it comes from, how it can be measured and how to get more of it (Johnston and Percy-Smith 2003). Despite the extensive research on social capital, no universal method is available to measure it, nor is a single underlying indicator commonly accepted in the literature (Sabatini 2006). Difficulties occur since concepts such as social capital are by their very definition complex. As such, Hadjimichalis (2006) advises that researchers need to be prudent about using the concept of social capital to describe the success or failure of entire communities and their ability to achieve economic growth.

The potential to build social capital is highly dependent on location and context (regional cultural history, prevailing livelihoods and opportunities, remoteness, migration patterns, and a range of other economic and socio-cultural factors) (Porter and Lyon 2006:169, Flora and Flora 2004:529, Krishna and Shrader 1999). The variation in cultural context is exemplified in Latin America, given that familism is common, and the strongest and most reliable bonds are often among family members or close circles of personal friends (Fukuyama 2004:37). However, I argue that the specificity of place must be recognized in a discussion of social capital, such as the variations in natural-resource endowments or variations in the abundance and quality of natural capital (Perreault 2003). Although the communities in the case studies have similar demographic characteristics because they are located in the same region, I will assess if differences with respect to social capital exist among the three communities or groups.

2.1.2 Bonding and Bridging Social Capital

Three main aspects divide and categorize social capital and are useful for examining the networks within, between and beyond communities (Woolcock 2001 cited in Pretty and Smith 2004, De Silva et al. 2007). ‘Bonding’ refers to relations between family members, close friends and neighbours or cooperative relations between members of a social network who share a sense of social identity - which cement homogenous social groups (Szreter and Woolcock 2004). It provides the basis for reciprocity and exchanges within formal and informal associations (Grootaert and Narayan 2004). ‘Bridging’ describes the capacity for groups to make links with others that may have different

views, particularly across communities (Pretty and Smith 2004).[1]

Bridging and bonding social capital can reinforce each other, and give rise to effective community actions or entrepreneurial social infrastructure (Flora and Flora 2004:532). However, an economic problem may ensue if too much bonding social capital disturbs the optimal balance between bridging and bonding (Svendsen and Svendsen 2004:3). Excessive bonding social capital can be a negative externality and a barrier for economic growth leading to inward-looking networks, reinforcing exclusive identities and homogeneous groups, and increasing transaction costs (Svendsen and Svendsen 2004:11, 2).

2.1.3 Empirical Research of Social Capital

Empirical studies to measure social capital use a range of variables (Zukewich and Norris 2005, Helliwell and Putnam 1995, Knack and Keefer 1997, Krishna and Schrader 1999, Krishna and Uphoff 1999, Grootaert and Narayan 2004 cited in Beugelsdijk and van Shaik 2001, Beugelsdijk and van Shaik 2001). Several analyses use the Social Capital Assessment Tool, which is a set of survey questions designed to collect social capital data at the household, community and organizational levels (Grootaert and Van Bastelaer 2002, Krishna and Schrader 1999).

Relatively few studies (Yip et al. 2007, Mitchell and Bossert 2007) have compared social capital empirically within and between communities, although others have looked at social capital at the community level (Woolcock and Narayan 2006:33). As such, my research will be valuable and innovative since I assess the levels of social capital within and between communities. Grootaert (2001) looks at social capital using multiple units of analysis, including community and household levels. The results show that the composition of membership makes a difference in community associations. Heterogeneous associations appear to bestow larger benefits on their members than less diversified ones. Key dimensions appear to be the economic characteristics of the members (e.g. education, economic status, and occupation) (Grootaert 2001). Mitchell and Bossert (2007) analyze relationships between membership density and attitudes towards trust, as well as civic and health behaviours in six communities in Nicaragua.

[1]'Linking' refers to alliances and vertical connections with individuals in positions of power (Putnam 2000, Brown and Fox 1998, Woolcock 2002). I do not focus on linking in my analysis because of its lack of applicability at the community/household scale. It is outside the scope of the research since I focus on relationships within and between communities, and do not include non-local actors.

They observe that membership density and institutional trust were positively related to an index of political engagement, although social trust was either not related or negatively associated, suggesting the complexity of the concept and difficulties of measurement (Mitchell and Bossert 2007).

De Silva et al. (2007) use a qualitative methodology to assess social capital in the development of shantytowns in Lima, Peru, considering both cognitive and structural social capital, and bonding, bridging and linking. They determine that aspects of social capital vary by setting (rural/urban), person involved (male/female), and over time, realizing that social capital is a multidimensional and culturally specific concept (De Silva et al. 2007).

Few empirical studies have focused on addressing issues of natural resource management with respect to social capital (Wood et al. 2008, Wood 2003, Bouma et al. 2006, Sanginga et al. 2007, Van Bastelaer and Leathers 2002). Wood et al. (2008) and Wood (2003) looked at social capital characteristics in a Sherpa community in Nepal and the prospects for community management of musk deer. Among other conclusions, they determine that leadership can confound levels of social capital, indicating that careful consideration of the complex interactions between social capital and other household characteristics is required when assessing the prospects for community-based natural resource management (Wood et al. 2008, Wood 2003). Following a study of watershed management in rural communities in India, Bouma et al. (2006) determine that the variance of trustworthiness between communities is very low and that trust does not depend on average village trustworthiness but rather on the individual's own characteristics.

Few studies exist with respect to empirical research on social capital and nature-based tourism (Jones 2005, Jóhannesson et al. 2003). As such, my research addresses a gap in the literature. Jones (2005) applies the concept of social capital to generate an understanding of the processes of social change leading to, and resulting from, the development of community-based ecotourism ventures in Gambia. The research concludes that even though a high level of social capital may have been instrumental in the formation of an eco-camp, it could be in danger of being eroded and environmental improvements jeopardized because of the way in which the camp operates. Jóhannesson et al. (2003) use a qualitative approach examining social capital with respect to tourism, looking at trends as communities move from resource-based towards cultural economies, and they stress the importance of networks.

The diffusion of social capital into published work on artisanal fishing, aquaculture and coastal zone management has been limited (Stirrat 2004). Researchers who have incorporated this topic include Adger (2001) and Ahmad (2003). Adger (2001) looks at climate change and coastal zone management and determines that communities will adopt different strategies to adapt, partly based on their networks and social capital. Ahmad (2003) uses an integrated conceptual framework to look at inland fisheries in Bangladesh and the role of social capital in managing common pool resources, similar to the approach that I employ in my research.

2.1.4 Limitations of Empirical Research

Empirical research on social capital faces several limitations. Since it is commonly accepted that social capital is a multidimensional concept, each researcher can address a particular aspect of the concept depending on the aim of their study – especially since there is no underlying method of measurement to use for empirical research (Sabatini 2006, De Silva et al. 2007). Empirical studies address different dimensions each time, making general assessments and comparisons between studies difficult (Sabatini 2006). However, my research uses questions to measure social capital built on previous studies and I compare my results to other studies (Grootaert and Van Bastelaer 2002, Wood et al. 2008, Wood 2003).

Challenges exist in measuring social capital. It is difficult to assume from the outside that a group has, or has not, established a common understanding that enable them to rely on each other to behave in ways that are predictable and mutually productive. The self-organizing processes that social capital facilitates generate outcomes that are visible, tangible and measurable; however, the processes themselves are much harder to see, understand and measure (Ostrom 2000:181). Most empirical studies measure social capital through “indirect” indicators, or “associational” variables, which fail to represent the social capital’s key components, although they often provide satisfactory proxies to assess social capital (Sabatini 2006). Furthermore, studies focusing solely on one or few aspects of social capital often fail to take into account its context-dependent and dynamic nature (Sabatini 2006).

2.2 Common Pool Resources and Analytical Framework

2.2.1 Common Pool Resources (CPR)

Common-pool resources are resources where exclusion is costly and one person's use of the resource subtracts the ability of the others to exploit the same resource, like small-scale fisheries or whale-watching a pod of whales (Dietz et al. 2002:14). Ecosystems that support nature-based tourism are like common-pool resources; several "users" might draw from the same resource (Edwards 2004). These resources are characterized by being "non-exclusive" since it is impossible or costly to exclude additional users, and by "rivalry" since consumption by one user reduces the quantity or quality available for other users (Edwards 2004). With respect to whale-watching tourism, whales can only 'benefit' people who are on boats closest to them. An increase in the number of boats can deteriorate the quality of the whale-watching (rivalry) and exclusion is costly.

As such, applying CPR theory to the application of ecotourism can help to establish more rigorous, multi-layered analysis that identifies the institutional demands required by activities related to community-based ecotourism (Edwards 2004). Institutional arrangements (like property rights) are necessary to manage resources; social capital is crucial for any type of institutional solution, such as private property rights, state control, or community management (Ahmad 2003).

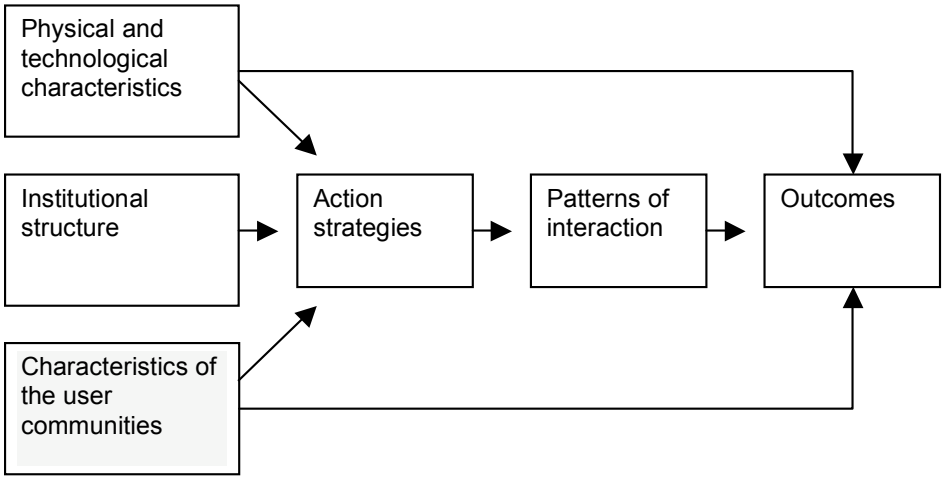
2.2.2 Analytical Framework of Contextual Factors

Considering the complexities of managing common pool resources (CPRs) such as nature tourism (whale-watching) and fishing, I will frame my research using an analytical framework developed to analyze the influence of contextual factors on multiple use common property settings (Edwards and Steins 1999). Edwards and Steins (1999) define contextual factors as "dynamic forces constituted in the user groups' social, cultural, economic, political, technological and institutional environment". The contextual framework is adapted from Oakerson (1992) with contributions from Ostrom (1992, 1994) and Feeny (1994) among others (Dietz et al. 2002). Furthermore, Edwards (2004) uses the framework to analyze community-based ecotourism initiatives (Edwards 2004) (Figure 2.1 Analytical Framework).

Three categories are used to analyze CPR situations. *Physical/technological characteristics* of the resource system refer to the characteristics, the variation of

multiple uses and the extent that technology might be employed to help manage the resource (Edwards 2004, Edwards and Steins 1999).

Figure 2.1 Analytical Framework



Characteristics of the user community reflect the importance of recognizing the presence of different stakeholders; communities/individuals have an influence over the institutional arrangements of common-pool resources, whether it is directly or indirectly (Edwards and Steins 1999). I incorporate a social capital perspective, which is valuable in researching resource management issues since it contributes to an understanding of the social relations involved in accessing and managing natural resources (Bebbington 2000 cited in Perreault 2003).

Institutional arrangements establish rules, which influence the decisions of individuals, organizations and public agencies. Informal institutions provide rules, knowledge and obligations mediated through social capital, thereby reducing transaction costs (Berkes et al. 2000). *Policy level arrangements* consider institutions external to the local community and may include appropriate statues and national policy on tourism (Edwards, 2004). *Collective choice level arrangements* consider interactions between collective decision-makers and may include codes of practice (Edwards 2004). *Operational level arrangements* consider interactions between resource users and are designed to ensure proper use of the shared ecosystem (Edwards 2004). I will focus on the operational level arrangements for resource users with respect to nature-based tourism.

Given particular situational variables, individuals make choices from possible *strategies.* Some *patterns of interaction* emerge from such choices leading to *outcomes* (Edwards and Steins 1999, Edwards 2004). I will briefly address the outcomes in my analysis, such as possibilities for future nature-based tourism in the region.

2.3 Community-based Management (CBM)

CBM has been revered as a widespread strategy for improving the management of common-pool resources in the last two decades (De Castro and McGrath 2003, Kellert et al. 2000, Pretty 2003). Definitions of CBM include: a commitment to involve and empower community members and local institutions in the management and conservation of natural resources; an interest in devolving power and authority from central and/or state government to more local institutions; a desire to link objectives of socio-economic development; and a tendency to legitimize local property rights and value traditional ecological knowledge (Kellert et al. 2000). In many parts of the world, communities have demonstrated increasingly that they can collaborate for long-term resource management in response to decreases in fisheries and other common-pool resources (De Castro and McGrath 2003, Pretty 2003). Consequently, CBM has been used for the management of small-scale fisheries and water, agriculture, and forestry resources; and more recently, community-based ecotourism ventures (Bulte et al. 2006, Sultana and Thompson 2004, Kellert et al. 2000, Jones 2005, Basurto 2005).

However, difficulties of reconciling and harmonizing the objectives of socio-economic development, biodiversity protection, and sustainable resource use can lead to problems under CBM (Kellert et al. 2000). Experiences with community management over the last decade have shown that achieving this potential can be elusive (De Castro and McGrath 2003, Murombedzi 1999). Recent studies are reassessing the potential for community-based management (Quesada Alpizar 2006). Particularly in fisheries, some researchers question whether communities are motivated by a concern for the status of the fishery or simply by a desire to prevent outsiders from having access to resources, while others question the ability of communities to manage local resources sustainably, as well as the economic viability of such schemes (De Castro and McGrath 2003). CBM of fisheries for the Seri people in the Gulf of California, Mexico, has worked to some degree because the federal government has neither presence nor authority inside Seri waters, and the

Seri have the power to grant authorized permits to outsiders; however, they profit from authorizing outsiders to fish in their waters (Basurto 2005).

Even though community involvement in management and conservation activities encourages local commitment, a community-managed approach to tourism is not a panacea, but rather is part of an integrated management policy for ecotourism and coastal development (Foucat 2002). Regardless, the best approach to wildlife conservation issues that involves social participation in Mexico is CBM (Valdez et al. 2006). The successful management of common-pool resources paired with high levels of social capital has largely been at the local and regional levels, where access to resources can be controlled and where institutional conditions and market pressures are supportive (Pretty 2003, Roncoli et al. 2007). Efforts to improve governance, establish legal authorities and rights, and remove barriers to the economic viability of CBM must complement the capacity building of institutions (Ratner 2006). CBM is relevant to my research since fishing and tourism cooperatives in the study area share commonalities with it, and cooperatives could be interpreted as types of CBM in some instances.

2.4 Nature-based Tourism

2.4.1 Definition of Nature-based Tourism

Nature-based tourism is defined as any form of tourism that relies primarily on the relatively undeveloped natural environment for its attractions (Goodwin 1996 cited in Wurzinger and Johansson 2006, Ceballos-Lascurain 1996). It is primarily concerned with the direct enjoyment of some undisturbed phenomenon of nature (Valentine 1992). Ecotourism, a subset of nature-based tourism, is defined as responsible travel to natural areas that aims to have limited negative impacts while providing significant economic opportunities for local people (Wurzinger and Johansson 2006, Khan 1997, TIES 2006, Wunder 2000). In contrast to ecotourism, community-based ecotourism refers to ventures that have a high degree of community control over the activities taking place and where communities command a large proportion of the benefits (Scheyvens 1999).

I use the term ‘nature-based tourism’ in my research. Although the nature-based tourism activities to which I refer may be commonly defined as ‘ecotourism’, they cannot be equated with ecotourism unless they directly produce better protection for the environment and improve local welfare (Ceballos-Lascurain 1996). As such, it can be difficult to differentiate between nature-based tourism as a type of tourism that relies

primarily on the natural environment and true 'ecotourism', which entails significant benefits for the local people and the environment (López-Espinosa de los Monteros 2002).

2.4.2 Role of Nature-based Tourism

Nature-based tourism can contribute to the local economic development of the community and impart substantial benefits on host economies (Hill et al. 2006, Mehmetoglu 2007). Economic benefits generated from nature-based tourism include local employment opportunities, tourism revenues, infrastructure improvement, and foreign exchange (Lai and Nepal 2006).

Nature-based tourism has also been promoted as linking wildlife conservation and economic development; several researchers suggest that nature-based tourism perpetuates the efficient use of all resources and provides incentives for maintaining relatively intact natural systems, particularly in developing countries (Cater 1994, Khan 1997, Tsaur, Lin and Lin 2005, Campbell 2002, Wunder 2000, Kiss 2004). The benefits of conservation from nature-based tourism depend on the substitution of productive activities to reduce pressures on resources by providing a secure and sustainable income (Wunder 2000). Nonetheless, some people may need a variety of income sources to meet their needs while others may be able to subsist solely on nature-based tourism ventures. As only few members of communities may capture the income generated from nature-based tourism, it may not be sufficient to deter local people from engaging in more consumptive extraction of resources, like small-scale fisheries (Duffy 2000 cited in Pretty and Smith 2004, Langholz 1999).

2.4.3 Requirements for Nature-based Tourism

Regional development depends not only on the stock of human-made capital (built infrastructure) and natural capital (natural resources and high value species), but also on human capital (professional skills, training and education) and social capital, as already defined above (Hall and Boyd 2005:4). Human and social capitals are critical requirements for sustainable nature-based tourism; they are not the consequence of development but rather its prerequisite (Hall and Boyd 2005:4). They contribute to the formation of other types of capital, such as turning specific aspects of the natural environment into tourism services (Hall and Boyd 2005:4). However, the absence of

human and social capital is also a challenge for development in many peripheral areas (Hall and Boyd 2005:4).

The human capital of the entrepreneur, particularly managerial skills, is a very important aspect for the development of small entrepreneurial ventures for service-industry tourism (Haber and Reichel 2007). With the development of nature-based tourism, entrepreneurs from within a community are important as leaders initiating tourism development. Nevertheless, there is minimal literature about nature-based tourism entrepreneurs from within communities, as community-based organizations or outside entrepreneurs normally instigate initiatives (Parker and Khare 2005). For example, Parker and Khare (2005) discuss the role of the entrepreneur from the position of someone outside of the community and hypothesize how projects succeed or fail based on the relationship created between the entrepreneur and the community (Parker and Khare 2005:39).

Several other aspects are required for successful nature-based tourism initiatives and these aspects are facilitated by the development of social capital. Kruger (2005) argues that nature-based tourism can only be an effective tool for development under certain conditions: a local community involved at most stages of effective planning and management, local and regional economic advantages, the existence of flagship species (like the gray whale), and differential pricing effects. Based on case-study research of tourism taking place in three national parks in Japan, Hiwasaki (2006) identifies four common success factors for community-based nature tourism: institutional arrangements, self-regulations related to conservation, high environmental awareness, and the existence of partnerships.

Lastly, the securing of property rights is important for the successful development of nature-based tourism with minimal conflicts (Rodriguez-Dowdell et al 2007, Young 1999). Based on research in Puerto Adolfo López Mateos in Bahia Magdalena and San Ignacio in Laguna San Ignacio, BCS, Young (1999) states that nature-based tourism can suffer from the same problem as fisheries, such as inefficient cooperatives, unless the community's rights to land, water and the nature-based tourism target species are well defined. Rodriguez-Dowdell et al. (2007) stress the importance of property rights in an implementation strategy for the sustainable management of tourism activities involving the viewing of whale sharks in Bahía de los Angeles, BCS, and determine that a concession in favour of the group of local users is the most efficient and equitable strategy as compared to free access and a limited number of permits. Both of these

cases illustrate the importance of property rights with respect to nature-based tourism centred on viewing flagship species such as whale-watching.

The analytical framework is developed from the literature, and divides the requirements for managing common-pool resources, like nature-based tourism, into physical and technological characteristics, institutional structures, and characteristics of the user communities (Table 2.1).

Table 2.1 Requirements for nature-based tourism

Analytical framework	Requirements for nature-based tourism
Physical and technological characteristics	• Existence of flagship species and other natural resources • Infrastructure • Local and regional economic advantages
Institutional structure	• Effective planning and management • Securing of property rights • Regulations
Characteristics of the user community	• Social capital • Local community involved at most stages • Environmental awareness • Human capital, training, entrepreneurs • Partnerships

2.5 Context in Mexico

2.5.1 Tourism in Mexico

Many developing nations including Mexico continue to focus on large-scale tourism as a means of generating foreign revenue, despite the growing environmental and social concerns regarding this practice (Murray 2007). Tourism is the third largest source of foreign exchange revenue, after the oil and maquiladora industries, and accounts for more than 6% of the national GDP. Mexico is the seventh most-popular travel destination world wide, as measured by international tourism arrivals (UNWTO 2005).

Most large-scale tourism is concentrated along the coast, making these areas the fastest growing regions for this activity (Hall 2001 cited in Murray 2007, Murray 2007). Approximately 45% of tourist activities in Mexico occurs in the coastal zones, and 30% of these tourists visit coastal tourism mega-projects, including Los Cabos and Loreto in BCS (Rivera-Arriaga and Villalobos 2001). However, conflicts can stem from these large-scale tourism projects, resulting in the relocation of fishing families that live near them (Rivera-Arriaga and Villalobos 2001). Many of the artisanal fisher camps are illegal settlements and lack property rights; the fishers do not have the legal rights to secure

tenure over the land. Other conflicts include the appropriation of land and water rights; cultural replacement as a result of tourism projects' impact on the local people's way of life; and changes in the economy of the region (Rivera-Arriaga and Villalobos 2001, Herrera-Ulloa 2003). Shifting job opportunities may place most jobs out of reach of locals who do not have the necessary training (Rivera-Arriaga and Villalobos 2001, Herrera-Ulloa 2003).

The tourism industry has been the main economic activity in BCS during the last half of this century (Herrera-Ulloa 2003). Since 1988, the tourism sector in BCS has maintained an annual average growth rate of 20% (ICF 2006). For example, there were almost 900,000 visitors in 2000, as compared to 100,000 in the early 1990's (Herrera-Ulloa 2003). Tourists in BCS are primarily from Canada and the United States (Herrera-Ulloa 2003). Los Cabos (Cabo San Lucas and San Jose del Cabo) is the most popular tourism destination in BCS, with 66% of all the tourism activity in the state in 2000, followed by Loreto and La Paz (ICF 2006, Herrera-Ulloa 2003).

2.5.2 Demand for Nature-based Tourism

Globally, the growth in demand for nature-based tourism is exceeding the supply, creating new challenges for those involved in planning and tourism research (Juric et al. 2002). Along with the growing and changing tourism market, consumer behaviours exhibit these differences. More than two-thirds of U.S. and Australian travellers and 90% of British tourists consider active protection of the environment, including the support of local communities, to be part of a hotel's responsibility (TIES 2005). Some authors cite that nature-based tourism is growing at 10-30% per annum, which is more than tourism in general (Mehmetoglu 2007 and Juric et al. 2002). The actual size of the sector is uncertain; estimates range from 5% to 33% of the total number of world travellers (Juric et al. 2002). Although nature-based tourism and ecotourism have become high growth areas within the tourism industry, these sectors remain a small portion of the total number of visitors (Ziffer 1989, Juric et al. 2002).

Tourism in BCS is increasingly focusing on natural areas, and on nature-based tourism, ecotourism and adventure tourism as opposed to large-scale tourism because of changing demand (ICF 2006). Partly because of its proximity to the US, Mexico is one of the most popular destinations in Latin America for nature-based tourism, including recreational whale-watching (Boo 1990).

Unlike Los Cabos in the south, and La Paz and Loreto in the east, less tourism occurs in Bahia Magdalena. Located in the more isolated northwestern region of BCS, where the climate is slightly cooler then the southern and eastern parts, it has not been the focus of large-scale government tourism development. Bahia Magdalena has a few small hotels and restaurants that cater to tourists during the winter whale-watching season and summer sport-fishing season (Mexfish 2006). Because mass tourism has not substantially affected the region, spaces are available for nature-based tourism to develop that benefit the local communities.

2.5.3 Whale-watching in Bahia Magdalena

Whale-watching is a relatively new and dynamic USD $1 billion industry that provides a high rate of return and significant economic benefit to many coastal regions worldwide (Curtin 2003). The demand for the whale-watching industry, including all cetaceans, has grown exponentially in the last 20 years (Hoyt 2000). By 1998, whale and dolphin watching involved almost 100 countries and nearly 500 separate communities (Hoyt 2000, Valentine and Birtles 2004:28). With a rapid growth rate of 12.1% per year globally since 1991, it requires careful management and planning (Hoyt 2001, Curtin 2003). Whale-watching does not fit into one single category but straddles nature-based tourism, adventure tourism and ecotourism since it can vary depending on how it is operated and by whom (Hoyt 2001). In many cases, the benefits from whale-watching are substantial and the community involvement is significant (Valentine and Birtles 2004:28).

Whale-watching in Bahia Magdalena is shifting towards something that is closer to ecotourism instead of nature-based tourism since residents of the local communities largely manage it, and because local operators in Puerto Adolfo Lopez Mateos (PALM) have begun putting more emphasis on natural areas (Heckel et al. 2003, Young 1999). Bahia Magdalena is the third most important lagoon for the congregation and reproduction of gray whales (*Eschrichtius robustus*) in BCS; they leave the Bering Sea in November and migrate to their winter breeding grounds in the lagoons of the Baja California Peninsula in January (Hasting and Fischer 2001, Heckel et al. 2003). Besides being a breeding ground for gray whales, Bahia Magdalena has other important ecological aspects; it is a refuge for aquatic migratory birds and a developmental area for sea turtles on the Pacific coast (Koch et al. 2006). It is also the most important fishing ground for small-scale fisheries in the state of BCS; the calm nearshore waters are

important fishing grounds for a variety of commercial valuable species of shellfish and finfish (Carta Nacional Pesquera 2004 cited in Koch et al. 2006).

Whale-watching is the most important nature-based tourism activity in Bahia Magdalena and is open annually from January 1 until April 15. From the early 1970s, tourism companies from the U.S. have brought foreign visitors on package tours to Bahia Magdalena to see the gray whales (Young 1999). Initially, few local people worked in the tourism industry. However, since the 1980s, as more tourists travelled to the region independently, more fishers began to hire out skiffs and serve as tour guides for the recreational whale-watching industry (Young 1999). Regulation of the industry did not begin until 1986, and in 1998, the General Law of Ecological Balance and Environmental Protection was enacted which legislated gray whale conservation (Dedina 2000:66). Currently, a number of programs, laws and regulations that are under the jurisdiction of environmental and tourism secretaries regulate whale-watching in Mexico. Permits are allocated by SEMARNAP (The Ministry from the Environment, Natural Resources and Fisheries) and permit holders are obligated to comply with a set of regulations similar to those of the International Whaling Commission (IWC) (Spalding 2002).

As recently as the early nineties, tourism infrastructure such as local lodging facilities, restaurants, transit for tourists and basic services like electricity, running water and sewers were poorly developed and were “de facto” mechanisms limiting the number of tourists. In 1994, the beach where guide boats entered the Bay had only two public latrines and one 50-gallon trash barrel (Young 1999). Despite these realities, whale-watching has grown dramatically over the last 10 to 15 years in the Baja peninsula (Heckel et al. 2003). Politicians and government planners viewed whale-watching as the only sector of the local economy with the potential to grow (Dedina 2000:134). The numbers of ecotourism ventures are increasing in BCS, mostly due to the rapid expansion of the whale-watching industry (Perez-Cortes et al. 2004, Gardner and Chavez-Rosales 2000). There were 2,381 visitors to Puerto San Carlos (PSC) during the whale-watching season in 2002, and 3,644 in 2006 (SEMARNAP 2006). There were 3,834 visitors to Puerto Adolfo Lopez Mateos (PALM) during the whale-watching season in 2002 and 11,025 visitors in 2006 (SEMARNAP 2006). Other than whale watchers, few tourists visit the Bay.

Only modest amounts of the total revenues generated from whale-watching stayed in the communities in the early 1990s (Young 2001); however, this is changing. Through

community organizing, local involvement in tourism has increased, such as the number of locally owned hotels and restaurants. The organizing of local operators who wanted more ownership over recreational whale-watching in the mid-1990s triggered the movement towards more local control (Dedina 2000). However, few comprehensive studies exist to determine whether whale-watching tourism is either an economically viable activity for local communities or whether it is compatible with the protection of wildlife (Young 1995:16). I address this gap in the research and ascertain the economic impact of whale-watching on local communities.

CHAPTER 3: METHODOLOGY

This chapter outlines the methodology I used in my research. First, I will identify the scale of analysis. Secondly, the survey design and the process of administering the household survey are presented. Thirdly, I will describe the qualitative methods that complement the quantitative methods. Finally, an elaboration on the statistical analysis is presented.

3.1 Scale of Analysis

Although many social capital analyses look at macro-level spatial variability of social capital indicators, my research focused on analyzing social capital variables at the community level (See Owen and Videras 2006). Krishna and Schrader (1999) and Franke (2005) separate micro- and macro-levels of social capital. A micro-approach to social capital focuses on the value of collective action at the community level, and deals with the propensity of actors to cooperate by way of joining forces to attain certain objectives (Franke 2005, Ahn and Ostrom 2002 cited in Franke 2005). In past research, village and neighbourhood levels in Mexico exhibited certain forms of beneficial relationships and social interaction (Radcliffe 2004). As such, I examined social capital as a community-level attribute, similar to much of the post-Coleman (1990) literature, which has almost universally viewed social capital as such (Glaeser et al. 2002). Analyses of social capital at both the community and household level recognize that social capital may be formed and/or operate at multiple levels of aggregation (Subramanian, Kim, and Kawachi 2002). My research looked at social capital based on the household as the baseline unit of analysis. The data is aggregated at the scale of the community and is also grouped together as clusters of social capital cross-cutting communities.

3.2 Developing the Household Survey

I, along with my colleagues, designed and administered a face-to-face household survey (Appendix B). The household survey is a useful tool to obtain information from a large number of respondents. The survey was revised approximately 23 times in English with substantial input from a variety of people skilled in tourism, development

economics, survey methods and local knowledge of the communities. We, the research team, pilot-tested the survey in five households in both Puerto San Carlos (PSC) and Puerto Adolfo Lopez Mateos (PALM), and comments from the respondents were incorporated into a revised version of the questionnaire. A bilingual colleague and I translated the survey into Spanish. We met with the highest elected officials in each of the three communities to obtain their approval before carrying out the household survey.

A local non-governmental organization[2], which focuses on rural environmental projects, administered the survey face-to-face, thereby reducing possible cultural biases. The survey team of eight people included residents of PSC, who are familiar with the communities, as well as researchers with experience administering surveys on environmental issues from other parts of Mexico.[3]

The research team trained the surveyors. The first day of the training consisted of a day of seminars explaining the project and the methodology. The second day of the training consisted of conducting practice surveys in the field with small groups. These surveys were reviewed to ensure that all surveyors understood the material. The practice surveys were not included in the final data set. I supervised the surveyors continuously for the first week of surveying and intermittently from then onwards. Each survey took approximately 30-45 minutes depending on the respondent.

The household survey included questions on:

- Demographic information and household livelihood information
- Social capital
- Discrete choice selection looking at future scenarios for local development[4]
- Perceptions about whales and other marine resources
- Opinion statements addressing attitudes towards conservation and management of natural resources

3.2.1 Demographic and Household Livelihood

The demographic information (age of respondent, the number of years the respondent has been living in the community, the number of people in the household, etc.) provided a description of the respondents. I incorporated a section on household

[2]Alianza por un Planeta Verde, A.C.

[3]Miguel Angel Leal Jiménez (leader), Maria Dolores Franco Colín, Erika Urias Meza, Carmen Caño Perez, Emmanuel Leal Montagño, Jazmín Vatierra Laga and Edna Karina.

[4]Although the Discrete Choice Selection was included in the household survey, it is not included in my analysis.

livelihood information, which included information on income-generating activities of the respondents. To assess individuals' attitudes towards the conservation and management of natural resources, I developed nine opinion statements using Likert scaling, a common form of five point scaling (Bernard 2002:307-308).

3.2.2 Survey Design of the Social Capital Questions

I assessed social capital using four components: relations of trust, reciprocity and exchanges, common rules and norms, and connectedness in networks and groups (Pretty and Ward 2001).

Relations of Trust

Similar to Knack and Keefer (1997), Beugelskijk and van Schaik (2005), Wood (2003), Wood et al. (2008), Woolcock and Narayan (2006:48), Van Bastelaer and Leathers (2002), and Owen and Videras (2006), I measured relations of trust by asking whether respondents feel that most people within and outside of their community can be trusted (World Values Survey - Rosenberg, 1956 cited in Sabatini 2006).

Reciprocity and Exchanges

To assess components of reciprocity and exchanges, I employed three proxies. First, I used the number of days contributing to community activities and volunteering as an indicator (Adapted from Wood 2003, Australian Bureau of Statistics 2004 cited in Franke 2005, Onyx and Bullen 1998). Secondly, I used the number of days that respondents regularly visit with their neighbours (Wood 2003, Zukewich and Norris 2005, Onyx and Bullen 1998). Thirdly, I used an assessment of how communities would respond if faced with a natural disaster (Adapted from the SOCAT- Grootaert and Van Bastelaer 2002).

Common Rules and Norms

Common rules, norms and social sanctions are mutually agreed upon or handed-down conventions of behaviour, which ensure that group and individual interests are complementary and give individuals the confidence to invest in the collective good, knowing that others will as well (Pretty and Smith 2004). To measure common rules and norms, I assessed how conflicts are regularly resolved in the community. I incorporated ideas of institution-building, rules and norms from Ostrom (2000), and the conflict resolution section of the Social Capital Assessment Tool (SOCAT) (Grootaert and Van Bastelaer 2002). I assessed if respondents express their opinions in their community by asking if they

regularly speak out when disagreeing with other members in their community (Wood 2003). I used civic participation as another indicator of a norm held by the community and asked if respondents had voted in the last federal, state and municipal elections (Zukewich and Norris 2005).

Connectedness in Networks and Groups

I used an assessment of connectedness in networks and groups to measure the fourth component of social capital. Common indicators are membership in informal and formal associations and networks, and often include characteristics of the organization like the composition of membership and level of involvement (Woolcock and Narayan 2006:48, Yip et al. 2007, Grootaert and Van Bastelaer 2002, Knack and Keefer 1997, Beugelskijk and van Schaik 2005, Mitchell and Bossert 2007, Wood 2003).

I used membership in a cooperative or union as a proxy for associations to manage natural resources, since they are key associations used to organize fisheries and tourism in Mexican coastal communities. Furthermore, I considered membership in other types of groups that people belong to other than cooperatives and unions (e.g. religious group, school group and political association) (Grootaert and Van Bastelaer 2002, Van Bastelaer and Leathers 2002, Zukewich and Norris 2005). With both types of associations, I considered factors like the frequency of group meetings, the functioning of the group, and the composition of the group (e.g. whether it consists of mostly family members, friends and neighbours, or residents of the wider community). I assessed how often respondents leave their region, as an indicator of connectedness in networks, since it is often necessary for people to travel to the capital of the state, La Paz, for business transactions. In addition, this measure reflects the extension of associate-based networks.

3.2.3 Bonding and Bridging Social Capital Variables

Bonding variables include whether or not respondents trust most of the people within their community, the numbers of volunteer days, the number of days that respondents visited their neighbours in a two week period, how respondents would act or respond to a natural disaster such as a hurricane or flood, how respondents resolve conflicts in the community, and if respondents speak out and express their opinions on community matters.

Bridging variables include whether or not respondents trust most people not in their community, if respondents voted in the last elections (federal, state and municipal), and

the number of times respondents leave the municipality in the past 12 months (Table 3.1).[5]

Table 3.1 Social capital variables

	Social capital variable	Bonding/ bridging
1) Relations of trust	A) Whether or not respondents trust most of the people within their community (*Trust in most people within the community*)	Bonding
	B) Whether or not respondents trust most of the people outside of their community as indicators (*Trust in most people outside of the community*)	Bridging
2) Reciprocity and exchanges	A) The number of days volunteering by respondents (*Days volunteering*)	Bonding
	B) The number of days that respondents visited their neighbours in a 2 week period (*Days visiting neighbours*)	Bonding
	C) How respondents would act or respond to a natural disaster such as a hurricane or flood (*How respond to a natural disaster*)	Bonding
3) Common rules and norms	A) How respondents resolve conflicts in the community (*How resolve conflicts*)	Bonding
	B) If respondents speak out and express their opinions on community matters with other community members (*Speak out and express opinions*)	Bonding
	C) If respondents voted in the last elections (federal, state and municipal) (*Vote in elections*)	Bridging
4) Connectedness in networks and groups	A) The number of times respondents leave the municipality in the past 12 months (*Times outside the municipality*)	Bridging
	B) Whether or not respondents or there households are members in a cooperative or union (*Household in cooperative*)	Bonding
	C) Whether or not respondents are members in other groups or associations (*Member of group or association*)	Bonding

This table is adapted from the literature.

3.2.4 Sampling Frame and Methodology for the Household Survey

I obtained maps of PSC and PALM from the municipal representative's office in each community. The maps provide a basic sampling frame by roughly outlining the units of analysis from which to sample (Bernard 2006:149). *Manzanas* (neighbourhoods) and lots divide the communities on the maps. However, the maps do not indicate if houses are located on the lots and no central database exists listing both the occupants and/or owners of the properties in the study area.

Manzanas were randomly selected on the maps in PSC and PALM in such a way that the communities were surveyed indiscriminately to generate a random sample. As Bernard (2006:161) notes, "by creating a series of essentially random chunks of different sizes, you distribute the error you might introduce by not knowing the density and that

[5]A cognitive/structural approach is another form of analysis used by some researchers to analyze social capital (See Mitchell and Bossert 2007).

distribution lowers the possible error." The *manzanas* are like random chunks since they vary in size and compactness. The team surveyed up to a maximum of 5-6 households per *manzana*. They were not always able to complete the specified number of surveys per *manzana* when a sufficient number of habitants or houses did not exist. The survey team randomly surveyed *manzanas* until a significant and heterogeneous sample was generated in each community. A limitation of the convenient replacement technique, as was used in PSC and PALM, is that it can homogenize the sample and make it less representative of all the variation in the sample population (Bernard 2002:243). However, the sample size was heterogeneous because of the large sample size and random sampling of the *manzanas*.

In contrast, the survey team employed a different sampling strategy in Puerto Magdalena (PM) since no map was available. I, along with part of the survey team, took two trips to PM. We attempted to survey every house; however, a small number of residents were unavailable on both trips to the island.

A balance of both genders of respondents was obtained to avoid a gender bias; as such, 44% of respondents were women and 56% of respondents were men. In total, 530 surveys were administered: 277 in PSC, 211 in PALM and 42 in PM. Based on the numbers of households, the confidence intervals at 95% were 5.4 for PSC, 5.7 for PALM and 8.4 for PM (Survey System 2003) (Table 3.2).

Table 3.2 Numbers of surveys and confidence intervals per community

Community	**Number of surveys**	**Number of Households** (Based on an average of 4 people per house)	**Confidence interval (at 95%)** (Based on the number of households)
PSC	277	1650	5.4
PALM	211	750	5.7
PM	42	60	8.4

3.2.5 Limitations of the Household Survey

Advantages of face-to-face interviews are that they can be used with people who are illiterate; the surveyor can explain the question if the respondent does not understand, and can probe for more complete data (Bernard 2002:243). Respondents cannot flip ahead and anticipate what is coming (Bernard 2002:243). Various methodological biases can occur in survey research such as administration method biases, caused by

differences in the procedures used to administer an instrument (physical conditions), or interviewer biases (Harkness et al. 2003:148). Interviewer biases include errors by the respondent such as misunderstandings or lies, and unintentional errors by the interviewer such as misreading a question, omitting questions, recording the wrong answer or misunderstanding the respondent (Neuman 2006:309). Answers can also be influenced by the interviewer's expectations about a respondent's answer, the respondent's appearance, living situation and/or other answers (Neuman 2006:309). Furthermore, the interviewer's appearance, attitude, or reactions can also influence the answers (Neuman 2006:309). Face-to-face interviews, like the household survey, can be reactive. It takes skill for the surveyor to avoid disclosing to the respondent the responses that they anticipate (Bernard 2002:243).

3.3 Qualitative Methods

3.3.1 Informal Interviews and Unstructured Observation

I used informal interviews and unstructured observation to corroborate and provide meaning to the data from the household survey. Informal interviews are characterized by a lack of structure or control, and are based on remembering conversations during the course of a day in the field and jotting down field notes (Bernard 2002:204). I used unstructured observation to record daily observations in my research journal (Jones and Somekh 2005:140, Altrichter and Holly 2005:24). The information I obtained from the informal interviews and unstructured observation assisted in interpreting the information collected from the household survey. I recorded "key utterances verbatim as this reduces the extent to which intended meanings are obscured" (Jones and Somekh 2005:140).

3.3.2 Semi-structured Interviews

Concurrently, I administered semi-structured interviews to key informants to assist in interpreting the household survey. Semi-structured interviews are a form of guided interviewing and listening in which only a portion of the questions and topics are established prior to the interview (Pretty and Vodouhê 1998). The interview appears like an informal conversation; however, the interview is actually controlled and structured and new avenues of questions can be pursued as they develop (Pretty and Vodouhê 1998). The topics covered in these interviews were similar to those addressed in the

household survey; however, I explored them more informally and in detail. The interviews focused on tourism, fisheries, and aspects of social capital. I conducted 28 semi-structured interviews: 13 in Puerto San Carlos, 10 in Puerto Adolfo Lopez Mateos and 5 in Puerto Magdalena. The interviews ranged in length from 15 minutes to 2.5 hours.

3.4 Statistical Analysis

3.4.1 Literature on the Statistical Analysis of Social Capital

Social capital data have been analyzed in many ways. Yip et al. (2007) used multi-level logistic and linear regressions to distinguish relationships between individual-level versus contextual-level social capital using a data set of 1218 individuals in 48 villages. Krishna and Uphoff (1999) used a social capital index to assess social capital based on six items (equity, trust solidarity, reciprocity, cooperation and participation). Owen and Videras (2006), Glaeser et al. (2002), Hjellbrekke and Korsnes (2005) used a Latent Class Approach to measure social capital.

I ascertained that it is more appropriate to use a Principal Component Analysis (PCA), which facilitates identifying the different components of social capital, specifically when it is difficult to develop the relative weighting and importance of the various factors. PCAs are appropriate when one has the belief that latent variables underlie the responses (Leech et al. 2005:77). It explains the variance-covariance structure of a dataset through few linear combinations of the original variables, which can account for the variability given that the objective of the data analysis is reduction and interpretation (Sabatini 2005).

Narayan and Cassidy (2001) and Mitchell and Bossert (2007) employed general factor analyses. However, in using a PCA, where the point of departure is the acknowledgement of the multidimensionality of the concept, I found it a more suitable tool for extracting the latent indicators of social capital (Sabatini 2005). A PCA is more appropriate than a factor analysis since it finds optimal ways of combining variables into a small number of subsets, while identifying structures that underlie such variables and estimating scores to measure latent factors (Henriques 1998). The new variables that result from the PCA are linear combinations of the original variables (Hammer 2007). PCAs often reveal “latent” relationships, thereby allowing for interpretations that would not normally result from other forms of analysis (Sabatini 2005).

Sabatini (2005) performed a PCA on groups in Italy representing the structural dimensions of social capital, in order to build latent indicators on a dataset of four main dimensions: strong family ties, weak informal ties, voluntary organizations and political participation. Wood, Knowler, and Gurung (2008), and Wood (2003) used this method to examine prospects for community-based management of musk deer in Sagarmatha National Park, Nepal. They assessed social capital by running a PCA followed by a cluster analysis to group households with distinct social capital characteristics.

PCAs have several applications, including the reduction of the data set for clustering purposes (Hammer 2007). I used the factor scores from the PCA in a cluster analysis to generate new groupings, since cluster analyses segment respondents into groupings by using clustering algorithms to measure the degree of similarity or dissimilarity between two observations (Aldrich et al. 2007).

3.4.2 Approach 1: Comparison of Social Capital Variables Between Communities

First, I entered the data from the household survey into a database using the Statistical Package for Social Science (SPSS). Secondly, I examined general trends in the data between each of the three communities (e.g. demographic and livelihood information). I used SPSS to determine basic frequencies, descriptive data, cross-tabulations with Pearson's chi-squares, and one-way analysis of variance tests (ANOVAs).

I compared key social capital variables in each of the three communities in the study area to assess differences and similarities in institutional conditions. Pearson's chi-square tests (χ^2) were used for comparisons between categorical groups. One-way analysis of variance (ANOVA) (F) was used for parametric comparisons, as this is valuable for finding statistical evidence of differences across groups' means (StatsDirect Limited 2007a). I used the Levene test for homogeneity of variances, followed by the Bonferroni test when equal variances were assumed, and the Tamhane's T2's test when the assumptions of equal variances were violated. I applied a significance level of $p<0.05$.

Subsequently, I developed a scale to compare bonding and bridging aspects of social capital variables, and the variables were divided between low, medium and high. For variables with percentages, low=0.0-33.0% of respondents, medium=33.1%-66.0% and

high=66.1%-100.0%. For variables with mean values, low=0-5.0, medium=5.1-10.0, high=10.1 and above.

3.4.3 Approach 2: Principal Component Analysis and Hierarchal Cluster of Social Capital Variables

I standardized the variables by taking the Z-score of each variable, as this allows all variables to be on the same scale and removes arbitrary effects that can occur due to variations in the units of measure (Aldrich et al. 2007). Z-scores are the number of standard deviations from the mean in a normal distribution in increments of $1/100^{th}$ of a standard deviation (Bernard 2006:171). I transformed all variables into numeric or interval scales, since they do not need to have a particular distribution for a PCA (Jolliffe 2002:69). I used Cronbach's Alpha test to investigate the reliability and internal consistency of the social capital variables. If the deletion of an element causes a considerable increase in the alpha, then the element should be removed from the test (StatsDirect Limited 2007b).

I ran a Principal Component Analyses (PCA) on key social capital variables to assess which of the variables account for differences among respondents. Initially, I ran preliminary PCAs using combinations of social capital variables, separating both bridging and bonding variables, before finalizing the set of variables used in the analysis. I used the Varimax method of orthogonal rotation for the PCA, which maximizes the sum of the variances of the squared coefficients with each eigenvector while the rotated axes remain orthogonal. The objective of the Varimax solution is to maximize the variance of the "new" variable, while minimizing the variance around it (StatSoft 2003). I used the Kaiser Normalization, which means that only factors with Eigen values above one are retained (StatSoft 2003). I used the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test to indicate the proportion of variance in the variables that is common variance; high values (close to 1.0) generally indicate that a factor analysis will be useful, and values below 0.50 indicate that it may not be appropriate. I saved the variables as regression factor scores.

Subsequently, I used the factor scores from the PCA to divide the respondents into clusters using a Hierarchal Cluster Analysis based on Ward's method and an interval measure of Squared-Euclidean distance. Although it is the most common form of clustering used in the social sciences, Ward's method is distinct from all other clustering methods because it uses an analysis of variance approach to evaluate the distances

between clusters, where the basic concepts are similarity and distance (Sepcic et al. 2004). It is an agglomerative clustering method – which iteratively merges *n* observations (respondents) into a single cluster in a process of *n-1* steps (Aldrich et al. 2007). Ward's method attempts to minimize the sum of squares (SS) of any two clusters that can be formed at each step by reducing the total within-cluster error (Aldrich et al. 2007). Squared Euclidean distance analysis removes the signs of the variables and places greater emphasis on objects further apart, thus increasing the effect of outliers (Garson 2007). I used an agglomeration schedule to determine the number of clusters to use in the analysis. I selected the number of clusters based on the results of the coefficient matrix of the agglomeration schedule, using the numbers of clusters that are present when the proximity coefficient jumps significantly from the previous value (Garson 2007). Similar to a comparison of the communities, I analyzed the clusters to determine key relationships and see how representative the groups are in explaining the distribution of variables, specifically those related to social capital, using cross-tabulations and one-way ANOVAs.

3.4.4 Comparing the Approaches

After completing the outlined analysis, I compared the results of the two approaches to assess how effective the methods are in analyzing the data and explaining the institutional conditions of the region. I used the Sum of Squares, generated from an ANOVA, to compare the two approaches and to assess their effectiveness in analyzing the data. The Sum of Squares within groups represents variation of the individual scores around their respective group means and allows one to assess the extent of variation in each group (SPSS Inc. 2006). The model is statistically significant if it can account for a large amount of variability in the responses (Dallal 2000).

CHAPTER 4: DESCRIPTION OF THE STUDY AREA

In this chapter I outline basic characteristics of the user communities, including demographic and livelihood information. Subsequently, I describe aspects of resource use in the region, focusing primarily on nature-based tourism. This chapter provides a basis of understanding of the contextual factors that frame the case study.

4.1 Characteristics of the User Communities

4.1.1 Puerto San Carlos (PSC)

A wave of settlers came to BCS from impoverished rural areas in the Mexican mainland and founded PSC in 1967-69 (Garcia Martinez 2005, Doloutskaia 2002, Secretaria de Promocion y Desarrollo Economico 2005). The primary objective of PSC was to serve as a port to export agricultural products nationally and internationally from the Santo Domingo Valley (Garcia Martinez 2005). However, many people migrated to the coastal areas to fish following the failure of government-sponsored agricultural programs in the municipality of Comondu in 1981 (Garcia Martinez 2005). The federal government encouraged migration to the region to exploit the fishing grounds and to solve economic problems in other parts of Mexico (Young 1999).

PSC is the largest town along the Bay and a regional port (Dedina 2000:127). The population was 3,990 with 992 houses occupied in 2000 (INEGI 2007). However, it has grown substantially in the last few years, and the actual population is probably much higher. Based on an estimation of 1,650 households with approximately four residents per household, the population is closer to 6,600. In addition, the population of PSC fluctuates regularly because of many transient residents who depend on seasonal fisheries (Flores-Skydancer 1999, Baja Quest 2006). The average household consists of four people: 1.3 males over 17, 1.3 females over 17, and 0.81 males under 17 and 0.68 females under 17. Respondents have attended approximately eight years of formal schooling (minimum of zero and a maximum of 19 years of schooling), supporting the statistic that 61% of the town is literate (INEGI 2007).

PSC is comprised of migrants from all over Mexico. Respondents have lived in the community for an average of 21 years; 13% have not lived elsewhere, 50% have lived elsewhere in BCS, 34% have lived outside of BCS and 3% have lived elsewhere in BCS

and outside of BCS. In total, respondents have lived in 27 different places in BCS and 17 different states plus the USA.

4.1.2 Puerto Adolfo Lopez Mateos (PALM)

PALM, another small fishing town, had the largest and most important government-owned processing plant in the state during the 1970s (Young 2001). The plant offered many benefits for workers, such as free housing, basic services and medical care (Young 2001). Consequently, the population grew by 77% between 1970 and 1980 (1,283 and 2,266) (Young 2001). However, the government privatized the plant in 1987, and approximately 50% of the workers were laid off, increasing the number of small-scale fishers in the Bay. By 1995, only 6% of the original workforce remained at the plant (Young 2001). Negative feelings arose towards outsiders because of concern over the availability of jobs and resources. The plant was closed most of 2006 due to a labour strike, further reducing employment in the community. In addition, many of those who went on strike were laid off following the labour dispute.

The population of PALM was approximately 2,309 with 560 occupied houses in 2000 (INEGI 2007). However, the current population is most likely higher. Based on an estimation of 750 households with approximately four residents per household, the population is closer to 3,000. The average household consists of four people: 1.4 males over 17, 1.3 females over 17, and 0.66 males under 17 and 0.65 females under 17. Respondents have attended approximately seven years of formal schooling (minimum of zero and a maximum of 22 years of schooling), supporting the statistic that 61% is literate (INEGI 2007).

Respondents have lived in the community an average of 29 years; 27% have not lived elsewhere, 30% have lived elsewhere in BCS, 40% have lived outside of BCS and 3% have lived both elsewhere in BCS and outside of BCS. In total, respondents have lived in 25 different places in BCS and 11 different states plus the USA.

4.1.3 Puerto Magdalena (PM)

Located on Magdalena Island situated in the northwestern edge of the Bay, PM is the most isolated of the three communities. It is a small fishing town and is about 30 years older than PSC and PALM. The population of PM was 259 with 68 occupied houses in 2000 (INEGI 2007). Based on an estimation of 60 households, the current population may be closer to 240 residents. PM is experiencing a trend of emigration because

people are moving to PSC and other areas of the Bay to access services that are not available on the island. The average household consists of four people: 1.3 males over 17, 0.88 females over 17, and 0.90 males under 17 and 0.38 females under 17. Respondents have attended approximately seven years of formal schooling (minimum of zero and a maximum of 16 years of schooling), supporting the statistic that 57% of the town is literate (INEGI 2007). Respondents have lived in the community an average of 24 years; 29% have not lived elsewhere, 55% have lived elsewhere in BCS, and 17% have lived outside of BCS. In total, respondents have lived in eight different places in BCS and four different states in Mexico.

Most of the village is associated with a large cooperative, which started by fishing spiny lobster in the 1930s and included abalone in the 1950s (Doloutskaia 2002). According to Doloutskaia (2002), the members of the lobster cooperative have worked effectively and they have a concession for the only fisheries stock that is not in decline in the region. However, as I found in my research, the local community and cooperative are facing many challenges protecting their concession from poachers. Although the cooperative used to include over 100 associates, many left because of internal politics and other changes in the last 10-15 years. Now approximately 70 associates remain.

4.2 Multiple Uses of Resources and Livelihood

Resource users exploit the environment in and around the Bay in multiple ways. The principal resource activities surrounding the Bay are small-scale artisanal fisheries, commercial fisheries, fish processing, and nature-based tourism – primarily recreational whale-watching. More intensive resource use (e.g. nature-based tourism, commercial fishing, and maritime traffic) characterizes the central and northern areas of the Bay. They incur larger anthropogenic impacts (e.g. pollution and extensive gillnetting in mangrove channels) than the other areas (Hastings and Fisher, 2001).

The majority of the people in the region (57%) think that there is a reduction in the abundance of marine resources in the last 10 years. Those who perceive that marine resources are decreasing attribute it to an increase in fishing effort (44%), a lack of regulation and application of the law by the government (26%), pollution (13%), variation in climate (8%) and an increase in fishing equipment and technology (4%). Dominant resource concerns by the residents in Bahia Magdalena include illegal fishing practices, failed resource regulation, and high unemployment; however, the ranking of each of these threats vary among stakeholder groups like the tourism sector, commercial

fisheries, and wider communities (Hasting and Fischer 2001). The primary sources of income by households are small-scale fishing (46%), fish processing (13%), other commerce and services (13%), government employment (10%), construction and transportation (5%), tourism (3%), and industrial fishing (3%) (Appendix C).

4.2.1 Wealth Index

A wealth index was created to compare the levels of wealth between the three communities, combining building structures and vehicle ownership. The wealth index is comprised of four aspects: households with cement flooring (25%), households with cement or brick walls (25%), car ownership (30%) and boat ownership (20%). Building materials are important indicators of wealth since there is a wide variation between squatter houses/shelters and permanent cement buildings. Transportation is an important indicator of wealth, since public transit is limited within the communities, and access to the main municipal town is necessary to reach most services like banks, large grocery stores, and health services. Lastly, *pangas* are important indicators of wealth since the communities are largely dependent on fishing and fishing related activities, and access to a boat is necessary for these activities. The wealth index differs significantly between PM and the other communities; the mean values are 0.70 in PSC, 0.66 in PALM and 0.53 in PM ($F=7.78$, $p=0.000$, Bonferroni mean difference=0.17 between PSC and PM, SE=0.04, $p=0.000$, and 0.13 between PALM and PM, SE=0.05, $p=0.018$) (Appendix D).

4.2.2 Net Income

Mean annual incomes before expenses are highest in PSC (71,045 pesos/year) followed by PM (65,179 pesos/year) and PALM (59,321 pesos/year); they differ significantly between PSC and PALM ($p=0.001$). Business expenses were subtracted from the mean incomes because of the costs of doing business (e.g. gas for the panga, fishing nets or boat repair). Mean annual incomes after expenses are highest in PSC (66,120 pesos/year), followed by PALM (53,048 pesos/year) and PM (40,738 pesos/year); they differ significantly between PSC and PM ($p=0.037$) (Appendix E).

4.2.3 Small-scale Fishing

Small-scale fishing is the primary livelihood activity for 48% of households in PSC, 37% of households in PALM and 91% of households in PM ($\chi^2= 44.6$, df=8, $p=0.000$)

(Appendix C). Sixty-nine percent (192) of households in PSC, 65% (137) of households in PALM and 95% (40) of households in PM generate income from fishing or fish related activities, which includes artisanal fishing, industrial fishing, fish processing and other related activities (e.g. cannery) (χ^2=15.2, df=2, p=0.000). My findings support other sources which state that 47% of the economically active population in PSC is dedicated primarily to fishing activities, followed by the processing industry, commercial activities and tourism (INEGI 2000 cited in Garcia Martinez 2005:38).

4.3 Background and Institutional Structure for Tourism

4.3.1 Economic Benefits

Proportion of Households Involved in Tourism

Tourism and related activities (hotel, restaurant, whale-watching, sport fishing) are the primary income generating activities for 2% of households in PSC, 6% of households in PALM and 0% of households in PM. They are more important as secondary activities; 4% of households in PSC, 15% of households in PALM and 7% of households in PM use tourism and related activities as additional forms of income (Appendix C).

However, 18% of households are involved in 'activities that may benefit from tourism' *(Household involved in tourism)*, which include businesses that provide services for tourists: 26% of households in PALM, 13% of households in PSC and 12% of households in PM (χ^2=13.5, df=2, p=0.001)[6]. The percentage of income generated by tourism varies between the communities. When all surveyed households are included, respondents in PSC and PALM generate a larger proportion of their income from activities that may benefit from tourism then PM (χ^2=13.5, df=2, p=0.001). However, when only considering households that are involved in tourism, the percentage of income generated from tourism does not differ significantly (Table 4.1).

[6]Some respondents noted that they were involved in tourism but were not generating any income from the activities.

Table 4.1 Percentage of total income generated from tourism in each community (n=96)

Percentage of income generated from tourism	PSC		PALM		PM		Total	
	% of households in tourism	N	% of households in tourism	n	% of households in tourism	N	% of households in tourism	n
None	8	3	2	1	20	1	5	5
1-10%	32	12	28	15	40	2	30	29
11-20%	11	4	15	8	40	2	15	14
21-50%	19	7	32	17	0	0	25	24
51% or more	30	11	24	13	0	0	25	24

Types of Tourism Activities

Each household's level of involvement in tourism varies, depending on the type of activity. Whale-watching is the principal tourism activity in each of the communities; 58% of people in PALM and 38% of people in PSC involved in tourism are whale *pangueros*. Furthermore, a higher proportion of respondents in PSC work in restaurants and hotels than in PALM (Table 4.2).

Table 4.2 Types of tourism activities in each community

Type of tourism activity	PSC		PALM		PM		Total	
	% of households in tourism	n	% of households in tourism	n	% of households in tourism	n	% of households in tourism	n
Whale-watching panguero	38	12	58	35	0	0	50	47
Whale-watching Operator	3	1	3	2	0	0	3	3
Whale-watching secretary	3	1	2	1	0	0	2	2
Nature panguero	3	1	5	3	0	0	4	4
Restaurant	19	6	12	7	33	1	15	14
Hotel	16	5	3	2	0	0	7	7
Store	13	4	7	4	33	1	10	9
Transport	6	2	0	0	0	0	2	2
Other commercial activities	0	0	10	6	33	1	7	7

Mean and Gross Household Income from Tourism

PSC tends to generate slightly higher mean household incomes from activities that benefit from tourism than PALM. In contrast, PALM's gross income for tourism activities for the entire community is slightly higher than PSC. Values for mean and gross household incomes generated from household involvement in tourism activities are much lower in PM than in the other communities (Appendix E).

Table 4.3 Mean and Gross Household Income Generated from Activities that Benefit From Tourism

Community	Gross Income (Sample) (Pesos/12 months)	Mean Household Income from Tourism (Pesos/12 months)	% of Households in tourism	Gross Income (Community) (Pesos/12 months)
PSC	2,797,741	79,935	13% of 992	10,308,476
PALM	906,730	75,561	26% of 560	11,001,657
PM	13,860	2,772	12% of 68	22,620

4.3.2 Institutional Structure

Cooperatives and Tourism

Many new cooperatives have emerged in the region of Bahia Magdalena (e.g. PSC and PALM) because of a change in the cooperative law in the mid-1980s. Before the change in the cooperative law, they consisted of many members (between 30-250 associates) and provided benefits such as social security. Presently, new cooperatives are comprised of small groups of people (approximately 10 people). Only five people are legally required to start a cooperative (Appendix A).

PSC has 76 cooperatives including five new cooperatives that started at the beginning of 2007 (January to April 2007). The 54 respondents in cooperatives in PSC are in 43 different cooperatives. Among the respondents who are in cooperatives or unions in PSC, 93% are in fishing cooperatives, and 8% are in cooperatives whose activities include fishing and tourism.

PALM has approximately 35 cooperatives. The 44 respondents in cooperatives in PALM are in 20 different cooperatives. Among the respondents who are in cooperatives or unions in PALM, 67% are in fishing cooperatives, 29% are in tourism cooperatives and 5%, are in cooperatives whose activities include fishing and tourism (6 cooperatives).

A significant proportion of households (28%) involved in tourism activities are also involved in cooperatives (χ^2=13.6, df=1, p=0.000). Of those respondents who are members of cooperatives, 33% of the respondents say that it is very likely that their cooperative will change its legal framework to include tourism, 30% say that is not likely, and 14% already changed their legal acts. The highest proportions of those interested in changing their legal framework to include tourism are in PSC; 40% of respondents in cooperatives are interested.

Operational Arrangements for Whale-watching

Operators in each of the whale-watching communities have limited numbers of whale-watching permits. The number of whale-watching permits has not changed since 1997 because of concern about negative effects on the whales and no plans exist to change the number of permits in the future. People interested in initiating other types of nature-based tourism activities can apply for permits. A permit process for sea turtle-watching is not yet in place although discussions are underway.

The tourism industry is limited in Bahia Magdalena, and is predominantly owned and operated by local companies (8 of 10 whale-watching companies are based in Bahia Magdalena). The external companies that bring whale watchers to the area are mostly smaller companies, unlike large foreign operations in the southern parts of the state (e.g. Los Cabos). Nevertheless, the influence of large-scale tourism development is evident, and people repeatedly talk about how the Baja peninsula is being sold to Americans. Since most tourists only visit the communities for a few hours and head directly to see the whales, the majority of tourists do not tend to use the local hotels or restaurants and make little if any economic contributions to the rest of the communities, especially if tourists visit the Bay with private transport companies.

Whale-watching Operations in PALM

Five main tourism companies in PALM include a tourism cooperative (A), a tourism union (B) and three private operators. I focus on the cooperative and the union, since they are the largest operators in the community.

The largest whale-watching operator in PALM is a cooperative (A), which officially started in the early 1990s. It was founded by a group of friends, partnering to take scientists out to see the whales. They organized into a group and formed the legal acts

required by a cooperative. Currently, 28 associates are in the tourism cooperative. Each associate (or person working with that associate's permit) takes his or her turn through a rotation. Of the 11 respondents of the tourism cooperative that were randomly surveyed, 64% stated that they were mostly from the community and 36% stated that they were mostly friends and neighbours. Many of the associates are not from the founding cooperative since the original members have passed on or sold their permits, often to family members. The members of the tourism cooperative appear to work well together and their finances are jointly managed. They prepare budgets for the cost of gasoline, trips to the government office in La Paz, and other administrative activities[7]. Aside from direct income generated as *pangueros* – they generate another 25-30 jobs for people working in the restaurant and the cabins that they are in the process of building. The cooperative also has assistance from the government to expand (e.g. a loan for the restaurant and cabins). Additionally, they have many business agreements with operators outside of PALM, including an arrangement with a large transport company in BCS, as well as operators in La Paz and Los Cabos. The cooperative made 1,065 trips in 2006, transporting a total of 5,925 tourists with an average of 5.6 people per boat (SEMARNAP 2006).

The cooperative contributes to the community by assisting with community work parties and special celebrations (e.g. Mothers' Day). Future business plans include starting an artisan store to generate more business and to extend tourists' sojourn in the Bay. The tourism cooperative is discussing the possibility of expanding by using larger boats; currently, the number of boats cannot be increased because of government permit regulations. Members of the cooperative are also interested in being involved in sport fishing and bird watching.

The tourism union (B) in PALM originated from a group that separated from the tourism cooperative in the early 1990s. The tourism union is different from a cooperative in that each operator's finances are separate; however, they are beneficial in terms of assisting operators share costs of operation and facilitate the permit process. As such, social capital is possibly stronger in a cooperative as compared to a union. The union was formed with the assistance of the county supervisor of Comondu who was also a member of PAN (the National Action Party) (Dedina 2000:139).

[7]See Schwoerer (2007) for an analysis of the economic valuation of whale-watching in Bahia Magdalena.

The union has 29 associates, many of them family, and they have lived in the community for many years. They made 473 trips in 2006, transporting a total of 2,403 tourists with an average of 5.1 people per boat (SEMARNAP 2006). Activities in the tourism union are progressing well, and associates are interested in getting involved in other types of tourism activities. Some respondents claim that the union is less organized and plagued by more conflicts than the tourism cooperative because of differing ideas on how to operate.

Whale-watching Operations in PSC

The main operators that provide whale-watching excursions in PSC are a tourism union (C) and a private enterprise (D). In addition, two other private enterprises from PSC, and two other foreign-owned companies based in La Paz work in PSC.

The tourism union (C) began around 1992, partly instigated by one of the charismatic whale-watching operators in the area, who had already been taking tourists on trips to see the whales for several years previously. Currently, 12 associates are in the union. Since the finances between the associates are separate, the operators in the union can act more independently, and at least one of the operators does their own promoting. The tourism union made 426 trips in 2006, moving 1,489 tourists with an average of 3.5 people per boat (SEMARNAP 2006). The union took approximately 1,500 tourists to see gray whales in the 2007 tourism season.

According to one respondent, the tourism union meets every month; they are optimistic regarding the prospects for the following year and are working well together. Other tourism operators criticize the union, commenting that internal conflicts are prevalent, and that the associates have different working speeds and habits. Concern stems from the idea that some of the associates are not ‘business-minded’. Plans and ideas for the next whale-watching season include developing a more effective advertising strategy and starting a webpage.

An ambitious entrepreneur in the community operates a local private enterprise in PSC (D). The entrepreneur has been a leader in tourism development in the community. The private enterprise provided tours for approximately 2,000 tourists in the past year. The company made 320 trips for 1,619 tourists in the 2006 whale-watching season, with approximately five people per boat (SEMARNAP 2006).

The company has many connections in the state capital of La Paz. In addition, it has signed an agreement for marketing with the ferries that travel between BCS and

mainland Mexico. Additionally, the owner has many plans to expand the whale-watching industry by using larger boats.

Tourism in PM

The only organized tourist activity on the island of Magdalena is a restaurant. Whale-watching trips in PSC often stop there for lunch, and tourists can have fresh seafood (e.g. lobster, fish or shrimp) and learn about the island. The restaurant began in 1993 with the assistance of a local entrepreneur from PSC, who agreed to bring tourists to the island to enhance their whale-watching experiences. The restaurant is only open during the whale-watching season (the *temporada*), and tourists frequent the restaurant daily from January until March.

No whale-watching operators are based in PM. One fisher from PM states that the whales come to the Bay, and belong to their island, but they are not the people bringing out the tourists. Also, conflicts exist among residents in the community with respect to who can become involved in tourism. One shopkeeper wanted to start selling beer and *ceviche* (a cultural dish containing raw seafood) at a *palapa* (palm-covered roof). He mentioned that those who are currently involved in tourism do not want to allow others to establish competing businesses.

PALM versus PSC

PSC is now on equal footing with PALM as a whale-watching attraction since the inauguration of a new wharf in 2007. PALM has had a tourism wharf for approximately six years, and it has assisted in establishing the whale-watching industry by creating a common area for tourists to contact operators. Prior to the building of the wharf, departures from PSC were from the beach. The new wharf includes a canteen and bathrooms. Nevertheless, PALM is still a more important site for whale-watching based on the number of whale-watching tourists. During the 2006 whale-watching season, PALM had 11,025 visitors and PSC had 3,644 visitors (SEMARNAP 2006).

Both communities host annual whale-watching festivals to promote the tourism industry. The festivals also affirm the way in which gray whales have become a part of the cultural landscape (Dedina, 2000:33). However, as a nature-based tourism operator from PSC remarked, the government needs to promote both PALM and PSC to disperse tourists between the communities and reduce negative impacts on the whales.

Tourism operators in PALM say that they work more cooperatively than in PSC, suggesting that the latter have more disagreements and lack communication among operators. Although the operators in PALM state that they are more organized and have fewer conflicts than in PSC, they still have some clashes. In the past, some operators have lowered prices for Mexican nationals creating contention among the tourism providers. Regardless, tourism operators in both communities meet at the end of the whale-watching season to review the past season.

The whale-watching operators in PSC possibly have less ability to work together to collectively coordinate tourism operations than PALM. Both wharfs were built by the government port agency API BCS (Administración Portuaria Integral de Baja California Sur); however, the state government manages the wharf in PSC as an externally-operated private concession, unlike in PALM. Whale-watching operators in PALM state that their wharf is not operated as a concession since they take ownership of the land and it belongs to the people in the community[8]. In contrast, a large transport company from the state capital operates the wharf in PSC and in exchange it promises to bring more tourists to the area and to maintain the wharf. The private transport company manages a store and restrooms, transports tourists to the community and organizes whale-watching trips between tourists and local operators. The tourism operators in PSC rent the office spaces year-round and pay a 15 pesos "tax" per tourist, although the wharf is only in use three months of the year.

According to several respondents, the government agency did not give the local whale-watching operators in PSC control of the wharf because it was believed that they do not have the capacity to properly manage and maintain it. Another reason given as to why the government allowed the outside "company" to operate the concession was that local companies lacked the capital to finance its operation. According to the municipal representative, the "company" has the opportunity to promote whale-watching tourism in the community at the national level and moved an average of 500 tourists during the past whale-watching season. The "company" concurs that everything is going well with the management of the wharf, and that they are trying to sell PSC as an alternate product to PALM - the more popular destination. Trips from PSC travel into a less

[8] A tourism operator in PALM says that they pay the (federal) government "rent" for the pier. It could be operated as a concession if it is transferred to the municipal government (and be operated by a private company). The whale-watching operators in PALM do not want anyone from outside of the community operating their pier. Although the local whale-watching operators are in competition with each other, they also work together and are interested in developing a committee to manage the pier.

sheltered area of the Bay than those from PALM. Regardless, operators in PSC are not content about the management of the pier. The transport company acts like an intermediary between the tourists and the whale watchers and the operators feel that it is unfair that the company has a concession since the wharf was built by public funds. One operator refuses to use the wharf in protest. The consensus among respondents is that the pier provides limited benefits and that they are interested in changing the situation for the following year.

The operators in PALM claim that they are more organized than PSC and that they would not allow a company to take control of the wharf; however, the wharf in PALM was built several years previously. Other respondents mentioned that the private transport company did not take control of the wharf in PALM because the tourism operators organized and petitioned the governor to not let an outside company have a concession of the port.

Other Nature-based Tourism Activities

Other nature-based tourism activities in Bahia Magdalena include: sport fishing, sea turtle-watching, general nature tourism trips, kayaking, bird watching, surfing and sailing. Currently, few whale-watching operators from La Paz do multi-day trips that include kayaking and camping. One respondent in PM suggested the possibilities of submerging old cars to create areas for scuba diving. Nevertheless, many of the activities generate minimal income for the local communities and residents commented that they do not have the financial capital to initiate them. Although many sailboats harbour at PM, the boats are mostly self-contained and provide little economic benefits to the communities with the exception of purchasing minimal supplies.

Sport fishing is gradually increasing in Bahia Magdalena. The high season for sport fishing is November to December, and occasionally fishing tournaments are held in PSC. The sport fishing industry in Bahia Magdalena consists of a number of independent part-time fishing guides in *pangas* and a few other boats (Mexfish, 2006). The government proposed an act that those who have artisanal fishing permits can change their permits to sport fishing permits (Sudocalifornia – 7 de November 2006). However, no regulation for sport fishing in Bahia Magdalena is in place and people buy fishing licenses inland in Ciudad Constitucion. One tourism entrepreneur in PSC suggested practicing commercial fishing as a form of experiential tourism to expand nature-based tourism (e.g. fishing scallops, octopus or calamari).

Discussion has arisen over the possibilities of sea turtle-watching especially with a changing consciousness towards conserving them and the promotion of annual sea turtle festivals in PSC and PALM. A new cooperative recently organized to develop sea turtle-watching in PALM assisted by an environmental non-governmental organization. The organizers of the cooperative did an open call to the whole community to invite whoever wanted to become involved in the cooperative; initially the group had 24 members, and it grew to include 52 associates with more people requesting to join.

The objectives of the cooperative are to promote more nature-based tourism in the region, to diversify their incomes beyond fishing and to become involved in activities that are less environmentally destructive. While developing the legal framework, members revised the social objectives to include the ability to do other activities beside turtle-watching such as operating a restaurant, hotel, tortilla store, and possibilities for fishing (shrimp, almeja, etc.). Currently, the cooperative is in the process of planning the tourism trips and acquiring the necessary skills and materials.

The focus of the sea turtle cooperative is on viewing the “caguama Amarillo” (loggerhead turtle or *caretta caretta*). Sea turtle-watching tourism is more complicated than whale-watching, since one can only see loggerhead turtles when the ocean is tranquil. As such, the tourism trips need to be a few days in length to ensure that the tourist would see the turtles. Difficulties ensuring that a tourist will see a turtle affect the possibilities of developing sea turtle-watching as a formal nature-based tourism activity. As such, successful sea turtle-watching needs to be combined with other activities like kayaking, camping and bird-watching.

Tourism Services

Other groups are expanding tourism services to complement nature-based tourism activities. For example, a women’s cooperative established a tourist restaurant in PALM. Fifteen women started the cooperative, and six women remained a year later. The cooperative meets every month, and the women work in pairs alternating the operations of the restaurant each week. Thus far they are not generating any profits, which is why many women had to leave the cooperative to support their families. They have petitioned the government for assistance and are asking for business loans.

CHAPTER 5: ANALYSIS OF SOCIAL CAPITAL AND RELATED CHARACTERISTICS BY COMMUNITY AND CLUSTER GROUP

The first part of this chapter focuses on the different characteristics found between communities, while the second part examines differences between cluster groups generated from a Principal Component Analysis and Hierarchal Cluster. For both communities and clusters, demographic and livelihood variables are considered for their significance between groups. This is followed by a comparison of social capital variables and a summary of bridging and bonding social capital in each group. Significant differences between households who benefit from tourism and the rest of the sample are presented.

5.1 Communities

5.1.1 Demographic Characteristics, Livelihood and Resources

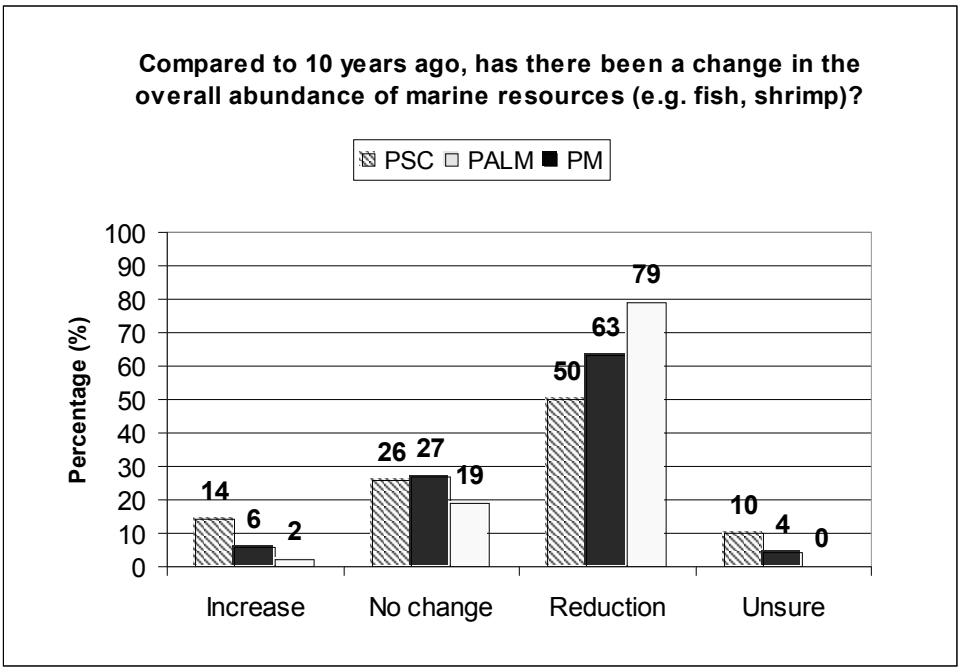
Demographic Characteristics and Livelihood

Variables that are significantly different between the communities include: whether respondents have lived in another location, if respondents are leaders of a group or association, the wealth index, and if the household is involved in activities that benefit from tourism and fishing related activities (see Sections 4.2.1, 4.2.3 and 4.2.4). More respondents have lived in another location in Puerto San Carlos (PSC) (87%), followed by Puerto Adolfo Lopez Mateos (PALM) (73%) and Puerto Magdalena (PM) (71%) (χ^2=16.1, df=2, p=0.000). PSC has more group leaders than the other communities: 6.5% of respondents from PSC are leaders of a group, as opposed to 1.9% of respondents in PALM and 0% of respondents in PM (χ^2=8.4, df=2, p=0.015). Variables that are not significantly different between the respondents in each community are gender, leadership of a cooperative and years of formal schooling (Appendix F).

Perceptions of Marine Resources

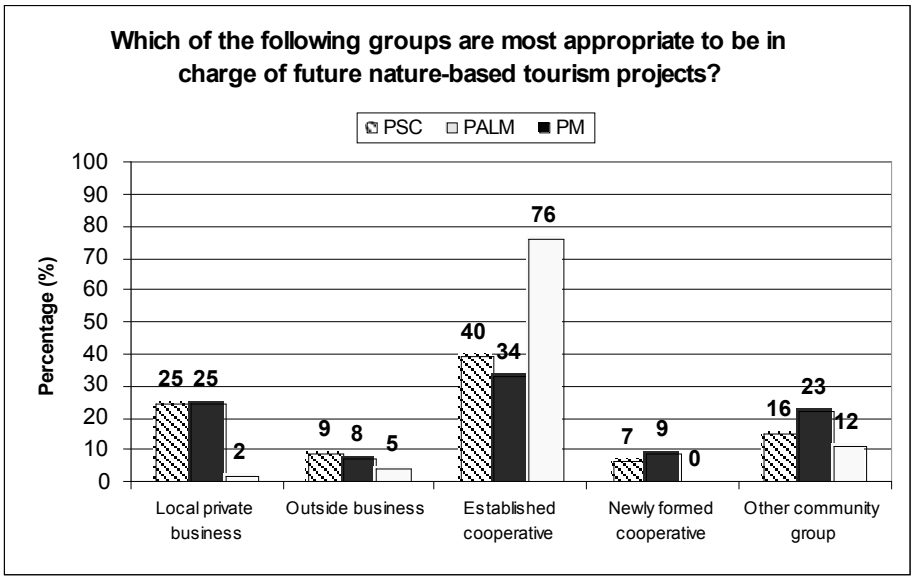
Perceptions of changes in the abundance of marine resources, preferences for who should establish new nature tourism ventures and for future economic activities differ significantly between the communities. The highest proportion of respondents who perceive a reduction in the abundance of marine resources is in PM, followed by PALM and PSC (χ^2= 28.3, df=6, p=0.000) (Figure 5.1).

Figure 5.1 Perspectives on the abundance of marine resources



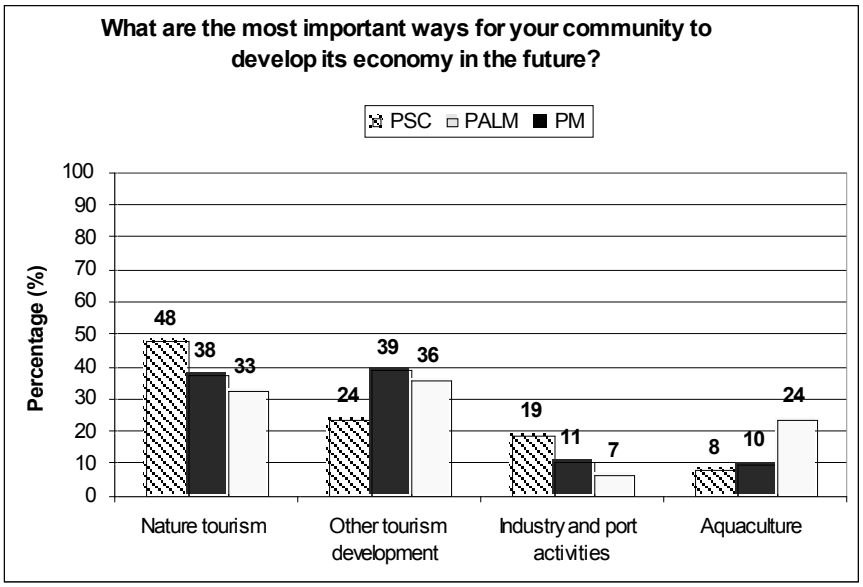
Preferences for who should establish new nature-based tourism projects in the region differ significantly between the communities (χ^2= 37.4, df=12, p=0.000). More respondents in PM (76%) selected established cooperatives or unions than the other communities (34-40%), although it was the preferred choice in each community. Subsequently, all respondents preferred local private businesses followed by other community groups as entities that should establish new nature-based tourism projects (Figure 5.2).

Figure 5.2 Perspectives on who should establish new nature-based tourism projects by community



Preferences for future economic activities that communities should pursue differ significantly (χ^2= 28.7, df=8, p=0.000). PSC largely prefers nature tourism (48%), as compared to PALM and PM, who selected other tourism development (39% and 36%) before nature tourism (Figure 5.3).

Figure 5.3 Preferences for future economic activities by community



5.1.2 Social Capital Characteristics

Relations of Trust

More people in PALM and PM trust most people in their community than in PSC. The values range from 69% to 72% for the first two, compared to 39% in the latter (p=0.000) (Table 5.1). More people in PALM trust most people outside of the community than in PSC and PM; the value for PALM is 34% as compared to 16-17% in the other communities (p=0.000) (Table 5.1). These values are generally higher than those recorded by the World Values Survey for Mexico as a whole – 31% of people have trust in most people and 61% of people think that one cannot be too trusting (CEOP 1990).

Perceptions on the relations of trust within one's community differ significantly based on the number of years that people have lived in their town of residence. Respondents who trust most people within the community have lived in the community for an average of 25.6 years whereas those who do not, have lived in the community for an average of 22.1 years. (F=4.62, p=0.010, Bonferroni mean difference=3.50, SE=1.15, p=0.075).

Reciprocity and Exchanges

The importance of volunteering is highest in PM, followed by PALM and PSC (p=0.000)[9] (Table 5.2 and Table 5.3). The numbers of days that respondents visit their neighbours differ significantly between each of the communities, and are highest in PM followed by PALM and PSC (p=0.000) (Table 5.2 and Table 5.3).

Significant differences exist between the communities in how people would respond to a natural disaster (e.g. a hurricane or flooding); that each family would more likely make repairs on their own was the most commonly cited response in PSC, and that that neighbours and friends would work together to make repairs was the most common cited response in PALM and PM (p=0.000) (Table 5.1).

[9]Although there are significant differences between the communities using ANOVA, the numbers of days volunteering are not significantly different using the post-hoc test (Tamhane's T2 test). However, there are almost significant differences between PSC and PALM (p=0.052). This is most likely attributed to the large range of responses in each community, as represented by the standard deviations and standard error values (Table 5.2 and Table 5.3).

Table 5.1 Social capital variables in each community

Variable		PSC		PALM		PM		Total		χ^2	df	P
		%	n	%	n	%	n	%	N			
Trust in most people within the community	Yes	39	108	72	151	69	29	55	288	60.1	4	***0.000***
	No	58	160	25	52	26	11	42	223			
	Unsure	3	7	4	8	5	2	3	17			
Trust in most people outside of the community	Yes	16	43	34	71	17	7	23	121	27.0	4	***0.000***
	No	82	227	63	133	76	32	74	392			
	Unsure	2	6	3	6	7	3	3	15			
How respond to a natural disaster	Family	36	100	26	55	14	6	30	161	60.6	10	***0.000***
	Neighbours	9	24	34	72	38	16	21	112			
	Community	29	75	17	35	21	9	23	123			
	Government	25	68	21	45	26	11	23	124			
How resolve conflicts	Call the police	64	177	67	141	38	16	63	334	26.0	8	***0.001***
	Resolve conflicts between people	19	54	22	46	43	18	22	118			
	Leave the conflict unresolved	14	38	6	13	17	7	11	58			
Speak out and express opinions	Yes	40	110	51	107	71	30	47	247	39.3	6	***0.000***
	Sometimes	18	51	28	60	19	8	23	119			
	No	38	104	19	41	7	3	28	148			
	Unsure	4	12	1	3	2	1	3	16			

Table 5.2 Numerical social capital variables between communities - Mean values

Variable	Community	Mean	SD	F	df	P
Days volunteering (days/12 months)	PSC	1.97	4.13	10.9	2, 524	***0.000***
	PALM	3.24	6.79			
	PM	7.20	15.92			
	Total	2.89	6.96			
Days visiting neighbours (days/2 weeks)	PSC	4.80	5.68	15.6	2, 523	***0.000***
	PALM	6.56	5.90			
	PM	9.71	5.45			
	Total	5.89	5.91			
Vote in elections (federal, state and municipal)	PSC	2.34	1.19	2.8	2, 526	0.063
	PALM	2.58	1.01			
	PM	2.33	1.20			
	Total	2.44	1.13			
Times outside the municipality (trips/12 months)	PSC	6.14	11.68	3.2	2, 494	***0.041***
	PALM	4.74	6.98			
	PM	2.44	2.71			
	Total	5.27	9.56			
Household in cooperative	PSC	0.31	0.52	4.1	2, 527	***0.016***
	PALM	0.34	0.60			
	PM	0.57	0.50			
	Total	0.34	0.55			
Member of group or association	PSC	0.17	0.39	5.6	2, 527	***0.004***
	PALM	0.11	0.02			
	PM	0.00	0.00			
	Total	0.13	0.02			

Common Rules and Norms

The stated methods for resolving conflicts differ in each community. People are more likely to call the police in PSC and PALM as opposed to PM (p=0.001) (Table 5.1). The proportion of respondents who would express their opinions differs significantly in communities. Respondents in PM are more likely to express their opinions on community matters, than those in PALM and PSC (p=0.000) (Table 5.1). No significant differences exist between the communities with respect to the number of elections in which respondents voted, including federal, state and municipal elections (Table 5.2 and Table 5.3).

Table 5.3 Numerical social capital variables between communities - Post-hoc tests

Variable	Comparison	Mean difference	Post hoc test	SE	P
Days volunteering (days/12 months)	PSC and PALM	-1.26	Tamhane's T2	0.53	0.052
	PALM and PM	-3.96	Tamhane's T2	2.53	0.330
	PSC and PM	-5.22	Tamhane's T2	2.50	0.123
Days visiting neighbours (days/2 weeks)	PSC and PALM	-1.76	Bonferroni	0.53	***0.003***
	PALM and PM	-3.16	Bonferroni	0.97	***0.004***
	PSC and PM	4.92	Bonferroni	0.95	***0.000***
Vote in elections (federal, state and municipal)	PSC and PALM	-0.23	Tamhane's T2	0.10	0.058
	PALM and PM	0.25	Tamhane's T2	0.20	0.530
	PSC and PM	0.01	Tamhane's T2	0.20	1.000
Times outside the municipality (trips/12 months)	PSC and PALM	1.41	Tamhane's T2	0.88	0.296
	PALM and PM	2.30	Tamhane's T2	0.65	***0.002***
	PSC and PM	3.71	Tamhane's T2	0.84	***0.000***
Households in cooperative	PSC and PALM	-0.03	Bonferroni	0.05	1.000
	PALM and PM	-0.24	Bonferroni	0.09	***0.035***
	PSC and PM	-0.26	Bonferroni	0.09	***0.013***
Member of group or association	PSC and PALM	0.06	Tamhane's T2	0.03	0.125
	PALM and PM	0.11	Tamhane's T2	0.02	***0.000***
	PSC and PM	0.17	Tamhane's T2	0.02	***0.000***

Connectedness in Networks and Groups

Respondents from PSC and PALM are more likely to travel outside of the municipality of Comondu than those from PM (p=0.041) (Table 5.2 and Table 5.3).

The proportion of respondents who are members of cooperatives or unions differs between the communities. About 43% of the respondents in PM are in cooperatives as opposed to 20-21% in the other communities (χ^2 =11.9, df=2, p=0.003). However, it is

more appropriate to look at membership in a cooperative or union by household when conducting a household survey. It takes into account the gender variation, since men are the primary members of cooperatives or unions. PM has the highest percentage of households with members in cooperatives or unions (57%), whereas values range between 31-34% in PSC and PALM (p=0.016) (Table 5.2 and Table 5.3).

The numbers of respondents who are members in a group or association differ significantly between communities. Membership is highest in PSC followed closely by PALM. In contrast, no respondents are in groups other than cooperatives in PM (Table 5.2 and Table 5.3). Various types of groups and associations operate in PSC and PALM. These include social groups (e.g. Lions Club), environmental groups (e.g. Mag Bay Keepers or the turtle group), neighbourhood and community groups (e.g. the Committee for Community Participation, which organizes Mothers' Day activities and other activities in the community), school committees (e.g. kindergarten, primary, secondary and preparatory school), workers groups, women's groups, political groups, sports groups and religious associations (Table 5.4).

Table 5.4 Types of associations in PSC and PALM

Group type	PSC		PALM	
	% of households in associations	n	% of households in associations	n
Neighbourhood association and social group	9	4	35	8
Women's group	2	1	0	0
Environmental group	0	0	13	3
Political group	17	8	4	1
School group	15	7	9	2
Health group	2	1	0	0
Sports group	15	7	9	2
Religious group	34	16	17	4
Group for the elderly	2	1	4	1
Other	4	2	9	2
Total	**100**	**47**	**100**	**23**

Summary of Bonding and Bridging Aspects of Social Capital

Each of the social capital variables are categorized as being bonding or bridging variables and given a rating of low, medium or high. For variables analyzed by proportions, low=0.0-33.0%, medium=33.1%-66.0% and high=66.1%-100.0%. For variables defined by mean values, low=0-5.0, medium=5.1-10.0, and high=10.1 and above. Overall, bonding variables are highest in PM, followed by a medium rating in

PALM and a low rating in PSC. In contrast, bridging variables have a medium rating in PSC and PALM and a low rating in PM (Table 5.5 and Appendix G).

Table 5.5 Summary of bonding and bridging aspects of social capital in each community

	PSC	PALM	PM
Bonding variables			
Trust in most people within the community	Medium (39%)	High (72%)	High (69%)
Days volunteering (days/ 12 months)	Low (2.0)	Low (3.2)	Medium (7.2)
Days visiting neighbours (visits/2 weeks)	Low (4.8)	Medium (6.6)	Medium (9.7)
Speak out and express opinions	Medium (40%)	Medium (51%)	High (71%)
Household in cooperative	Low (20%)	Low (21%)	Medium (43%)
Member of group or association	Low (17%)	Low (11%)	Low (0%)
Bridging variables			
Trust in most people outside of the community	Low (16%)	Medium (34%)	Low (17%)
Vote in elections (Municipal, State and Federal)	High (77%)	High (87%)	High (77%)
Times outside the municipality (times/12 months)	Medium (6.1)	Low (4.7)	Low (2.4)
Bonding	***Low*** *(4 low, 2 medium)*	***Medium*** *(3 low, 2 medium, 1 high)*	***High*** *(1 low, 3 mediums, 2 high)*
Bridging	***Medium*** *(1 low, 1 medium, 1 high)*	***Medium*** *(1 low, 1 medium, 1 high)*	***Low*** *(2 low, 1 high)*

5.1.3 Comparison of Households that are Involved in Tourism and those that are not

This section highlights differences between households involved in tourism (n=96) and households not involved in tourism (n=433). Households involved in tourism refer to those who take part in 'activities that may benefit from tourism'.

Demographic Characteristics and Livelihood

Fewer households that benefit from tourism have lived elsewhere, as compared to those that have not benefited from tourism; 72% (n=69 of 96) of households that benefit from tourism have lived elsewhere and 82% (n=355 of 433) of households that do not benefit from tourism have lived elsewhere (χ^2=5.1, df=1, p=0.025). Households involved in tourism have a higher wealth index (0.75 versus 0.65) (F=9.9, p=0.002). Other variables were not significantly different across the communities.

Differences exist in preferences for future economic activities among people who are involved in tourism and those who are not; 48% (n=46 of 96) of households involved in

tourism prefer nature-based tourism and 41% (n=39 of 96) prefer other tourism development. Of households who are not involved in tourism, 42% (n=180 of 433) prefer nature-based tourism and 29% (n=126 of 433) prefer other tourism development (χ^2=14.0, df=4, p=0.007). No significant differences in preferences for who should establish new nature-based tourism projects or perceptions on changes in the abundance of marine resources are evident between the clusters.

Social Capital Variables

Households involved in activities that benefit from tourism tend to be more trusting of people within (67%) and outside (37%) of their community. In comparison, households who are not involved in activities that benefit from tourism tend to be less trusting of people within (52%) and outside (20%) of their community (p=0.000, p=0.001) (Table 5.6). More people who are involved in tourism express their opinions (56% versus 44%, p=0.038) and vote in more elections than those who do not (2.72 versus 2.37 elections, p=0.007) (Table 5.6 and 5.7). More people involved in tourism travelled outside of their municipality than those who do not (p=0.035). Also, they are more likely to belong to households who have members in cooperatives or unions (57% versus 29%, p=0.000) (Table 5.7).

Table 5.6 Social capital variables comparing households that benefit from tourism and those that do not

Variable		Households not involved in tourism		Households involved in tourism		Total		χ^2	df	P
		%	n	%	n	%	n			
Trust in most people within the community	Yes	52	224	67	64	55	288	20.8	2	***0.000***
	No	46	198	25	24	42	222			
	Unsure	2	9	8	8	3	17			
Trust in most people outside of the community	Yes	20	86	37	35	23	121	13.5	2	***0.001***
	No	76	334	59	57	74	391			
	Unsure	3	11	4	4	3	15			
How respond to a natural disaster	Each family fixes their own house	29	126	35	34	30	160	4.9	5	0.443
	Neighbours and friends work together	21	90	23	22	21	112			
	Community works together	23	100	24	23	23	123			
	Government should do it	25	107	18	17	24	124			
How resolve conflicts	Call the police	63	269	67	64	63	333	5.8	4	0.216
	Resolve conflicts between people	22	93	26	25	22	118			
	Leave the conflict unresolved	12	52	6	6	11	58			
Speak out and express opinions	Yes	44	192	56	54	47	246	8.4	3	***0.038***
	Sometimes	22	95	25	24	23	119			
	No	31	132	17	16	28	148			
	Unsure	3	14	2	2	3	16			

Table 5.7 Numerical Social capital variables in each cluster comparing households that benefit from tourism and those that do not

Variable	Group	Mean	SD	F	df	P
Days volunteering (days/12 months)	Not in tourism	2.86	7.47	0.047	1, 524	0.828
	Involved in tourism	3.03	4.02			
	Total	2.89	6.97			
Days visiting neighbours (days/2 weeks)	Not in tourism	6.01	5.91	0.86	1, 524	0.828
	Involved in tourism	5.40	5.89			
	Total	5.90	5.91			
Vote in elections (federal, state and municipal)	Not in tourism	2.37	1.18	7.4	1, 526	***0.007***
	Involved in tourism	2.72	0.86			
	Total	2.44	1.13			
Times outside the municipality (trips/12 months)	Not in tourism	4.81	9.53	4.4	1, 494	***0.035***
	Involved in tourism	7.13	9.34			
	Total	5.23	9.53			
Household in cooperative	Not in tourism	0.29	0.50	21.3	1, 527	***0.000***
	Involved in tourism	0.57	0.69			
	Total	0.34	0.55			
Member of group or association	Not in tourism	0.13	0.35	0.001	1, 527	0.970
	Involved in tourism	0.14	0.34			
	Total	0.13	0.35			

5.2 Clusters

5.2.1 Principal Component Analysis (PCA) and Cluster Analysis

Social capital variables for the PCA

Several adjustments were needed in the analysis to use the social capital variables into a standard PCA. I recoded three variables to make them appropriate for a PCA. I recoded 15 (3%) "Unsure" values for *Trust in most people within the community* and 17 (3%) "Unsure" values for *Trust in most people outside of the community* proportionally between "Yes" and "No". I recoded 16 (2%) "Unsure" values for *Speak out and express opinions* to group them with "Sometimes", which is equidistance between "No" and "Yes". I removed 33 data sets because of missing values for *Number of times outside of the municipality*. The other missing values for each of the social capital variables were replaced with rounded means[10].

I included all social capital variables in the PCA except for three variables. I excluded *How respond to a natural disaster* and *How resolve conflict* since they are categorical

[10] *Household in cooperative* was missing 5 values, *Days visiting neighbours* was missing 4 values, *Days volunteering* was missing 3 values, *Trust in most people within the community* and *Trust in most people outside of the community* were each missing 2 values, and *Vote in elections* was missing 1 value.

variables. The responses cannot be interpreted to have a sequential order, and as such, they do not have a genuine interpretation within the PCA. Also, the Cronbach's Alpha (CA) increased when they were removed from the analysis. I excluded whether or not respondents are members of informal associations, since no informal associations or groups exist in Puerto Magdalena (PM). The CA increased from 0.403 to 0.459 when I removed the three variables from the PCA. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.577 (Appendix H).

Components of the PCA

Three principle components emerged from the PCA explaining 51.6% of the total variance. Trust within and outside of the community define Component 1. This component explains 21.5% of the total variance. It represents the first aspect of the definition of social capital, representing *Relations of Trust.* The number of days volunteering, the number of elections in which respondents voted, whether or not the respondents express their opinions in their communities, and the number of visits with neighbours define Component 2. It explains 16.4% of the total variance. It defines the second and third aspects of the social capital definition: *Reciprocity and exchanges,* and *Common rules and norms*. The number of times that respondents leave the municipality and whether or not members of their households are associates in fishing or tourism cooperatives define Component 3. It explains 13.6% of the total variance. It represents the fourth aspect of the social capital definition, *Connectedness in networks and groups* (Table 5.8, Appendix I and Appendix J).

Table 5.8 Factor scores for the rotated component analysis of social capital variables

Social capital variable	Component 1	Component 2	Component 3
Trust in most people outside of the community	**0.834**	-0.117	0.116
Trust in most people within the community	**0.800**	0.186	-0.112
Days volunteering	-0.043	**0.658**	0.044
Vote in elections	0.049	**0.633**	-0.190
Speak out and express opinions	0.272	**0.550**	0.295
Days visiting neighbours	-0.047	**0.465**	0.350
Times outside the municipality	-0.092	-0.052	**0.751**
Household in Cooperative	0.110	0.105	**0.660**

Communities and Component Scores

A negative relationship exists between PSC and the first two components, given that the negative sign represents the direction of the relationship. This indicates that PSC tends to have low trust (Component 1), and community aspects (Component 2). PALM is primarily characterized by Component 1, and followed by Component 2. PM loads heavily onto Component 2, followed by Component 3 (Table 5.9).

Table 5.9 Mean Component scores from the PCA for each community

Community	Component 1	Component 2	Component 3
PSC	-0.288	-0.227	0.011
PALM	**0.357**	0.165	-0.075
PM	0.106	**0.673**	**0.300**

Clusters Defined by the Output of the PCA

I used the factor scores from the PCA of the social capital variables to generate the clusters. After running the hierarchal cluster analysis, I noted an abrupt jump between coefficients 770.3 (stage 493) and 905.8 (stage 494) of the agglomeration schedule. This validates the use of three clusters, since there are 496 stages in total (Appendix K). Cluster 1 has 222 respondents (45%), Cluster 2 has 162 respondents (33%) and Cluster 3 has 113 respondents (23%).

There is a negative relationship between Cluster 1 and each factor. Component 2, followed by Component 3, primarily characterizes cluster 2. Component 1 primarily characterizes Cluster 3, indicating the importance of trust (Table 5.10)

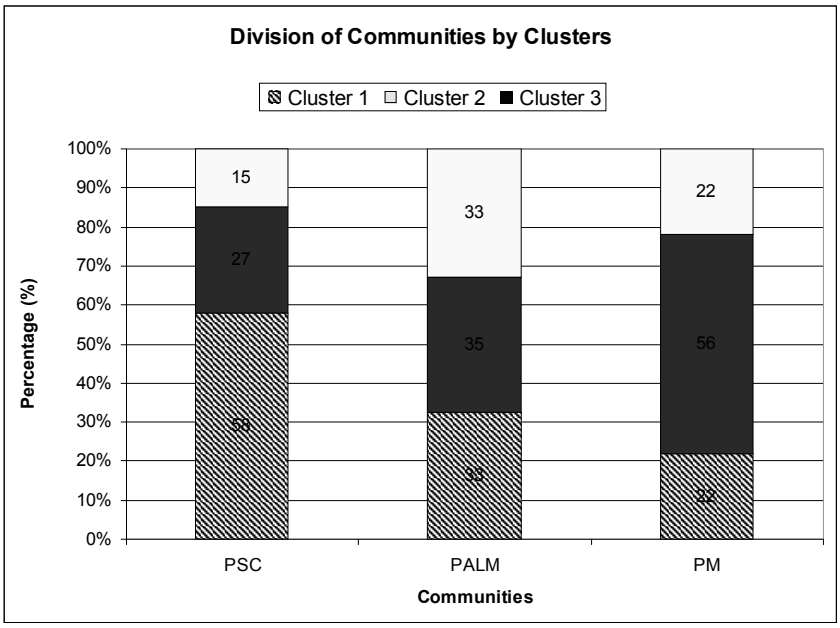
Table 5.10 Mean Component scores from the PCA for each cluster

Cluster	Component 1	Component 2	Component 3
Cluster 1	**-0.610**	**-0.478**	**-0.399**
Cluster 2	-0.239	**0.767**	**0.475**
Cluster 3	**1.541**	-0.160	0.103

5.2.2 Division of Clusters and Communities

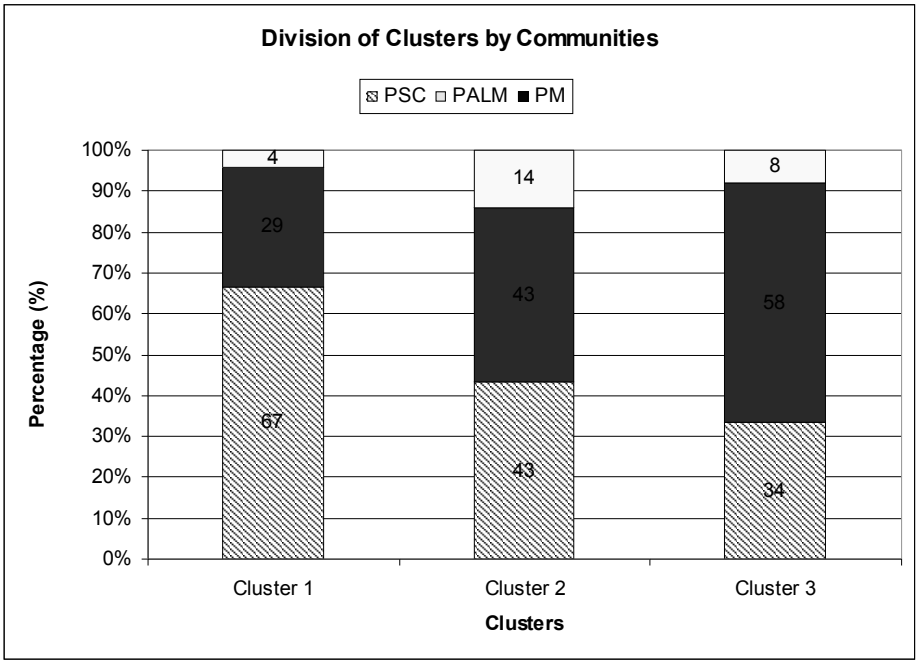
The proportion of communities in each cluster differs significantly (χ^2= 46.9, df=4, p=0.000; F=20.1, df=2, p=0.000). Most respondents from PSC are in Cluster 1, and most respondents in PM are in Cluster 2. Respondents in PALM are equitably distributed in all clusters (Figure 5.4).

Figure 5.4 Division of communities by clusters



In contrast, when examining the distributions by clusters, Cluster 1 is comprised primarily of respondents from PSC, Cluster 2 is comprised primarily of respondents from PALM and PM and Cluster 3 is comprised primarily of respondents from PALM (Tamhane's T2 mean difference between PSC and PALM=-0.435, p=0.000; Tamhane's T2 mean difference between PSC and PM=-0.430, p=0.001) (Figure 5.5).

Figure 5.5 Division of clusters by communities



5.2.3 Demographic Characteristics, Livelihood and Resources

Demographic Characteristics and Livelihood

Variables that vary significantly between the clusters include: age of the respondent, gender, years of schooling, whether the respondent have lived elsewhere, leadership of a cooperative or union, and if the household is involved in activities that benefit from tourism. The average age of the respondent is 40 in Cluster 1, 42 in Cluster 2 and 47 in Cluster 3 ($F=10.2$, df=2, 494, $p=0.000$). More respondents in Cluster 1 (51%) are women, followed by Cluster 2 (41%) and Cluster 3 (35%) ($F=4.5$, df=2, 494, $p=0.012$). Respondents in Cluster 3 have an average of 9 years of formal schooling as compared to 7 years in Cluster 1 and Cluster 2 ($F=5.2$, df-2, 494, $p=0.000$). A higher percentage of Cluster 1 (83%) and Cluster 3 (84%) have lived elsewhere, as compared to Cluster 2 (72%) ($F=4.2$, df=2, 494, $p=0.015$). Twenty-two percent (21.6%) of households in Cluster 2 have leaders in a cooperative or union, as compared to 17.7% percent in Cluster 2 and 6% in Cluster 1 ($\chi^2=23.3$, df=4, $p=0.000$). Thirty percent of households in Cluster 3 are involved in activities that benefit from tourism, as compared to 18% in Cluster 2 and 13% in Cluster 1 ($F=7.8$, df=2, 493, $p=0.000$). Variables that are not significantly different between clusters include the wealth index, and the household involvement in fishing or related activities (Appendix L).

Perceptions of Marine Resources

Perceptions of changes in the abundance of marine resources ($\chi^2=15.7$, df=6, $p=0.015$), and preferences for future economic activities differ significantly between the clusters ($\chi^2=24.8$, df=8, $p=0.002$) (Figure 5.6 and Figure 5.7). Preferences for who should establish new nature-based tourism ventures do not differ significantly between the clusters (Figure 5.8).

Figure 5.6 Perceptions on changes in the abundance of marine resources

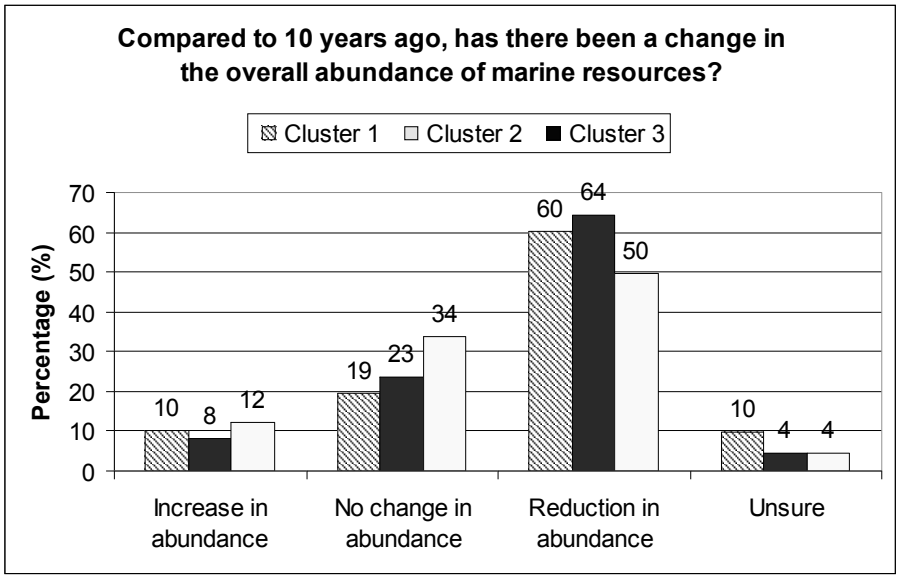


Figure 5.7 Preferences for future economic activities by cluster

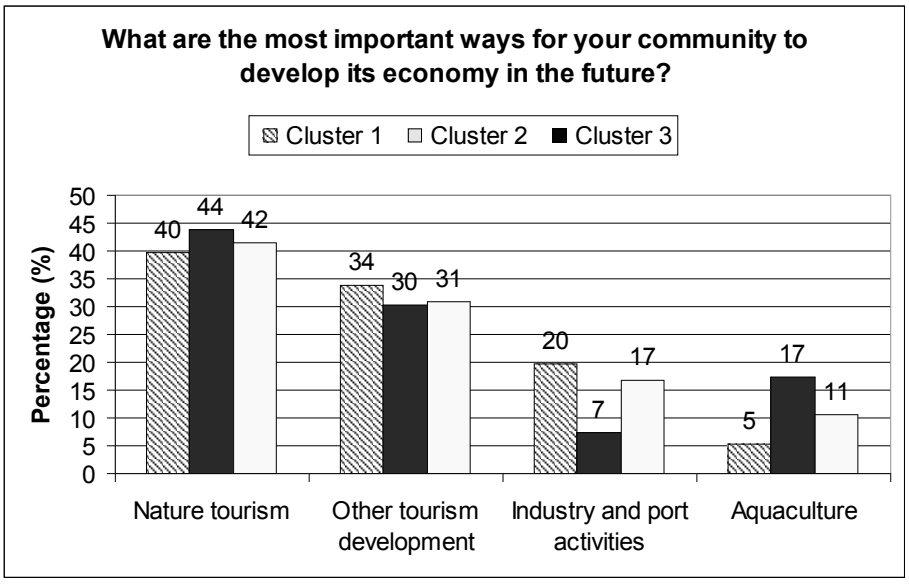
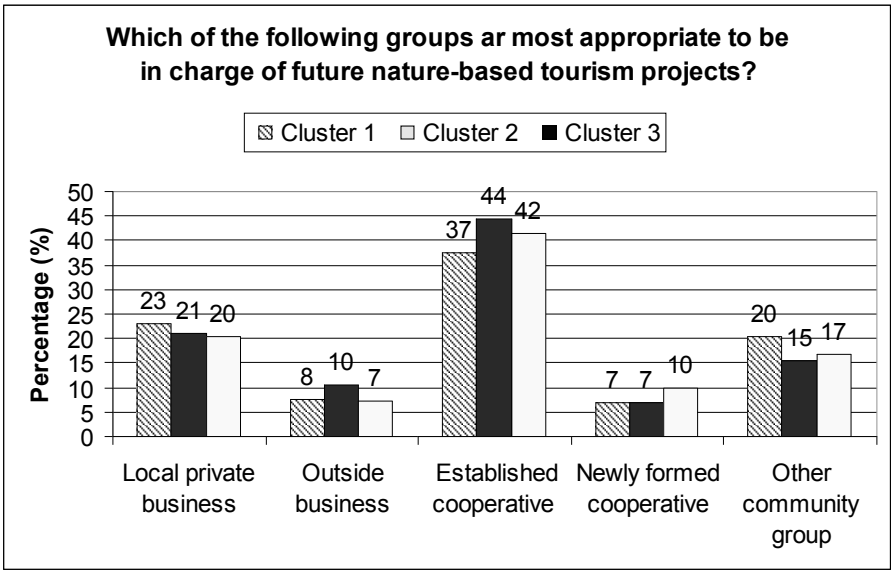


Figure 5.8 Perspectives on who should establish new nature-based tourism projects by cluster



5.2.4 Social Capital Characteristics

Relations of Trust

Most respondents in Cluster 3 trust most people within their communities, followed by Cluster 2 and Cluster 1; the values are 97%, 62% and 31% respectively (p=0.000) (Table 5.11). With respect to whether or not respondents trust most people outside of their communities, differences are greater. About 97% of Cluster 3 trust most people outside of their community as opposed to 4% in Cluster 2 and 2% in Cluster 1 (p=0.000).

Reciprocity and Exchanges

The importance of voluntary activities differs significantly between each of the clusters and is highest in Cluster 2, followed by Cluster 3 and Cluster 1 (p=0.000) (Tables 5.12 and 5.13). Similarly, the mean numbers of days that respondents visit their neighbours follows the same trend. Respondents visit their neighbours more often in Cluster 2, followed by Cluster 3 and Cluster 1 (p=0.000) (Table 5.12 and Table 5.13).

Significant differences exist between the clusters in how people would respond to a natural disaster affecting the entire community (p=0.000). Most respondents in Cluster 1 answered that each family would fix their own house. Most respondents in Cluster 3 answered that neighbours and friends would work together to repair each other's

houses. In Cluster 2, most respondents said that it is the responsibility of the government (Table 5.11).

Table 5.11 Social capital variables in each cluster

Variable		Cluster 1		Cluster 2		Cluster 3		Total		χ^2	Df	P
		%	n	%	n	%	n	%	n			
Trust in most people within the community	Yes	31	67	62	101	97	110	56	278	143.4	4	***0.000***
	No	66	145	35	56	0	0	41	201			
	Unsure	4	8	3	5	3	3	3	16			
Trust in most people outside of the community	Yes	2	4	4	7	97	109	24	120	422.9	4	***0.000***
	No	96	211	93	151	0	0	73	362			
	Unsure	2	5	3	4	4	4	3	13			
How respond to a natural disaster	Each family fixes their own house	41	91	22	35	26	29	31	155	34.5	10	***0.000***
	Neighbours and friends work together	14	31	25	41	28	32	21	104			
	Community works together	18	40	26	42	24	27	22	109			
	Government should do it	24	54	27	44	20	22	24	120			
How resolve conflicts	Call the police	67	148	56	91	66	74	63	313	11.4	8	0.181
	Resolve conflicts between people	19	43	27	43	22	25	22	111			
	Leave the conflict unresolved	10	22	15	24	7	8	11	54			
Speak out and express opinions	Yes	25	55	74	119	56	63	48	237	118.2	4	***0.000***
	Sometimes/ Unsure	27	59	21	34	27	30	25	123			
	No	49	108	6	9	18	20	28	137			

Common Rules and Norms

Preferences for the resolution of conflicts do not differ significantly between the clusters; however, the proportion of respondents who would express their opinions does (Table 5.11). Respondents in Cluster 2 (74%) and Cluster 3 (56%) are more likely to speak out if they were in disagreement with members of their community. About 25% of Cluster 1 would express their opinions (p=0.000) (Table 5.11).

The numbers of elections in which respondents voted, including federal, state and municipal elections, differs significantly between the clusters. Significantly more respondents in Cluster 2 voted than in the other clusters (p=0.000) (Table 5.12 and Table 5.13).

Table 5.12 Numerical Social capital variables in each cluster – Mean values

Variable	Cluster	Mean	SD	F	Df	P
Days volunteering (days/ 12 months)	Cluster 1	1.10	2.21	19.3	2, 494	***0.000***
	Cluster 2	5.50	11.24			
	Cluster 3	2.78	4.08			
	Total	2.92	7.11			
Days visiting neighbours (days/ 2 weeks)	Cluster 1	3.31	4.86	58.4	2, 494	***0.000***
	Cluster 2	9.25	5.66			
	Cluster 3	5.75	5.66			
	Total	5.80	5.90			
Vote in elections (federal, state and municipal)	Cluster 1	2.10	1.33	19.8	2, 494	***0.000***
	Cluster 2	2.81	0.70			
	Cluster 3	2.49	1.08			
	Total	2.42	1.14			
Times outside the municipality (trips/12 months)	Cluster 1	3.47	4.87	11.8	2, 494	***0.000***
	Cluster 2	8.12	13.95			
	Cluster 3	4.72	7.74			
	Total	5.27	9.56			
Household in cooperative	Cluster 1	0.13	0.33	36.8	2, 494	***0.000***
	Cluster 2	0.50	0.50			
	Cluster 3	0.35	0.48			
	Total	0.30	0.46			
Member of group or association	Cluster 1	0.11	0.32	2.6	2, 494	0.079
	Cluster 2	0.19	0.41			
	Cluster 3	0.11	0.31			
	Total	0.13	0.35			

Connectedness in Networks and Groups

The mean number of times that respondents travel outside of the municipality of Comondu differs significantly between the clusters (p=0.000). Respondents in Cluster 2 travelled outside of the municipality significantly more often than did the other clusters (Table 5.12 and 5.13). Clusters 2 and 3 have significantly higher proportions of households in cooperatives than Cluster 1 (p=0.000) (Table 5.12 and Table 5.13). The proportion of clusters that are members in other groups or associations does not differ significantly, nor do the types of groups (Table 5.14).

Table 5.13 Numerical social capital variables in each cluster - Post-hoc tests

Variable	Comparison	Mean difference	Post hoc test	SE	P
Days volunteering (days/ 12 months)	Cluster 1 and 2	-4.40	Tamhane's T2	0.90	***0.000***
	Cluster 2 and 3	2.72	Tamhane's T2	0.96	***0.015***
	Cluster 1 and 3	-1.68	Tamhane's T2	0.41	***0.000***
Days visiting neighbours (days/ 2 weeks)	Cluster 1 and 2	-5.94	Tamhane's T2	0.55	***0.000***
	Cluster 2 and 3	3.50	Tamhane's T2	0.69	***0.000***
	Cluster 1 and 3	-2.44	Tamhane's T2	0.63	***0.000***
Vote in elections (federal, state and municipal)	Cluster 1 and 2	-0.71	Tamhane's T2	0.11	***0.000***
	Cluster 2 and 3	0.33	Tamhane's T2	0.12	***0.015***
	Cluster 1 and 3	-0.38	Tamhane's T2	0.14	***0.015***
Times outside the municipality (trips/ 12 months)	Cluster 1 and 2	-4.7	Tamhane's T2	1.14	***0.000***
	Cluster 2 and 3	3.41	Tamhane's T2	1.32	***0.030***
	Cluster 1 and 3	-1.24	Tamhane's T2	0.80	0.321
Household in cooperative	Cluster 1 and 2	-0.37	Tamhane's T2	0.05	***0.000***
	Cluster 2 and 3	0.15	Tamhane's T2	0.06	***0.046***
	Cluster 1 and 3	-0.23	Tamhane's T2	0.05	***0.000***
Member of group or association	Cluster 1 and 2	-0.07	Tamhane's T2	0.04	0.167
	Cluster 2 and 3	0.08	Tamhane's T2	0.04	0.191
	Cluster 1 and 3	0.06	Tamhane's T2	0.04	0.997

Table 5.14 Type of groups and associations in each cluster

Group type	Cluster 1		Cluster 2		Cluster 3	
	% of households in associations	n	% of households in associations	n	% of households in associations	n
Neighbourhood association and social group	20	5	14	4	25	3
Women's group	4	1	0	0	0	0
Environmental group	0	0	10	3	0	0
Political group	16	4	10	3	0	0
School group	8	2	17	5	17	2
Health group	0	0	4	1	0	0
Sports group	12	3	17	5	8	1
Religious group	32	8	17	5	42	5
Group for the elderly	0	0	7	2	0	0
Other	8	2	4	1	8	1
Total	**100**	**25**	**100**	**29**	**100**	**12**

Summary of Bonding and Bridging Aspects of Social Capital

Overall, bonding variables have a medium rating in Cluster 2 and Cluster 3 and a low rating in Cluster 1. Bridging variables have a high rating in Cluster 3, a medium rating in Cluster 2 and a low rating in Cluster 1 (Table 5.15 and Appendix M).

Table 5.15 Summary of bonding and bridging aspects of social capital variables in each cluster

	Cluster 1	Cluster 2	Cluster 3
Bonding variables			
Trust in most people within the community	Low (31%)	Medium (62%)	High (97%)
Days volunteering (days/12 months)	Low (1.1)	Medium (5.5)	Low (2.8)
Days visiting neighbours (visits/2 weeks)	Low (3.3)	Medium (9.3)	Medium (5.8)
Speak out and express opinions	Low (25%)	High (74%)	Medium (56%)
Household in cooperative	Low (13%)	Medium (50%)	Medium (35%)
Member group or association	Low (11%)	Low (19%)	Low (11%)
Bridging variables			
Trust in most people outside of the community	Low (2%)	Low (4%)	High (97%)
Vote in elections	High (67%)	High (93%)	High (80%)
Times outside the municipality (times/12 months)	Low (3.5)	Medium (8.1)	Low (4.7)
Bonding	***Low*** *(6 low)*	***Medium*** *(1 low, 4 medium, 1 high)*	***Medium*** *(2 low, 3 medium, 1 high)*
Bridging	***Low*** *(2 low, 1 high)*	***Medium*** *(1 low, 1medium, 1 high)*	***High*** *(1 low, 2 high)*

5.2.5 Division of Clusters by Communities for Households in Tourism

Sixty-two percent of households involved in tourism in Cluster 3 are whale *pangueros*, as opposed to 52% of Cluster 2 and 36% of Cluster 1 (Table 5.16). More respondents in Cluster 1 work in restaurants and hotels as compared to the other clusters.

Table 5.16 Types of tourism activities in each cluster

Type of tourism activity	Cluster 1		Cluster 2		Cluster 3		Total	
	% of households in tourism	n	% of households in tourism	n	% of households in tourism	n	% of households in tourism	n
Whale panguero	36	10	52	15	62	21	51	46
Whale Operator	0	0	7	2	3	1	3	3
Whale secretary	0	0	3	1	0	0	1	1
Nature panguero	4	1	3	1	6	2	4	4
Restaurant	18	5	14	4	12	4	14	13
Hotel	18	5	0	0	0	0	6	5
Store	7	2	10	3	9	3	9	8
Transport	7	2	0	0	0	0	2	2
Other commercial activities	7	2	10	3	6	2	8	7
Other	11	3	7	2	6	2	8	7

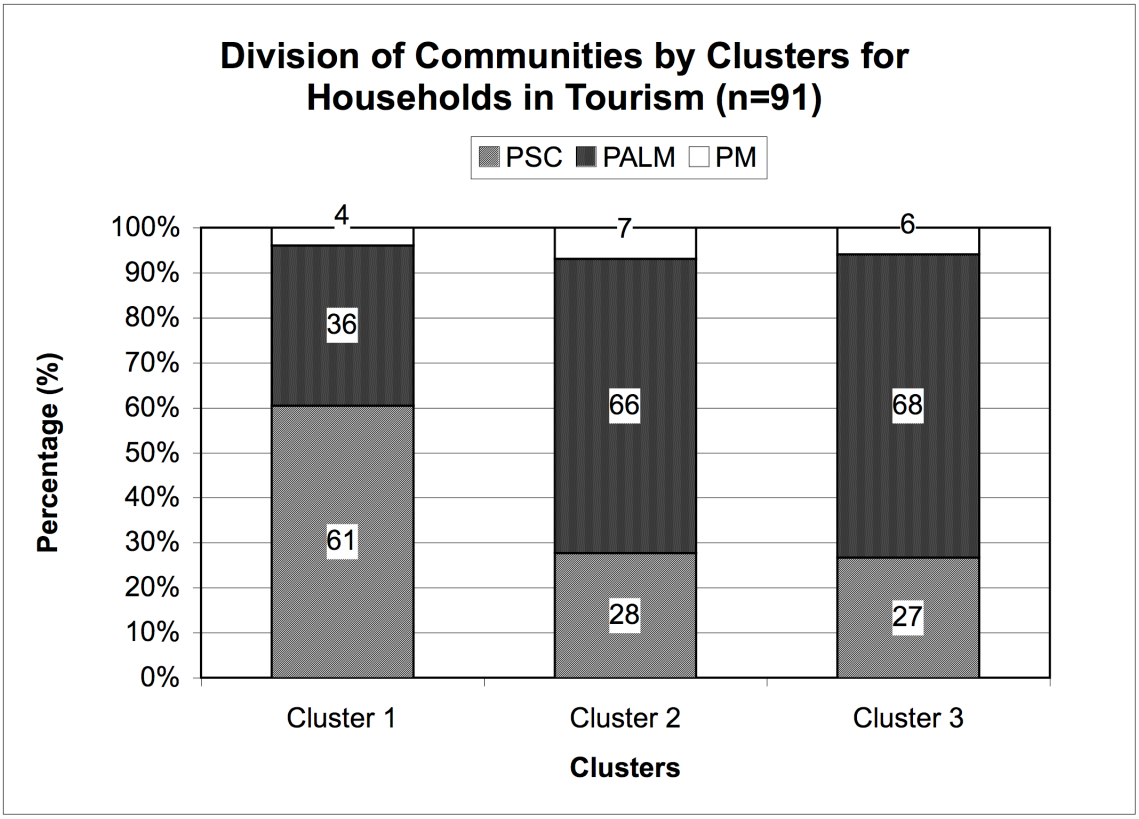
No significant differences exist between the clusters with respect to the proportion of income that households generate from tourism (n=91, χ^2=17.8, df=10, p=0.058) (Table 5.17).

Table 5.17 Percentage of total income generated from tourism activities by clusters (n=91)

% of income generated from tourism	Cluster 1		Cluster 2		Cluster 3		Total	
	% of households in tourism	n	% of households in tourism	n	% of households in tourism	n	% of households in tourism	n
None	4	1	7	2	6	2	6	5
1-10%	14	4	51	15	27	9	31	28
11-20%	14	4	10	3	21	7	15	14
21-50%	25	7	24	7	29	10	26	24
51% or more	43	12	7	2	18	6	22	20

When only including households that participate in activities that benefit from tourism, households in PSC are more likely to belong to Cluster 1 and households in PALM are more likely to belong to Cluster 3 and Cluster 2 (n=91, χ^2=9.5, df=4, p=0.050) (Figure 5.9).

Figure 5.9 Division of clusters by communities for households in tourism (n=91)



CHAPTER 6: DISCUSSION OF SOCIAL CAPITAL IN THE COMMUNITIES AND CLUSTERS

This chapter discusses the implications of social capital analyses for both the communities and the clusters. First, I review the Principal Component Analysis (PCA) and relate the factor loadings to the communities, recognizing that insights can be made with respect to different types of social capital. Secondly, aspects of bridging and bonding social capital and their relationship with the various factors are discussed. Significantly different social capital profiles contrast the communities, relating to a consideration of the characteristics of the user communities within the analytical framework of contextual factors. Distinct social capital profiles also emerge between the clusters. The loadings of the clusters on the components generated from the PCA are highlighted, paralleling the communities and the clusters. I look at the distribution of social capital within the clusters and the communities. I validate that different types of social capital exist, and confirm it is a multifaceted concept. I consider the implications of economic and cultural factors in social capital analyses and examine the relationship between social capital and leadership.

6.1 Principal Component Analysis (PCA)

The emergence of three components in the PCA acknowledges the multidimensional nature of social capital; however, the analysis only explains 52% of the total variance of the model. Each component represents part of the definition of social capital: relations of trust, reciprocity and exchanges, common rules and norms, and connectedness in network and groups. Different types of social capital are exhibited in the groups and components. These types do not necessarily represent more or less amounts of social capital, but varying combinations of it.

The factor loading on the first component of the PCA indicates the importance of ‘trust’ within and outside communities and explains most of the total variance (22%). Although Puerto Adolfo Lopez Mateos (PALM) loads positively onto this component (0.357), Puerto San Carlos (PSC) is negatively correlated (-0.288). These distributions demonstrate a trend towards higher trust in PALM and lower trust in PSC.

The factor loading on the second component indicates the importance of the 'community' aspect; it includes proxies for social capital such as volunteering, civic participation, expressing one's opinions, and visiting neighbours. It explains 16% of the total variance and represents parts of the social capital concept related to reciprocity and exchanges and common rules and norms. Puerto Magdalena (PM) loads heavily onto this component (0.673), suggesting a greater focus on 'community' aspects within the community. PSC has a negative value for this component (-0.227), indicating less emphasis on 'community' aspects.

The third component relates to aspects that are more important in developing 'network' connections, such as the frequency of travelling outside of the municipality and household involvement in cooperatives. It explains 14% of the total variance and relates to connectedness in networks and groups, which is the last part of the definition of social capital. No communities load strongly onto the third component; PM has the highest value of 0.300.

6.2 Communities and Social Capital

6.2.1 Bonding and Bridging Social Capital

Aspects of bridging and bonding social capital are intertwined in the PCA, since they load onto the same components. Consequently, it is difficult to separate the relative importance and nature of each of these aspects. As such, the PCA provides evidence that various types of bonding and bridging, as opposed to a one-dimensional concept, can conceptualize social capital. This supports empirical evidence from Sabatini (2005), who found varying regional endowments of social capital. It also validates evidence from De Silva et al. (2007), who noted combinations of both bonding and bridging social capital in their research. Bridging and bonding variables loaded onto all components: 'trust' (Component 1), 'community' aspects (Component 2), and 'network' activities (Component 3).

6.2.2 Characteristics of the User Communities

Considering the analytical framework of contextual factors, it is important to recognize the characteristics of the user community which reflect the importance of communities and individuals in directly or indirectly influencing the institutional arrangements of common-pool resources (Edwards and Steins 1999). A social capital perspective,

considering both bridging and bonding, contributes to an understanding of the values of social relations (Bebbington 2000 cited in Perreault 2003).

Social Capital in PSC

The types and combinations of bonding and bridging social capital are illustrated in descriptions of the communities, which differ significantly with respect to social capital variables. That various types of social capital differ between the communities relates to the first research objective: assessing how social and institutional conditions vary across key communities in Bahia Magdalena. Members of PSC tend to work more independently and to organize in smaller groups such as the family unit. Lower bonding and medium bridging social capital characterize PSC. PSC has a proliferation of family-based cooperatives and a vast number of cooperatives in general. Current forms of social capital reside primarily in kinship networks. Familism possibly reduces transparency and contributes to a lack of trust among strangers in such networks; familial relations tend to have high bonding social capital and lower bridging social capital. Possible political ramifications of familism can be corruption (Fukuyama 2004:38). Other factors are at play as well. These include the transient nature of the community, the diverse backgrounds of the residents and the size of the community. The combination of social capital in PSC may be related to less interaction among residents and may be attributed partly to the larger size of the community, as compared to PALM and PM (PSC=3990, PALM=2309, PM=259).

Social Capital in PALM

Most respondents from PALM are typified by medium bridging and bonding social capital. More community bonding and bridging is present in PALM, and it appears to be a more organized and tranquil community than PSC. A respondent stated that they are more of an inward-looking community and that residents' work well together. Many people are members in the new sea turtle cooperative illustrating involvement in the community. The predominant type of organizations in the community may reflect its social fabric; the number of 'helpful' community organizations is higher in PALM as opposed to PSC. More respondents in PALM are in neighbourhood associations/social groups (PALM=35%, PSC=9%), and environmental groups (PALM=13%, PSC=0%) than

in PSC. In PSC, people are more likely to be involved in religious groups (PSC=34%, PALM=17%).

Social Capital in PM

PM, a small and isolated community, has high bonding and low bridging social capital. The only organized group in the community is the one fishing cooperative, unlike the other communities, which have more associations and cooperatives. However, it appears that residents of PM organize activities informally (e.g. sports, fiesta). Members of the community are more inwardly focused. Some communities with high bonding, particularly island cultures like PM, may not be as open to others. As such, bonding can be either positive or negative depending on how tight or loose the connections are (Dale 2005:21).

Excessive bonding social capital can be a negative externality and a barrier for economic growth at the macro-level. It can generate generalized distrust and a lack of cooperation between groups (Svendsen and Svendsen 2004:11). These factors may be at play in PM, given that respondents are concerned that aspects of the community are not working well; an illustrative example is the organizational problems of the fishing cooperative. Over time, division within the cooperative has deepened and management challenges have become prominent. However, these challenges also stem from other issues related to accessing resources and regulating poaching. Cooperative are often created under a condition of high bonding, but face potential challenges like corruption when they are unable to expand appropriately, thereby not meeting the needs of more ambitious members.

The economic returns of bonding social capital will eventually dissipate, since they will increase in a community group until members no longer benefit. Bonding social capital may bring people together creating groups, but the responsibilities required of the members may become obstacles for accessing other opportunities. An example is micro-credit arrangements, where some members of group-based microcredit programs may find that the obligations and commitments of their colleagues become an obstacle for future advancement, especially for the more ambitious associates (Woolcock and Narayan 2006). It is necessary for groups to divest themselves of immediate community ties, diversifying and expanding through ‘bridging’ social capital (Woolcock and Narayan 2006:39). Similarly, negative feelings about successful entrepreneurs in PSC may reflect a related situation. The entrepreneurs may be divesting of their bonding obligations and

developing bridging ties as their enterprise develops, and others may resent their success.

Economic development entails a combination of both bonding and bridging social capital (Woolcock and Narayan 2006). Although strong bonding ties may be important in improving well-being, bridging ties may be more useful for economic development by connecting people and providing access to information and opportunities that would not be available in bonding relationships (Sabatini 2005). For this reason, Sabatini (2005) defines low bonding and high bridging social capital as 'development social capital'. Individuals can draw on benefits of close community membership (bonding social capital), and can also ensure that they acquire skills and resources to participate in more extensive networks that transcend the community (bridging social capital), to progress in mainstream economic life (Woolcock and Narayan 2006). The types of social capital in PALM and PSC are probably most similar to this; PALM has medium bonding and medium bridging social capital, and PSC has low bonding and medium bridging social capital. As such, PALM and PSC have combinations of social capital, which are better suited for the future expansion of economic activities than in PM.

6.3 Clusters and Social Capital

6.3.1 Dispersion within Clusters and Communities

Compared to the variation of responses within communities, the analysis shows that less variation is present within clusters for most variables (Table 6.1). This is as expected, as the dispersion among clusters will always be lower considering that they are generated from a cluster analysis of the components from the PCA and are not a spatial grouping like the communities. Less dispersion exists within the Sum of Squares of the clusters than that of the communities for eight variables. Although more dispersion exists within the clusters than the communities for one variable, the dispersion between the clusters and communities for this variable is small.

The cluster analysis validates the existence of distinct social capital profiles between the communities, and the idea that different types of social capital exist. Also, more dispersion exists within the communities than the clusters because communities are heterogeneous units of analysis (Blackstock 2005, Agrawal 1999). Communities are generated by varieties of people with distinct social capital characteristics.

Table 6.1 Sum of squares of social capital variables within communities and clusters (n=497)

Social capital variable	Sum of squares within communities	Sum of squares within clusters
Trust in most people within the community	108.71	86.94
Trust in most people outside the community	88.72	10.63
Days volunteering	24012.95	23265.79
Days visiting neighbours	16203.82	13960.74
Speak out and express opinions	335.98	270.29
Vote in elections	639.38	597.29
Times outside the municipality	44752.71	43263.81
Household in Cooperative	101.28	90.81
Member of group or association	58.67	59.36

6.3.2 Cluster Profiles

Three groups emerge from the cluster analysis of social capital variables. The cluster analysis validates the communities (since they are highly correlated), and demonstrates that different types of social capital exist. Unlike the communities, the clusters have stronger loadings on each of the components. However, the relationships parallel those of the communities. Component 1 loads heavily onto Cluster 3 (1.541), like in PALM. Component 2 loads heavily onto Cluster 2 (0.767), like in PM. It is also negatively correlated to Cluster 1
(-0.478). Component 3 loads on to Cluster 2 (0.475), like in PM, and loads negatively on Cluster 1 (-0.399).

Each cluster has distinct social capital characteristics: *Individualists* (Cluster 1), *Community Oriented* (Cluster 2) and *Organizers* (Cluster 3). *Individualists* (C1) (n=222) are characterized by low trust in most people inside and outside of the community, low levels of volunteerism, low numbers of visits among neighbours, and low willingness to express one's opinions in the community. Average respondents have high civic participation as represented by the number of elections that respondents voted in; they travel minimally outside of the municipality and have low membership in cooperatives. Low levels of bonding and bridging social capital typify the cluster.

The *Community Oriented* (C2) (n=162) cluster is characterized by medium trust in most people within the community and low trust in most people outside of the community. They have medium values for community processes, such as the average numbers of days volunteering and visits with neighbours, and a higher proportion of

respondents who are willing to express their opinions in the community. Average respondents in the cluster have high levels of civic participation, and travel moderately outside of the municipality. The cluster has a moderate number of households in cooperatives. Medium bonding and low bridging social capital typify the cluster.

The *Organizers* (C3) (n=113) cluster is characterized by high trust in most people within and outside of the community. *Organizers* (C3) have moderate values for community aspects, such as low numbers of days volunteering, and moderate numbers of visits with their neighbours. They are somewhat willing to express their opinions in the community. Respondents travel infrequently outside of the municipality and have medium household membership in cooperatives. Medium bonding and bridging typify the cluster.

6.3.3 Interaction of Communities and Clusters

The degree to which each community is represented in each cluster differs significantly and reinforces the hypothesis that institutional conditions vary between the communities. The *Individualists* (C1) cluster is mostly comprised of residents from PSC (67%), whereas the *Organizers* (C3) cluster is mainly comprised of households from PALM (58%). The *Community Oriented* (C2) cluster is comprised evenly of PSC (43%) and PALM (43%). When looking at the composition of the communities, *Individualists* (C1) (58%) comprise most of PSC. PALM is a combination of all three clusters: 35% of *Community Oriented* (C2) and 33% of both Individualists (C1) and *Organizers* (C3). PM consists primarily of *Community Oriented* (C2) (56%); the remainder are in *Individualists* (C1) (22%) and *Organizers* (C3) (22%).

Low bonding and low bridging social capital characterizes the *Individualists* (C1) cluster, while low bonding and medium bridging social capital characterize PSC. *Organizers* (C3) are typified by medium bonding and high bridging social capital, which is fairly similar to PALM (medium bridging and medium bonding social capital). A significant proportion of PALM are also in the *Community Oriented* (C2) cluster, where both have medium bonding and bridging social capital, reinforcing the characterization of PALM having moderate bonding social capital, and medium to high bridging social capital. Lastly, PM is primarily comprised of *Community Oriented* (C2) individuals; although the second cluster has medium bonding and bridging, PM has higher bonding and lower bridging social capital than the cluster (Table 6.2). However, PM (42 respondents) is much smaller than *Community Oriented* (C2) (162 respondents).

Table 6.2 Comparison of bonding and bridging social capital in communities and clusters

Communities	Bonding	Bridging	Clusters	Bonding	Bridging
PSC	Low	Medium	C1 Individualists	Low	Low
PALM	Medium	Medium	C2 Community Oriented	Medium	Medium
PM	High	Low	C3 Organizers	Medium	High

6.4 Economic and Cultural Context

Quantitative studies in Latin America demonstrate that the distribution of social capital is uneven and dependent on education, income, cultural context and ethnicity (Atria 2003:587 cited in Corrochano 2005, De Silva et al. 2007). Considerations of these factors are important to avoid analyzing social capital as an asocial and ahistorical concept (Fine 2002). Understandings of the economic and cultural context also contribute to an understanding of the characteristics of the user communities. Differences between certain occupations (e.g. who is involved in tourism) are noted between both clusters and communities. Wealth and income levels vary between the communities, but not between the clusters. Education (*Years of formal schooling*) does vary between clusters. However, minimal differences could also be attributed to the small regional scope of the study; a larger-scale study may have more variation (e.g. cross-country, rural versus urban) (De Silva et al. 2007).

Whether or not respondents had lived elsewhere differed significantly between the communities and the clusters. Similarly, peoples' origin and the fact that many people are migrants to the region emerged as important themes from the qualitative research in influencing aspects of social capital within the communities. Inhabitants of the region come from various parts of Mexico; over 70% of the respondents have lived elsewhere besides their current community. Furthermore, 37% of PSC, 43% of PALM and 17% of PM have lived outside of the state of BCS. When considering the clusters, 40% of *Individualists* (C1), 39% of *Organizers* (C3) and 33% of *Community Oriented* (C2) have lived outside of BCS.

Animosity toward newcomers and transients from other regions are mostly related to competition in accessing resources, like fishing permits and government funding. Negative feelings exist towards new inhabitants 'taking jobs' and are associated with the realities of living in a frontier region where many people want to extract natural resources (e.g. fisheries and tourism). The population is increasing and lacks institutionalized practices to manage resources, aside from cooperatives and permit-holders for fisheries.

This partly stems from a dramatic increase in the population without time to evolve traditional community-based management systems, or other institutions except those instituted by the government (such as cooperatives). Fishing communities have little autonomy to make resource decisions, and federal officials in La Paz allocate permits (Appendix A).

Younger and transient communities, like the frontier communities in Bahia Magdalena, may have less trust in one another because they may have few established community institutions. In contrast, the Seri, a self-governed community of small-scale fishers in the Gulf of California, Mexico, have more established institutions and a shared cultural background and history (Basurto 2005). However, they also face challenges in monitoring the rights to their fishing grounds as some government officials' profit from granting access to outsiders (Basurto 2005).

Governments can affect communities' social capital, since the structures of communities are largely based on their relationship with the state (Woolcock and Narayan 2006). Government policies have encouraged the emergence of cooperatives and the development of small-scale fisheries over the last 20 years. However, other contextual factors need to be considered in influencing the types of social capital that emerge. Government policies have also been affected by cultural and natural resources, like the presence of gray whales. Different combinations of social capital, such as bonding and bridging, contribute to the range of development outcomes and change over time (Woolcock and Narayan 2006). Social components can be influential in the success of development outcomes, but cannot be viewed in isolation, as they are only part of the factors influencing development.

Gender and Social Capital

Gender was significantly different between the clusters. The cluster that has more bridging and bonding social capital has the lowest percentage of women (*Organizers* (C3), 35% women). The group that has the lowest bonding and bridging social capital has the highest percentage of women (*Individualists* (C1), 51% women). *Community Oriented* (C2) has 41% women. Women also have significantly less wealth overall than men. Gender differences between the clusters could indicate a trend of less social capital among women reflecting the cultural context; the communities are primarily dependent on fishing, which is a male-dominated activity, and the cooperatives are tied to fishing and tourism. Thus, households with fewer men may have less members of the

household involved in cooperatives. Also, women tend to travel less often then men. Possibly women take fewer trips outside of the region, since travel is often related to business activities, and men dominate the primary economy in the region (e.g. fishing) (Table 6.3).

Table 6.3 Significant differences between women and men respondents

Variable	Gender	Mean	SD	F	Df	P
Times outside the municipality (trips/12 months)	Women	3.7	5.7	10.4	1, 495	***0.001***
	Men	6.5	11.6			
	Total	5.3	9.6			
Household in cooperative	Women	0.20	0.40	18.9	1, 495	***0.000***
	Men	0.28	0.49			
	Total	0.30	0.46			
Wealth Index	Women	0.64	0.27	5.9	1, 487	***0.016***
	Men	0.70	0.25			
	Total	0.67	0.26			

The results from this study are unlike other social capital studies, since women tend to be more involved in voluntary groups, which contribute to the creation of social networks (Johnston and Percy-Smith 2003). However, it does relate to a consideration of the various types of social capital within communities, which validates the gender dimension (Lowndes 2000 cited in Johnston and Percy-Smith 2003).

6.5 Social Capital and Leadership

The relationship between leadership of a cooperative or union and social capital is significant between clusters; however, it relates more to the type of social capital (bridging or bonding). The *Organizers* (C3) (14%) and *Community Oriented* (C2) (14%) clusters have a higher proportion of leaders of a cooperative or union by household than *Individualists* (C1) (4%) (χ^2=16.1, df=2, p=0.000). The clusters with a higher proportion of leaders per household also both have more bonding social capital than *Individualists* (C1). Leadership is separate from a social capital analysis when assessing the prospects for community-based management, since leadership can confound social capital (Wood et al. 2008). Leadership of a group or association differs significantly between the clusters, but not between the communities. More respondents from PSC are leaders of a group as compared to the other communities; 6.5% of respondents from PSC are leaders of a group, as opposed to 1.9% in PALM and 0% in PM. The relationship between wealth and leadership is also significant, possibly indicating that

households with more leaders tend to have greater wealth, and which could be attributed to the presence of higher bridging social capital.

6.6 Summary of the Implications of Social Capital

The way in which various aspects of social capital loaded onto the Principal Components addresses the multidimensional nature of social capital, with 'trust' being the factor that explains the most variance. Different types of social capital are illustrated by the various combinations of bonding and bridging in each of the communities and the clusters. An analysis of the communities with respect to social capital incorporates the characteristics for the user communities, which is a component of the analytical framework for common-pool resources. The clusters replicate the communities but are more homogeneous. Lastly, social capital cannot be treated as an ahistorical concept, since context, including cultural and economic factors, influence the nature of social capital.

CHAPTER 7: IMPLICATIONS AND POLICY RECOMMENDATIONS FOR TOURISM

This chapter looks at the implications and policy recommendations for nature-based tourism in Bahia Magdalena, considering an institutional analysis of social capital. Few households' benefit from tourism, and it remains a minor income generating activity in each of the communities, especially PM. Although social capital might be important in affecting the formation and organization of tourism and the extent to which opportunities are seized, regional factors might be more influential in determining the presence or absence of nature-based tourism. In the first section, I address the contribution of tourism to each of the communities, followed by the clusters. Comparisons between how tourism currently operates and community-based management are made, along with preferences for who should establish tourism. Communities' preferences for future economic activities vary more by communities than clusters. This supports the importance of location in determining the success of nature-based tourism ventures. Recommendations necessary for nature-based tourism development to thrive in the region are proposed. Lastly, the limitations of the research are addressed.

7.1 Implications

7.1.1 Economic Benefits of Tourism

Tourism is the primary income generating activity for a few households in the region. It is slightly more important as a secondary livelihood activity for some others. As such, it is valuable to consider the proportion of households that are involved in tourism, defined as those households that participate in 'activities that may benefit from tourism' *(Household involved in tourism)*, and include businesses that provide services for tourists. Eighteen percent of households are involved in tourism, and these proportions differ significantly between the communities: 26% in Puerto Adolfo Lopez Mateos (PALM), 13% in Puerto San Carlos (PSC) and 12% in Puerto Magdalena (PM) (χ^2=13.5, df=2, p=0.001)[11].

Based on estimates of gross and mean income, PSC tends to generate higher mean household incomes from activities that benefit from tourism, followed closely by PALM;

[11]Some respondents noted that they were involved in tourism but were not generating any income from the activities.

80 thousand pesos/12 months (approximately $8,000 CAD) in PSC and 76 thousand pesos/12 months (approximately $7,600 CAD) in PALM. In contrast, PALM's gross income for the entire community is slightly higher than PSC's; it is approximately 11 million pesos/12 months ($1.1 million CAD) as opposed to approximately 10 million pesos/12 months ($1 million CAD). Values for PM are much lower than the other communities, with an estimated mean household income from tourism and related activities of 2,800 pesos/12 months ($280 CAD) and a gross community-wide income from tourism of approximately 23,000 pesos/12 months ($2,300 CAD).[12]

In a comparison of the clusters, respondents in the *Organizers* (C3) cluster (30% of households) are more likely to benefit from tourism than those in *Community Oriented* (C2) (18% of households) and *Individualists* (C1) (13% of households). Although fewer *Individualists* (C1) are involved in tourism, they tend to generate a higher proportion of their income from tourism than the other clusters: 43% of *Individualists* (C1) generate, on average, more than 51% of their income from tourism, as opposed to 7% in *Community Oriented* (C2) and 18% in *Organizers* (C3). Activities that are operated cooperatively tend to result in lower incomes since more people share the benefits, and those in the *Community Oriented* (C2) and *Organizers* (C3) clusters are more likely to be involved in community-managed or cooperative activities.

7.1.2 Households who benefit from Tourism Activities

Social capital is important in affecting the formation and organization of tourism and the extent to which opportunities are seized. Overall, households who benefit from tourism tend to have more bridging and bonding social capital. They are more trusting of people within and outside of their community. They tend to vote in more elections, travel outside the region more often, and are more likely to have a member of their household in a cooperative. Households who benefit from tourism are less likely to have lived elsewhere, and tend to have higher mean incomes and a higher wealth index. This may signify that households involved in tourism have more connections within and between communities, as a result of residing in the community for a longer period of time.

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[12] 10 pesos equalled approximately $1 Canadian (CAD). 1 Mexican Peso=0.105 CAD, and $1 CAD =9.549 Mexican Peso on April 1, 2007. <www.oanda.com>.

Households involved in tourism also tend to have more wealth, possibly since they are dependent on more economic activities than just fisheries.

7.1.3 User Communities and the Organization of Nature-based Tourism

Insights regarding the characteristics of user communities can contribute to a greater understanding of how natural resources are accessed and managed. PALM and PSC benefit more from tourism than PM, and they also both have higher bridging social capital. However, tourism is less influential in PM since it is isolated by its island location. Jones (2005) notes how people may be more likely to be involved in tourism when they rely on bridging social capital, using their connections and networks, since links with external organizations are important for the development of communities. Concepts of bridging and bonding social capital assist in understanding the processes of social change that contribute to the organization of community-based tourism ventures in Gambia (Jones 2005). The high social capital in one community led to the successful emergence of its community-based tourism industry (Jones 2005). Jones's research (2005) differs from the research presented here in that it does not use a quantitative analysis, and her study has a smaller scope.

The capacity to move from bonding to bridging social capital, along with openness to new ideas, people, and ways of doing things, is critical to accessing resources and may apply to tourism development (Dale 2005:21). Developing bridging social capital beyond the community is necessary to avoid a 'localist' strategy, which is necessary for tourism development in the long-term (Johannesson et al 2003). Although bonding is important for organizing and managing activities more cooperatively, initiatives such as local tourism services will not go forward without bridging social capital. The success of many community-organized activities may be dependent on bonding social capital, such as community forestry or fishing, since dense bonding social capital sustains collective action (Jones 2005). However, bridging social capital is necessary for successful community-managed nature-based tourism, since connections with other businesses increase tourism demand in other communities.

7.1.4 Patterns of interactions for Nature-based tourism

Differences in how tourism is operated and organized between PSC and PALM can potentially be connected to an analysis of the variation of social capital in each of the

communities. Similar to the communities, households involved in tourism vary between the clusters, reflecting different social capital characteristics. The manner that tourism is operated in PALM might influence the type of organization formed. It is predominantly organized as a large cooperative and union, reflecting certain operational arrangements. However, the success of the cooperative and union can also be related to the supporting institutional structures and policy and collective choice arrangements, which have enabled whale-watching to develop (e.g. permits and regulations). These institutional arrangements contribute to the emergence of distinct action strategies and patterns of interaction among resource users in each of the communities. Given particular situational variables, individuals make choices from possible strategies, where patterns of interaction emerge from such choices (Edwards and Steins 1999, Edwards 2004). These patterns of interaction are reflected by the different tourism organizations in both PALM and PSC.

Tourism Operations in PALM and PSC

Tourism operators in PALM state that they work more cooperatively than in PSC; some respondents claim that the latter has more disagreements among operators. The whale-watching operators in PSC possibly have less ability to collectively organize tourism operations as compared to PALM, reflecting different institutional conditions in each of the communities. The management of the wharfs illustrates this; the operators in PALM claim that they are more organized and that they would not allow an external company to take control of the wharf. However, the wharf in PALM was built several years ago, allowing time for institutional arrangements to develop among tourism operators. Conversely, the wharf in PSC was inaugurated in 2007. Perhaps the conflicts in PSC and unhappiness with the status quo will incite organizing and greater cooperation among tourism operators in the community. A possible benefit of the external transport company that manages the wharf in PSC is its capacity to promote whale-watching tourism at the national level.

Community-based Management

The main tourism cooperative in PALM, and to some degree the tourism unions in both PSC and PALM, replicate community-based management in many ways. It involves community members; it has some level of management and conservation of natural

resources; it encourages socioeconomic development (e.g. Mother's Day events) (Kellert et al. 2000). However it is a limited type of community-based management, since the permits are allocated by a higher governing authority - the federal government's environmental department (SEMARNAP). The permit system provides an institutional framework by which the cooperatives can build their credibility in the region and maintain control over resources. It also enables the government to control resources although they have minimal interaction with operators after the permits are obtained. The formalization of enabling structures, such as community-based organizations or cooperatives, is an important aspect of building social capital when they function cooperatively (Barraket 2005:78).

Social capital may contribute to the formation of tourism development, or it may be a result of it. Those who benefit from tourism in PALM are more likely involved in organized, community-based forms of management where medium bonding and bridging social capital exist. Also, high levels of bonding social capital may have been conducive to the formation of the sea turtle cooperative and restaurant cooperative in PALM, as explored in another study of community-based tourism (Jones 2005). However, bridging capital, through external help by an environmental non-governmental organization, may have also been a factor in facilitating the formation of the sea turtle cooperative. Tourism development can stimulate the formation of social capital and strengthen sustainable management of natural resources, but it can also erode social capital if conflicts over tourism undermine social and reciprocal relations (Ashley et al. 2000; Jones 2005). Jones (2005) ascertains that social capital might contribute to the organization of a vision and individual commitment to group work (like an eco-camp). However, those who take over power in the future might not share the same vision of village solidarity and collective action as those who initiated the activities, thereby risking the erosion of social capital.

This analysis emphasizes challenges with respect to community-based management. This organisational model provides an opportunity for community members to mobilize and subsist; however, as the power relationships change, bridging social capital may decrease the efficacy of the model. Perhaps it is more appropriate to use community-based management as a transition approach in development, as opposed to considering it as a final outcome, especially for tourism. The challenge remains to identify the conditions under which positive aspects of bonding social capital in poor, resource-based communities can be harnessed and their integrity retained, while gaining access

to formal institutions and more diverse stocks of bridging social capital (Woolcock and Narayan 2006:40).

The success of the cooperatives partly depends on the strength of the institutions and social capital in the long-term. Aspects of cooperative management, such as regular meetings, contribute to positive social capital. For example, the relationship between the perception of how well cooperatives function and the number of meetings that are held is significant, indicating that they operate better when they have more meetings (Appendix N). Repetitive interactions between the associates may contribute to building relationships and reducing transaction costs, thereby strengthening the institution and building social capital (Pretty and Smith 2004). Nevertheless, the erosion of fishing cooperatives, partly attributed to the abuses of the current small-scale fishing system by local cooperative leaders and government officials undermines the residents' faith in a formal mechanism that can lead to sustainable management of marine resources (Young, 1999, Appendix A).

Tourism Operations in PSC

In contrast to the larger tourism cooperative in PALM, there appears to be a family-based strategy in PSC; this is exemplified by the importance of small, local enterprises. Although there is one tourism union, it also operates more independently than the cooperative in that the union members' finances are kept separate. Moreover, it seems that entrepreneurs are instigators of tourism development in PSC. Small business owners initiate activities that are replicated throughout the community (e.g. restaurants, tourism operations). The numbers of fishing cooperatives are increasing, but appear to be comprised predominantly of families rather than various individuals in the community. This may originate partly from distrust within the community, since residents tend to prioritize their own family unit and familism is pervasive. Nevertheless, no significant relationships exist between the composition of cooperatives and communities (61% of households in cooperatives in PSC are mainly comprised of family members and relatives, as compared to 50% in PM and 48% in PALM) (Appendix O).

New Tourism Ventures

Preferences for how tourism is organized vary between the communities, but not between clusters. This is illustrated by significantly different perceptions between

communities with respect to who should establish new nature-based tourism ventures. Established cooperatives are the preferred model of development for instituting tourism in all communities although the proportion is higher in PM (76%) than in the other communities (40% for PSC and 34% for PALM). Cooperatives are also the status quo with respect to how fisheries are managed (along with *permissionarios*) and replicate a model most similar to some form of community-based management. Perhaps respondents choose cooperatives because it is a system with which they are familiar. It indicates preference for some type of organized management, and for one where more people are likely to benefit.

Preference for local businesses to establish potential nature tourism ventures are also important, more so in PSC and PALM, which exhibit higher bridging social capital than in PM (25% in PSC, 25% in PALM and 2% in PM). Local businesses instigate initiatives like tourism operations and other complementary activities, reinforcing the importance of local entrepreneurs.

7.1.5 Characteristics of the Resource and Future Tourism Development

Physical and technological characteristics of the natural resource system and of the actual location itself influence future tourism development as well as the user communities and institutional arrangements (Edwards 2004, Edwards and Steins 1999). The Bay is suitable for whale-watching due to the annual migration of gray whales every winter, but is dependent on the continued presence and conservation of the whales. Similarly, additional forms of nature-based tourism are dependent on the continued presence of other species and natural hotspots, like sea turtles and mangroves. This also stresses the relative importance of the communities in Bahia Magdalena as locations for nature-based tourism compared to each other and compared to other regions in the state. Whale-watching may draw visitors from other regions (e.g. Los Cabos, Loreto); however, they might not be attracted to the region for other nature-based tourism activates that they could find elsewhere.

Although social capital tends to affect the way in which nature-based tourism is formed and organized, location might be more important in determining its presence or absence and the preference for it, as opposed to other economic activities. Although similarities exist across the region, variations in geography between the communities may influence social capital and other management-related perceptions. As such, an understanding of the natural context and specificity of place is important in a discussion

of social capital. Natural resource endowments and the abundance and quality of natural capital vary, and relate to opportunities for livelihood activities (Porter and Lyon 2006:169, Flora and Flora 2004:529, Krishna and Shrader 1999, Perreault 2003). As Hall and Boyd (2005) note, social capital along with human capital contributes to turning aspects of the natural environment into tourism services (Hall and Boyd 2005:4). The natural environment is required to form nature-based tourism services, although it may be facilitated by social capital. It is necessary to consider the propensity of natural capital to be seized and transformed into a tourism service.

Preference for Future Tourism Development

Significant differences exist between the communities and the clusters with respect to preferences for future economic activities the region should pursue. Respondents in PSC prefer nature-based tourism (48%), followed by other tourism development (24%). Conversely, respondents in PALM and PM prefer other tourism development (39% and 36%), followed by nature-based tourism (38% and 33%). These activities are succeeded by industrial/port activities and aquaculture. Although significant differences exist between the clusters, they have less variation in the patterns of responses. All clusters prefer nature-based tourism followed by other tourism development; however, the third preference for future economic activities is industry and port activities for *Individualists* (C1) and *Community Oriented* (C2), while *Organizers* (C2) select aquaculture. These trends verify the importance that tourism plays in the region; at the very least, it is considered a possible activity for future development.

Preferences for future economic activities among the communities are also influenced by who currently benefits from tourism. Households who benefit from tourism activities are more likely to prefer nature-based tourism (48%) than other tourism development (41%). Conversely, households who do not benefit from tourism, have similar support for nature-based tourism (42%), but lower support for other tourism development (29%).

7.1.6 Contextual Factors and Outcomes

The culmination of contextual factors, including characteristics of the user communities, physical characteristics of natural resources, and institutional arrangements influence how resources are used and the action strategies and patterns of interaction that emerge. The contextual factors are important to consider, specifically in regards to managing common-pool resources like whale-watching and other forms of

nature-based tourism. The quality of a whale-watching experience may decrease as the numbers of tourists' increase, since it is often difficult to exclude or monitor operators.

The analytical framework assists in recognizing that various contextual factors affect how natural resources are managed. Social capital, along with other community characteristics (e.g. human capital), influences activity within and between communities, contributing to the emergence of the organization and structure of nature-based tourism. The structure of tourism is also dependent on the institutional arrangements that govern the resource, including regulations and permit processes. Nevertheless, it is still necessary to consider the physical characteristics of the resource. The presence of nature-based tourism is determined more by geography; it can be location-specific and is dependent on the resource endowments of a particular region.

In addition, factors outside of the scope and influence of the communities, such as tourism demand and foreign market forces, affect nature-based tourism development. Yet many respondents, as well as the state tourism office, expect that tourism will expand in Bahia Magdalena over the next five years, as it continues to grow in BCS. The state tourism-planning department envisions small-scale tourism in Bahia Magdalena, with some marinas and independent houses and one or two big hotels, as opposed to a metropolis of hotels as is found in other areas of the state (e.g. Los Cabos). The approach put forward by the government is to have a mix of local and outside investment in tourism development in the region; the priority is on "taking care of locals" and "letting them participate". Many people perceive tourism as an alternative and often-preferable activity to fishing; as one respondent remarked, "tourism is better than spending the whole night in the Bay [fishing]", and, "when it [fishing]'s good, it's good, but it only provides once in a while. I see more potential in tourism".

7.2 Policy Recommendations

Although prospects for tourism development are surrounded by hope (specifically for the future potential of nature-based tourism), there are obvious limitations that hinder development in Bahia Magdalena. They are represented by a more pragmatic view concerning the potential for nature-based tourism. Whale-watching, like fishing, is variable. Both vary seasonally; however, whale-watching depends on the supply of tourists, as well as the presence of the whales. Many believe that tourism in Bahia Magdalena is limited outside of the whale-watching season, especially considering the extensive tourism development in other areas of the peninsula (e.g. La Paz, Loreto and

Los Cabos). Although plans for large-scale hotel developments in the region exist, none appear to be solid or tangible at this time.

Various recommendations can be made with respect to creating an environment more conducive for the regional development of nature-based tourism, given that strengthening bridging social capital is one aspect that would facilitate other recommendations. In this context, social capital is important for future development possibilities because it is critical to ensure the long-term viability of a community and its development processes (Barraket 2005:81). However, the strengthening of social capital apart from other changes will not increase tourism development, since other factors influence tourism development (Johannesson et al 2003).

Adger (2001) determines that strategies communities use to adapt to environmental change are partly dependent on social capital. The same variation in strategies may apply to tourism; communities with higher levels of bridging social capital may be familiar with more possibilities to diversify economically, and communities with higher bonding social capital may have a greater ability to collectively organize and benefit from a cooperative structure. Thus, planning for nature-based tourism needs to take into account an emphasis on local participation, building on social and human capital, emphasizing new activities, diversifying the economic base and possibly using a cooperative structure for new initiatives. However, these actions need to be matched with government planning and support, infrastructure development, and an increase in a community-wide environmental ethic (Table 7.1).

Table 7.1 Summary of recommendations for tourism using the analytical framework

Contextual factor	Requirement	Recommendation
Physical and technological characteristics	Existence of flagship species and other natural resources	-Emphasize new activities (sea turtle-watching)
	Infrastructure	-Increase government support for infrastructure development
Institutional structure	Effective planning and management	-Diversify the economic base, -Use the cooperative structure for new initiatives
	Securing of property rights/regulations	-Maintain and improve local control
Characteristics of the user community	Local community involved at most stages/partnerships	-Use social capital -Encourage entrepreneurship
	Human capital	-Build human capital: training and skill development
	Environmental awareness	-Increase environmental awareness

7.2.1 Physical and Technological Characteristics

Emphasize New Nature-based Tourism Activities

New tourism activities, such as sport-fishing and sea turtle-watching are necessary to increase nature-based tourism in the region, since the whale-watching industry is saturated. Combinations of activities lengthen tourists' visits, thereby increasing economic benefits to the local communities. For example, tourism companies that provide multiple day trips including camping, kayaking and bird watching generate higher revenues per person than just whale-watching trips.

Increase Government Support for Tourism Development

The government needs to provide some type of infrastructure investment to realize successful nature-based tourism development. While high expectations for the future of tourism continues, government support such as assistance to purchase boats and motors for sport fishing, marketing, training and other capital investments is necessary for its development (Secretaria de Promocion y Desarrollo Economico 2005). Los Cabos, for example, was a small fishing community until the federal tourism agency FONATUR (Fondo Nacional de Turismo) decided to develop it as a large-scale tourism area. However, the government does not envision Bahia Magdalena as the next "Los Cabitos".

7.2.2 Institutional Structure

Diversify the Economic Base

Many people view tourism as an alternative and often preferable activity to fishing; however, the communities need to diversify their economies from primarily extractive activities in general, and tourism is just one of these activities. A move towards economic diversification is important in single resource economies; they are especially vulnerable because of their lack of diversity in the face of global markets (Dale 2005:14). People trying to advance themselves economically are involved in many activities – such as fishing, tourism, new cooperatives, and other business services.

Use the Cooperative Structure for New Initiatives

New cooperatives, like those in PALM (e.g. the women's cooperative and the sea turtle cooperative), create spaces for community economic development. Cooperatives are a beneficial form of organizing, since they facilitate a sharing of resources and allow

investments to be built with shared risk. Local cooperatives provide opportunities for people to work together with limited resources, using each other's connections and building on community linkages to develop enterprises. Petterson (1980) suggests that social conditions should improve because of better working conditions and increased solidarity between those involved in ownership and management of cooperatives. However, an increase in social solidarity is not always the result of the cooperative movement in Bahia Magdalena, as conflicts between cooperatives are pervasive within the fishing sector (Appendix A). Nevertheless, the cooperative movement in PALM is fairly strong, and is commended for its ability to contact and petition politicians. The movement was initially influenced by workers who organized at the fish processing plant, and later become involved in tourism when the plant downsized (See Dedina 2002). Cooperatives also provide new spaces for community-based management by having the ability to link the conservation of resources to socioeconomic development.

Maintain and Improve Local Control

Nature-based tourism provides opportunities for local ownership and active participation in the economic development of the region. This relates to the plan by the state tourism-planning department, which envisions the evolution of small-scale tourism involving a mix of local and outside investment. In both PSC and PALM, the tourism industries are predominantly owned and operated by local companies (8 of 10 whale-watching companies are based in Bahia Magdalena). As such, spaces exist for community control and for local entrepreneurs to develop new initiatives within the tourism industry. It is essential for communities to be involved in nature-based tourism for it to be successful (Kruger 2005). Local ownership and control is jeopardized when resident tourism operators have less control over accessing the resource, as in PSC where the external transport company controls the wharf.

Existing permit processes instituted by the government are valuable, such as the processes used to regulate whale-watching. New types of permitting processes might be necessary, like the permits for sea turtle-watching. New options to manage common pool resources can be considered, such as developing a tourism concession where the community or group has access rights over a defined region (Rodriguez-Dowdell et al. 2007).

7.2.3 Characteristics of the User Communities

Use Social Capital to Develop Tourism and Entrepreneurship

Social capital is important for nature-based tourism development. Certain types of social capital might contribute to a more supportive community for tourism services that involves a broader section of the community. Higher bridging social capital may facilitate the building of partnerships within and outside of the communities, and higher bonding social capital predicates successful collective action (Jones 2005). The results show that stocks of social capital are larger in PALM than in the other communities. As such, PALM may be better suited for more organized forms of tourism than the other communities.

In contrast, local private businesses, instigated by entrepreneurs, may be more appropriate for tourism development in PSC. Entrepreneurs are important in bridging between other communities and linking to people in positions of power, where bridging social capital is necessary. Entrepreneurs can also be important as catalysts, initiating and demonstrating new ideas, and emphasizing the importance of human capital (Parker and Khare 2005). Creating spaces for entrepreneurs to develop is important, and others in the community can learn from them.

Build Human Capital, and Promote Capacity Training and Skill Development

Human capital and capacity training are necessary for improving locals' abilities for tourism development (Secretaria de Promocion y Desarrollo Economico 2005). For example, one needs the necessary skills and personnel to develop a multi-day kayak trip. Many respondents look to the government to provide the necessary training (e.g. business skills).

Increase Environmental Awareness

Bahia Magdalena is difficult to access and needs substantial infrastructure development, such as roads, sewage, and waste disposal systems (Secretary of Tourism 2007pc.). The government does not invest sufficiently in waste disposal, and litter is rampant throughout the region. Respondents have mixed perspectives on whether the communities will comply and create an environment conducive to tourism development; most people disagree that their community takes care of the environment (Appendix P). Thus, a widespread environmental ethic is necessary for people to value their environment and improve the appearance of the communities. Bridging social

capital can lead to an increased awareness of what other communities are doing, and can be transferred into bonding social capital; community members can create expectations among each other to follow a better environmental ethic.

7.2.4 General recommendations for nature-based tourism

The recommendations specific to Bahia Magdalena can be applied more generally to different regions. It is always valuable for communities, specifically resource dependent communities, to emphasize new activities, diversify the economic base, and reduce pressures on natural resources by encouraging less intensive activities. It is often helpful to use existing forms of organization or social networks for tourism if they involve local residents and already have positive social capital, rather than creating new structures. Furthermore, if the aim is to maintain local control, it is important to encourage local entrepreneurs. Lastly, nature-based tourism requires necessary skills and environmental awareness by the tourism operators and possibly the larger communities. Social capital may contribute to the structure and formation of nature-based tourism, contingent on the presence of nature services, such as a flagship species (e.g. gray whale) or other natural attraction.

7.3 Limitations to Measuring Social Capital

The ability to adequately measure social capital using a quantitative household survey is limited. The variation in populations of the communities may influence certain social capital variables; such as how often people visit their neighbours. Similarly, one maybe more likely to express their opinions in a smaller community where more residents would know one another.

Difficulties arise in using proxies to measure social capital, since questions are used to represent broad and intangible concepts. Empirical studies and debate in the literature vary widely with respect to what proxies to use when measuring social capital. Indirect indicators may be misleading since they may confuse what social capital is, as opposed to what the outcomes are (Sabatini 2006). If research is reliant on social capital as an indicator, it is often found to be related to that outcome (Sabatini 2006). This relates to the criticism that social capital is used in a way that attempts to incorporate and explain too many distinct ideas, reducing the meaning of the concept (Jones 2005). Following a study of watershed management in rural communities in India, Bouma et al. (2006)

determined that the variance of trustworthiness between communities is very low and that trust does not depend on average village trustworthiness, but rather on the individual's own characteristics. They conclude that trustworthiness is not an effective indicator of social capital at the scale of the community (Bouma et al. 2006). I disagree, since trust varies significantly – both within the communities and between the clusters, and contributes to an understanding of social capital at the household scale.

Past research has challenged membership density as being an inadequate proxy for social capital and lacking theoretical foundation (Beugelskijk and van Schaik 2005, Mitchell and Bossert 2007). As is evident from my research, membership in voluntary associations or groups is not an important indicator of social capital in the study region. Few groups are present in the region, and the low participation rates of these groups reflect how they are not important to the local society in general. Few developed groups exist in the communities aside from cooperatives, possibly because the communities are young, and the existence of the cooperatives reducing the need for other groups. With respect to voting in elections, there is little variability among groups, and the numbers of elections that one votes in does not adequately represent civic participation. Furthermore, voting in elections has been used as both a proxy for measuring social capital and as an outcome variable to indicate the presence of social capital, making it an unreliable proxy (Mitchell and Bossert 2007).

Measuring social capital can be context-specific and the replicability of an empirical study is questionable, since communities are located in specific geographic, historical and ecological landscapes and possess particular and unique socioeconomic and cultural characteristics (Dale 2005:16). Social capital is far from being a straightforward concept; instead it seems destined to be an essentially contested concept like 'class', 'gender', and 'race' (Hadjimichalis 2006, Szreter and Woolcock 2004).

Lastly, community-based quantitative and qualitative research can be challenging. People are inclined to present a harmonious image of their community, as it is something that they aspire to and has benefited them. Thus, residents may not be open to researchers who they fear might compromise their reputation.

CHAPTER 8: CONCLUSIONS

8.1 Social and Institutional Conditions in the Region

Social capital varies between key communities in Bahia Magdalena, indicating that various types and combinations of social capital exist. Low bonding and medium bridging social capital characterize Puerto San Carlos (PSC); Puerto Adolfo Lopez Mateos (PALM) is characterized by medium bonding and medium bridging social capital. High bonding and low bridging social capital characterize Puerto Magdalena (PM). Bonding social capital appears to be stronger in smaller and more homogeneous communities, like PM. Bridging social capital is higher in PALM and PSC; these communities are easier to access, tend to have more wealth and residents are involved in more diverse range of economic activities.

The ways in which various aspects of social capital load onto the Principal Components addresses the multidimensional nature of social capital, given that trust is the component that explains the majority of the variance. The three components that result from the Principal Component Analysis explains only approximately half of the total variance (Component 1 – 'trust', Component 2 – 'community' and Component 3 – 'network'), and 'trust' is the component that explains the majority of the variance. As such, it is evident that other factors outside of the scope of this research contribute to explaining differences within the communities and the clusters. Additionally, social capital cannot be treated as an ahistorical concept, since context, including cultural and economic factors, influences the nature of social capital.

Clusters generated from the PCA and cluster analysis provide an additional and valuable form of analysis for assessing social capital, since dispersion within the clusters is smaller than in the communities. They verify that the communities are not homogeneous units of analysis. Three specific profiles of clusters emerge from a cluster analysis of the Principal Components: *Individualists* (C1) are characterized by low bonding and low bridging social capital, *Community Oriented* (C2) are characterized by medium bonding and medium bridging social capital, and *Organizers* (C3) are characterized by medium bonding and high bridging social capital. The clusters are dispersed throughout each of the communities; however, most *Individualists* (C1) are in

PSC, and most *Organizers* (C3) are in PALM. *Community Oriented* (C2) are found evenly in PSC (43%) and PALM (43%). When looking at the composition of the communities, the *Individualists* (C1) comprise most of PSC, PALM is a combination of all three clusters, and PM primarily consists of *Community Oriented* (C2).

8.2 Contribution of Institutional Conditions to the Structure of Tourism Activities

The second objective of the research was to determine what community and institutional factors have contributed to the structure of tourism activities. The research showed that tourism has a minimal economic impact in the region. The highest proportions of households involved in activities that benefit tourism are in PALM, followed by PSC and PM. The clusters also vary with respect to who benefits from tourism activities: *Organizers* (C3) benefit the most, followed by *Community Oriented* (C2) and *Individualists* (C1).

Entrepreneurial tourism enterprises may emerge in areas that exhibit lower bonding social capital, as opposed to communities that exhibit higher bonding social capital, where community-driven approaches are more likely to emerge. These patterns of interaction are influenced by contextual factors, including characteristics of the user communities, institutional arrangements and physical characteristics of the resource. Currently, the model closest to community-based management is the tourism cooperative in PALM. PALM has medium bonding social capital and is possibly more conducive to some form of community-based management, and/or more organized nature-based tourism than the other communities. New cooperatives may create spaces for tourism development and assist in diversifying local economic activities. Community-managed activities are more likely to be successful in PALM; there is already a cooperative structure in place to manage tourism activities, and evidences of more bonding and bridging social capital. Although the cooperative system has its drawbacks in managing fisheries, it is being replicated more successfully in tourism, possibly because the access rights are more clearly delineated with respect to whale-watching. Especially in PM, preferences for established cooperatives to initiate new nature-based tourism enterprises are evident. They are also the status quo with respect to how resources are currently managed in the region (e.g. fisheries).

8.3 Future Development of Nature-based Tourism

The third objective of the research was to evaluate what an analysis of social and institutional conditions, specifically social capital, contributes towards an understanding of new tourism activities and what these insights suggest for the future development of local nature-based tourism. Preferences for who should initiate new nature-based tourism activities differ significantly between the communities and the clusters. This may highlight the importance of geographical variation in determining the presence of nature-based tourism. This relates to both the location of the communities with respect to Bahia Magdalena as a site for nature-based tourism, and with respect to their location in compared to other locations in the state. Although similarities exist across the region, variations in geography between the communities may also influence social capital and other management-related perceptions.

Challenges beyond the control of the community remain a limiting factor for tourism development, such as tourism demand and other global forces. The existing whale-watching industry is saturated because of limited carrying capacity for sustainable management. Among others, future nature-based tourism activities can include sea turtle-watching, kayaking, and sport fishing; however, these activities remain in their infancy.

Recommendations for nature-based tourism development, both in the case study region, and in other areas in general, pertaining to physical and technological characteristics include: emphasizing new activities (e.g. sea turtle-watching), and increasing government support for infrastructure development. Recommendations pertaining to the institutional structure include diversifying the economic base, using existing structures for new initiatives, and maintaining local control and ownership. Those pertinent to the characteristics of the user communities include using bridging social capital to make connections between groups, and supporting entrepreneurs to lead new activities. It is also important to build human capital, and increase environmental awareness. Consequently, social capital might be a useful tool in ensuring that future nature-based tourism activities are predominantly owned and operated by residents of Bahia Magdalena, thereby maintaining some type of local control over marine resources and nature services.

8.4 Research significance

My research is significant in that I compared three communities in which social capital had not previously been studied, nor had their overall contribution and involvement in tourism. I noted that distinct social capital profiles emerged, and which reflect the way in which resources are managed in the region. Social capital may contribute to an greater understanding of the organization and structure of tourism. Community-based projects may be more successful in communities with higher bonding social capital, and more individualist activities may emerge in those with less. Nevertheless, bridging social capital is germane for all nature-based tourism activities to be successful. Understandings of these interactions contribute to a better grasp of social aspects of resource management.

8.5 Further Research

Although difficulties arise in measuring social capital, social capital analyses are valuable in recognizing the importance of social elements, such as the role of communities and institutions in development, and ensuring that they are considered in policy recommendations and planning (Woolcock and Narayan 2006). An understanding that various types of social capital exist can enhance social capital analyses, while recognizing that social interactions are complex.

Important future research could include the development of strategies of how to invest positively in social capital, especially in rural community settings primarily dependent on natural resources. Strategies to develop and strengthen existing social capital especially bridging social capital (e.g. networks of tourism operators), might assist in diversifying the local economy and increase sustainable opportunities for local residents, specifically that of nature-based tourism.

Appendices

Appendix A: Small-scale Fisheries

An understanding of small-scale fisheries is germane to my research since it is the dominant resource activity in the case study region and the nature tourism operators emerge from a fisheries context. Connections exist between the growth in tourism and the growth in the small-scale fisheries industry in BCS; immigrants from other states flood both industries, and tourism inevitably has an effect of increasing pressure on the fishing industry.

The establishment of fishing cooperatives was an attempt to promote settlement and development of the Pacific coastline and originated primarily as a result of pioneer settlers migrating from drought-ridden ranches and towns along the interior of the peninsula to the coast in the 1920s and 1930s (Young 2001, Dedina 2000:31). In the 1930s, cooperatives in Baja California Sur were awarded fishing concessions to exploit some of the most important inshore and shellfish fisheries, including lobster, shrimp and abalone and some were granted exclusive rights to the concessions under the Fishing Law passed in 1947 (Aguilar-Ibarra et al. 2000).

Two categories of small-scale fishers emerged under federal law: *cooperativistas* (members of cooperatives) and *pescadores libres* (free fishers). The government granted exclusive concessions to commercial valuable species, like abalone and lobster to *cooperativistas* who were legally required to work collectively, pay dues and assist government authorities in monitoring access to their concessions (Young 2001). In contrast, the government gave *pescadores libres* access rights to local fishing grounds for subsistence production. *Permissionarios,* who are individual or corporate entities with permits to catch and sell fish that are not reserved for cooperatives, could employ *pescadores libres* (Young 2001).

Cooperatives were required to sell their product to state-operated marketing firms at fixed prices via regional federations, while permissionarios sold their product on the open market (Young 2001). Cooperatives received lower prices for the products than they would on the open market, and consequently many cooperatives began selling part of their product on the black market to get higher prices. As such, inshore fisheries in Mexico exemplify problems arising from unclear property rights, where federal law has led to overlapping access rights to marine resources for commercial cooperatives and

subsistence fisheries (Liverman and Vilas 2006). Fishing communities have emerged with little autonomy to make resource decisions, where the use of marine resources are contingent on government-issued harvest permits, and decisions about their future are made by federal officials in Mexico City (Young 1999, Dedina 2000, Doloutskaia 2002).

There was little growth in the fisheries in BCS until the 1970s, when the statist government encouraged the formation of new fishing cooperatives, assumed greater control over fish processing through the purchase of private canneries, and promoted private investment offering substantial government financial support (Young 2001, Liverman and Vilas 2006). A shift to less state involvement in the 1990s has intensified pressures on resources and has exacerbated problems of outside encroachment (Garcia Martinez 2005, Young 2001). Cooperatives are unwilling or unable to secure effectively their own concessions to prevent poaching leading to conflicts among cooperatives and *pescadores libres* (Young 2001).

No formalized sets of community-based practices, or collective choice arrangements, for the management of local fishing activities exist outside of the cooperative system. In addition, conflict and damaging behaviour characterize cooperatives rather than cooperation and collective stewardship of marine resources (Young 1999). The fishing cooperative system has been widely criticized in BCS for pervasive administrative corruption at the local level by those who seek to run cooperatives for personal gain, with cooperative members who are more like shift labourers (Young 1999). Although the intention of the permits is to limit foreign encroachment and the domestic abuse of natural resources, the top-down strategy has been unsuccessful, and the majority of commercial fisheries in BCS have become overexploited (Young 1999).

Currently, the fishing environment in BCS is characterized by transient fishers exploiting different fisheries in the peninsula, open markets that are possibly less advantageous to cooperatives given that they no longer sell products as a consortium, the presence of entrenched official corruption, and the widespread poaching (Young 2001). Local fishers are required to harvest as much as possible on every trip to maximize their earning and offset the costs of gasoline and equipment (Young 1999). On a more positive note, new opportunities for the production of social capital are present, and are aimed at the collective mobilization around greater control of marine resources (Young 2001). As such, it is valuable to assess social capital and its distribution in the region.

Appendix B: Household Survey

Date:		House number:	
Surveyor:		Block:	
Community:		Choice Model:	

Household Survey Questionnaire

HOW TO USE THIS INTERVIEW PROTOCOL

Notes and remarks are [*contained in square brackets and in italics*]. These are for your information. Text marked in **lower case and bold** is for you to "read" to the respondent, but try not to read this protocol word for word. Just try to capture the main ideas within your own natural style of speaking.

Introduction

[Ask to speak to the male or female head of the household. The respondent should not be a relative, staying temporarily in the respective household.]

Hello, my name is_____. We are conducting a survey with local residents about marine use in Bahia Magdalena. We would like to know your personal opinions about fisheries, tourism and conservation in your area. This survey is part of a research project being undertaken by la Universidad Autónoma de Baja California Sur, Simon Fraser University in Canada and the Center for Coastal Studies at Puerto San Carlos.

Any information that is obtained during this study will be kept confidential to the full extent permitted by law. Knowledge of your identity is not required. You will not be required to write your name or any other identifying information on research materials. Materials will be maintained in a secure location.

It will take approximately one hour of your time and we would really value your input. Would you be willing to participate at this time?

[If yes, continue survey]
[If no, then ask if it would be more convenient to come back at another time]
[If yes, arrange a mutually agreeable time]
[If no, thank the respondent sincerely and end the interview]

Thank you for agreeing to participate. Where would you like to complete the survey? Before we start, I would like you to know that your participation is entirely voluntary and that you may choose not to participate at any time. The study results will be presented only as summaries in which no personal information is used.

Furthermore, I would like to clarify that we are in support of your existing economic activity and we are not here to change anything. We are simply interested in learning about your perspectives and opinions.

Where you interviewed with respect to this survey in the last 3 months? If yes, stop the survey.

START SURVEY [If the respondent wants to read the questions with you, let them]

A. Demographic Information

A1. Name and surname _____ *(optional)*

A2. Gender of the respondent: ☐ Female ☐ Male

A3. How old are you? _____years

A4. How many years have you been living in this village? _____years

A5. Have you lived elsewhere?
- ☐ No
- ☐ Elsewhere in BCS – where? _____
- ☐ Other _____ (region, state or country)

A6. How many years of formal schooling have you completed? _____years
[Count the number of years of schooling that the respondent has completed]

A7. What is your marital status?
- ☐ Married
- ☐ Live with your partner (common law)
- ☐ Widow(er)
- ☐ Divorced
- ☐ Single

A8. Number of people in the household: _____people

Category	**Reside in household for more than 6 months in the past year (# of individuals)**	**Reside elsewhere for more than 6 months in the past year (# of individuals)**
Adult male (18 years and over)		
Adult female (18 yrs and over)		
Male children (17 years and younger)		
Female children (17 yrs and younger)		

A9. Does your home have flooring? *[When possible, you can check by observation]*
☐ Yes ☐ No

A10. Is your house made of cement or brick? *[When possible, you can check by observation]*
☐ Yes ☐ No

A11. Do you own any pangas?
- ☐ Yes - How many? _____ pangas
- ☐ No

A12. Do you own a car/truck?
- ☐ Yes - How many? _____ cars/trucks
- ☐ No

B. Social Capital

I am now going to ask you some questions about your community and how people interact with each other.

B1. In a typical 2 week period, how often did you visit neighbours or have neighbours visit your household? _____visits in 2 weeks

B2. In the last 12 months, how many days did you contribute to community activities (e.g. volunteer, building, clean-ups, or organizing social events)? _____days

B3. Do you feel that most people **in** the community can be trusted?
☐ Yes ☐ No ☐ Unsure

B4. Do you feel that most people **from outside** the community can be trusted?
☐ Yes ☐ No ☐ Unsure

B5. In the last 12 months, how often did you leave Comondu? _____12 months

B6. How do you think the community would respond if a natural disaster (e.g. hurricane or flooding) affected the community? *[Pick one]*
- ☐ Each family (e.g. brothers/sisters) would make repairs on their own
- ☐ Neighbours/friends would work together to make repairs to each others homes
- ☐ The entire community would work together to repair homes and communal structures
- ☐ It would be up to government to solve the problem
- ☐ Unsure
- ☐ Other (Please specify _____)

B7. When conflicts arise between people in your community, how are these usually resolved?
- ☐ Between people
- ☐ Call the police
- ☐ No resolution
- ☐ Unsure
- ☐ Other (Please specify _____)

B8. Do you feel free to speak out when you disagree with other people in your community?
☐ Yes ☐ Somewhat ☐ No ☐ Unsure

B9. Are you a member of a cooperative or union?
- ☐ Yes - If so, which ones? *[Please list in the table below]*
- ☐ No *[If no, go to B16.]*

B9a. Name of cooperative or union in which you are a member *[In order of importance]*	B9b. Activity of the cooperative or union	
	Fishing	Tourism
1.	☐	☐
2.	☐	☐
3.	☐	☐
4.	☐	☐

I am now going to ask you questions about the cooperative or union of which you are a member.

B10. How many permits does this cooperative/union have? _____permits

B11. Are you involved in the management, leadership, or organizing committee of this cooperative/union?

☐ Yes ☐ No

B12. How many times did this cooperative/union meet in the last 12 months?
___number of times

B13. Are members of this cooperative/union mostly from the same extended family, neighbours/friends or from the wider community in general?

☐ Mostly same extended family
☐ Mostly neighbours/friends
☐ Mostly from the wider community
☐ Unsure

B14. Overall, how would you evaluate the functioning of this cooperative/union of which you are a member?

☐ Very bad
☐ Bad
☐ Neither good or bad
☐ Good
☐ Very good

B15. How likely would you be willing to change the legal framework of your fisheries cooperative to include tourism in the next five years?

☐ Does not apply
☐ Already did it
☐ Seriously thinking about it
☐ Not likely
☐ Unsure

B9a-2. Are **other members of your family** members of a cooperative or union?

☐ Yes – Which? *[Please list them in order of importance]*

☐ No *[NO, go to question B16.]*

B9b-2. Name of the cooperative or union *[In order of importance]*	B9c-2. Activity of the cooperative or union	
	Fishing	Tourism
1.	☐	☐
2.	☐	☐
3.	☐	☐
4.	☐	☐

I am now going to ask you questions about the cooperative of which other members of your family are a member.

B10-2. How many permits does this cooperative/union have? _____permits

B11-2. Are they involved in the management, leadership, or organizing committee of this cooperative/union?

☐ Yes ☐ No

B12-2. How many times did this cooperative/union meet in the last 12 months?

___number of times

B13-2. Are members of this cooperative/union mostly from the same extended family, neighbours/friends or from the wider community in general?

☐ Mostly same extended family

☐ Mostly neighbours/friends

☐ Mostly from the wider community

☐ Unsure

B14-2. Overall, how would you evaluate the functioning of this cooperative/union of which you are a member?

☐ Very bad

☐ Bad

☐ Neither good or bad

☐ Good

☐ Very good

B15-2. How likely are the other members of your family willing to change the legal framework in the fisheries cooperative to include tourism in the next five years?

☐ Does not apply

☐ Already did it

☐ Seriously thinking about it

☐ Not likely

☐ Unsure

B16. How many other cooperatives or unions (not including the cooperatives or unions for which the respondent may be a member) have you worked for or sold product to in the last 12 months?

☐ Worked for - How many? _____ number

☐ Sold to – How many? _____ number

I am now going to ask you questions about the community groups that are most important for you.

B17. Not including cooperatives or unions, what community groups, organizations or other associations do you **belong** to?
[List the name of the group and place the number corresponding to the type of organization from the table below. If 0 groups go to B21.]

Name	**Type of organization** *[List number from the table below]*
1.	
2.	
3.	
4.	
5.	
6.	

Type of organization	
1. Rural fishing society	7. Social group (Rotary, Lions Club, etc.)
2. Professional/business association	8. School committee
3. Neighbourhood association	9. Health committee
4. Women's group	10. Sports group/team
5. Environmental group	11. Religious group
6. Political group	12. Other (*Please specify* _____)

B18. Are you involved in the management, leadership, or organizing committee of this group?
☐ Yes ☐ No

B19. How many times did this group meet in the last 12 months?
_____number of times in the last 12 months

B20. Overall, how would you evaluate the functioning of this group in which you participate?
☐ Very bad
☐ Bad
☐ Neither bad or good
☐ Good
☐ Very good

B21. Did you vote in the last federal election? ☐ Yes ☐ No

B22. Did you vote in the last state election? ☐ Yes ☐ No

B23. Did you vote in the last municipal election? ☐ Yes ☐ No

C. Household Income

Now I am going to ask you about your livelihood activities in the last 12 months.

C1. What were the main sources of income for you and your household in order of importance in the last 12 months? *[Ask the respondent to list their main sources of income in order of importance. Please rank the categories that the respondent selects, where 1= the most important.]*

Rank	Source of income
	Artisanal fishing (including *permisionarios*) *[shrimp, clams, etc.]*
	Industrial/trawl fishing (including *permisionarios*) *[sardines, tuna]*
	Agriculture
	Canning, fish processing and other fishing related
	Construction and Transportation
	Tourism and related (hotel, restaurant, whale-watching, sport fishing)
	Commerce and services) (not related with tourism)
	Government (including schools, clinics, police, etc.)
	Remittances from family living elsewhere
	Other (Please specify_____)

C2. What was the total income for you and your household in the last 12 months?
_____ pesos/year

- ☐ Less than 15,000 pesos/year
- ☐ 15,001-30,000 pesos/year
- ☐ 30,001-45,000 pesos/year
- ☐ 45,001-60,000 pesos/year
- ☐ 60,001-75,000 pesos/year
- ☐ 75,001-90,000 pesos/year
- ☐ 90,001-105,000 pesos/year
- ☐ 105,001-120,000 pesos/year
- ☐ More than 120,001 pesos/year – please specify ____ pesos/year

C3. What were your total business expenses in the last 12 months (gasoline, nets, etc.)?
_____ pesos in the last 12 months

C4. In the last 12 months, how often did you work in the following activities that may benefit from tourism?
[If the person is involved in the service industry, transportation or other, check if they may benefit indirectly from tourism.]

Occupation	You	Other members of your household
Whale-watching		
Guide/Panguero	☐	☐
Operator/manager	☐	☐
Secretary/Office staff	☐	☐
Other (_____)	☐	☐
Sport fishing and other nature tourism		
Guide/Panguero	☐	☐
Operator/manager	☐	☐
Secretary/Office staff	☐	☐
Other (_____)	☐	☐
Service industry		
Restaurant/food stand employee	☐	☐
Hotel employee	☐	☐
Store employee	☐	☐
Other (_____)	☐	☐
Transportation		
Bus/taxi driver	☐	☐
Other		
Marketing	☐	☐
Other (_____)	☐	☐

C5. From the above tourism related activities, what proportion of your income is generated from tourism in the last 12 months?

- ☐ None
- ☐ 1-5%
- ☐ 6-10%
- ☐ 11-20%
- ☐ 21-50%
- ☐ More than 50%

D. Discrete Choice Section: Future Scenarios for Local Development

In the next four questions, you will have an opportunity to choose between different possible future scenarios of local development in your community. These scenarios represent possible descriptions of your community in about 15 year's time. Since these questions may be different from the typical sort of survey questions you are used to answering, I am going to take a little bit of time to explain the questions to you.

[INTERVIEWER: Show the respondent the practice choice card]

This is the first choice question. It is called a choice question because we will be asking you to choose between these three options.

[INTERVIEWER: Highlight each option by circling column with your finger]

Now, in order to make your choice between these three options, you will need to understand how they differ.

Each option is described by its performance on six characteristics

[INTERVIEWER: Point to the column of attributes descriptions and explain each of them in turn]

The first characteristic describes the performance of local fisheries in the region. The volume of fish harvested may change in the future. In respect to current levels, the <u>Volume of Fisheries Catch</u> may range from:

Increase of 10%
Constant at current levels
Decrease of 10%
Decrease of 25%

The next characteristic describes the <u>Type of Tourism Development</u> that may occur within or around your community. It is described in terms of type of accommodation, and the range of tourist activities and services offered. Please note that nature-based tourism will be offered in all accommodation arrangements. Options are:

No further tourism development tourism is limited to existing accommodations and tourist services

Development of <u>campgrounds and palapas</u> in addition to existing accommodation focus of increasing nature-based tourism but with only minor expansion of other tourism services, including restaurants and shops

Development of <u>small hotels, condominiums and residential development</u> integrated into the community nature-based tourism and moderate expansion of other tourism services, including restaurants, shops, and marinas

Development of a <u>large resort located outside</u> of the community nature-based tourism and an extensive expansion of other tourism services, including restaurants, shops, pools, marinas, spas and golf courses

The next characteristic describes Local Employment in the Tourism Industry. The proportion of jobs in the tourism industry that are filled by existing members of the community may range from:

1. Almost all are filled by locals
2. About 80% are filled by locals
3. About 60% are filled by locals
4. About 60% are filled by recent migrants

The next characteristic regards gray whales. Gray whales are a prominent feature of the Bahia Magdalena area. Currently, approximately 500 whales are known to visit the Bahia Magdalena area during the peak season although this number may change in the future. In the scenarios presented, the Number of Whales in the Bahia Magdalena area may range from:

100 whales
300 whales
500 whales
700 whales

Taxes may change in the future. Currently, the average household typically pays about $8000 pesos in income taxes annually, but additional taxes are possible. The following are possible changes to annual household taxes (assume these changes would apply equally to all households):

No change in taxation
Increase of $200 pesos
Increase of $400 pesos
Increase of $800 pesos

Aquaculture, such as shrimp, oyster and lion's paw scallop farms, may also provide some opportunities for employment in the future. These would likely be spread across the entire Bahia Magdalena region, shared across several communities. The number of new Aquaculture Jobs available regionally may range from:

None
50 jobs
150 jobs
300 jobs

[INTERVIEWER: Now bring the discussion back to the comparison of the three choices]

Now that you are familiar with the concepts, I am going to ask you to compare the options and tell me if you would choose Option 1 or Option 2 or neither. If you would like a reminder for what each attribute is and what the attribute level includes, you may look at the reference card.

[INTERVIEWER: Once again circle the options with your finger and point to each of the three response check boxes under each option]

Please remember that most likely none of these options will be perfect from your point of view and that some decisions may be difficult. There is no right or wrong answer; it is simply your opinion that matters.

[INTERVIEWER: Record the respondent's preferred option by checking the correct box in the interview response sheet.]

[INTERVIEWER: Hand respondent the choice card bundle, with the first card on top. Record the colour of the bundle, and complete the responses in the space below. Point out that this is a NEW set of options that are described by the same six characteristics but that the details of each option have changed. Point out that the neither option is the same as in the last question.]

Card Colour:

Pale orange (V.1) ☐	**Pink (V.2) ☐**	**Green (V.3) ☐**	**Orange (V.4) ☐**	**Violet (V.5) ☐**	**Yellow (V.6) ☐**
Purple (V.7) ☐	Salmon (V.8) ☐	Lime green (V.9) ☐	Pale pink (V.10) ☐	Blue (V.11) ☐	White (V.12) ☐

[Continue to administer the second, third and fourth choice questions]

QUESTION:

D.1. The following options represent alternative profiles of economic development in your community in the next 15 years. Which of these options is the most desirable description of your community?

		Option 1	**Option 2**	**Neither of these is Acceptable**
D.1.1.	**Practice Card**	⌊	⌊	⌊
D.1.2.	**Card 1**	⌊	⌊	⌊
D.1.3.	**Card 2**	⌊	⌊	⌊
D.1.4.	**Card 3**	⌊	⌊	⌊
D.1.5.	**Card 4**	⌊	⌊	⌊

E. Perceptions about whales and other marine resources

To understand more about how whales influence life in the region, I would like to ask you questions about your personal experience with whales and their impact on your livelihood.

E1. Over the last few years, how often have you observed gray whales during the period they visit the Bahia (December to April)?

☐ Almost daily ☐ Weekly ☐ Monthly ☐ A few times ☐ Never

E2. In your opinion, how many whales visit the Bahia compared to **10 years** ago? *[If the respondent has been in area for less than 10 years, check "unsure" if they do not have an opinion].*

☐ Fewer ☐ About the same ☐ More ☐ Unsure

E3. Some years ago, with the arrival of the whales, the federal government implemented certain restrictions on the normal activities in the Bay, like no fishing in certain areas. How much have your livelihood activities been affected by these restrictions?

- ☐ Substantially – Explain_____
- ☐ Somewhat – Explain_____
- ☐ Not at all
- ☐ Unsure

E4. Comparing whale-watching with other economic activities, how important is the presence of whales in the Bahia to the community as a whole?

- ☐ Very important
- ☐ Somewhat important
- ☐ Not at all important
- ☐ Unsure

E5. Compared to 10 years ago, has there been a change in the overall abundance of marine resources (e.g. fish, shrimp)? *[If the respondent has been in area for less than 10 years, check "unsure" if they do not have an opinion].*

- ☐ Increase in abundance
- ☐ No change
- ☐ Decrease in abundance
- ☐ Unsure

E6. In your opinion, which factor has been the most important cause of a change in the overall abundance of marine resources? *[Choose one.]*

- ☐ Lack of government regulations and/or enforcement
- ☐ Number of people/increased fishing effort
- ☐ Lack of enforcement
- ☐ Pollution and other marine activity
- ☐ Improvement in gear/fishing technology
- ☐ Climate variations
- ☐ Nothing is affecting it
- ☐ Unsure
- ☐ Other (Please specify_____)

F. Perceptions with respect to tourism and the environment

Now I am going to ask you questions related to your perspectives on fishing, tourism and the environment in the region.

F1. There are various economic activities that can improve the region in the future. In your opinion, what are the most important ways for your community to develop its economy in the future? *[Check one.]*

- ☐ Nature-based tourism development
- ☐ Other tourism development
- ☐ Industry/port activities (e.g. fish processing)
- ☐ Fish farming/aquaculture
- ☐ Other (Please specify _____)

F2. If there are opportunities in the region to implement more nature-based tourism projects, for example the observation of birds and marine turtles, which of the following groups are most appropriate to be in charge of such projects?

- ☐ Local private businesses/individuals
- ☐ Private business/individuals who are not from the community
- ☐ Established cooperatives or unions
- ☐ New cooperatives or unions
- ☐ Other community groups
- ☐ Not important/Unsure

I would like to ask you a few questions about your attitudes towards fishing, tourism and the environment in Bahia Magdalena. To what extent do you agree or disagree with each of the following statements? ***[Circle a number between 1 and 5 for each statement.]***

Statements	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
F3. My community takes care of the environment.	1	2	3	4	5
F4. The presence of whales in Bahia Magdalena creates conflicts with fishing.	1	2	3	4	5
F5. The permit system for fishing is equitably divided among the community.	1	2	3	4	5
F6. The permit system for whale-watching is equitably divided among the community.	1	2	3	4	5
F7. Overall, a marine protected area would be beneficial for my community.	1	2	3	4	5
F8. I plan on initiating a new business opportunity in the next 5 years.	1	2	3	4	5
F9. I can see myself taking a job in nature-based tourism if the opportunity arises.	1	2	3	4	5
F10. I take care of the environment.	1	2	3	4	5
F11. I am concerned that an increase in development in the region would have a negative effect on the environment (e.g. whales, turtles).	1	2	3	4	5

H. Other

Are there other comments that you would like to add?

Appendix C: Primary and Secondary Livelihood Activities in Each Community

Income	PSC		PALM		PM		Total	
	% of Primary	% of 2nd+	% of Primary	% of 2nd+	% of Primary	% of 2nd+	% of Primary	% of 2nd+
Artisanal fishing	48	5.3	37	9.5	91	2.4	46	6.8
Industrial fishing	4.3	0.7	2.8	0	0	0	3.4	0.4
Agriculture	0	0	0	0.9	0	0	0	0.4
Fish processing	12.3	6.2	16	3.3	2.4	0	13	4.5
Construction and transportation	6.1	1.1	4.7	2.4	0	0	5.1	1.7
Tourism	1.8	4.0	6.2	15	0	7.2	3.4	8.7
Other commerce and services	14	15	13	9.0	0	7.1	13	12
Government	11	2.9	10	0.5	4.8	0	10	1.7
Remittances	0	0	0.9	0	0	0	0.4	0
Pension	3.2	1.4	8.1	2.8	0	0	4.9	1.9
Other	1.8	0	0.9	1.4	2.4	0	1.5	0.6

Appendix D: Wealth Index in Each Community

Boat ownership is worth only 20% since not all households are involved in activities that might necessitate boat ownership.

Composition	PSC		PALM		PM		Total	
	%	n	%	n	%	n	%	n
Own at least one car	76	210	63	132	57	24	69	366
Own at least one boat	30	193	32	66	31	13	31	163
Households with cement flooring	88	244	94	198	98	40	92	482
Households with cement or brick walls	75	207	69	145	23	9	69	361
Wealth Index	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
	0.70	0.27	0.66	0.26	0.53	0.25	0.67	0.27

Appendix E: Total Mean Annual Incomes and Income Generated from Tourism in Each Community

Table: Annual income and expenses in each community – Mean values

Variable	Community	Mean	SD	F	df	P
Mean Total Numeric Income (Pesos/ 12 months)	PSC	71,045	36,553	6.7	2, 524	***0.001***
	PALM	59,321	33,826			
	PM	65,179	30,923			
	Total	65,906	35,445			
Mean Total expenses (Pesos/ 12 months)	PSC	15,841	28,372	2.3	2, 521	0.096
	PALM	14,334	29,142			
	PM	24,619	18,707			
	Total	15,946	28,122			
Mean Total Income after expenses (Pesos/ 12 months)	PSC	66,120	70,696	4.7	2, 519	***0.009***
	PALM	53,048	51,804			
	PM	40,738	23,680			
	Total	58,869	61,462			

Table: Mean annual income and expenses in each community – Post-hoc tests

Variable	Comparison	Mean difference	Post-hoc test	SE	P
Mean Total Numeric Income (Pesos/ 12 months)	PSC and PALM	11,724	Bonferroni	3,214	***0.001***
	PALM and PM	-5,857	Bonferroni	5,928	0.971
	PSC and PM	5,867	Bonferroni	5,810	0.939
Mean Total expenses (Pesos/ 12 months)	PSC and PALM	1,506	Bonferroni	2,580	1.000
	PALM and PM	-10,285	Bonferroni	4,745	0.092
	PSC and PM	-8,779	Bonferroni	4,648	0.178
Mean Total Income after expenses (Pesos/ 12 months)	PSC and PALM	13,072	Bonferroni	5,621	0.061
	PALM and PM	12,310	Bonferroni	10,324	0.701
	PSC and PM	25,382	Bonferroni	10,118	***0.037***

I calculated the approximate mean income generated from tourism in each household, by multiplying the 'proportion of income that households generate from tourism' by their 'mean annual income minus expenses' and the number of households with each proportion. After, I added the values into a gross value for all respondents. I divided the value by the number of households that are involved in tourism, to obtain an 'average household income from tourism - sample'. Subsequently, I multiplied the percentage of households involved in tourism in each community by the total number of households in the community, and the 'average household income from tourism - community'.

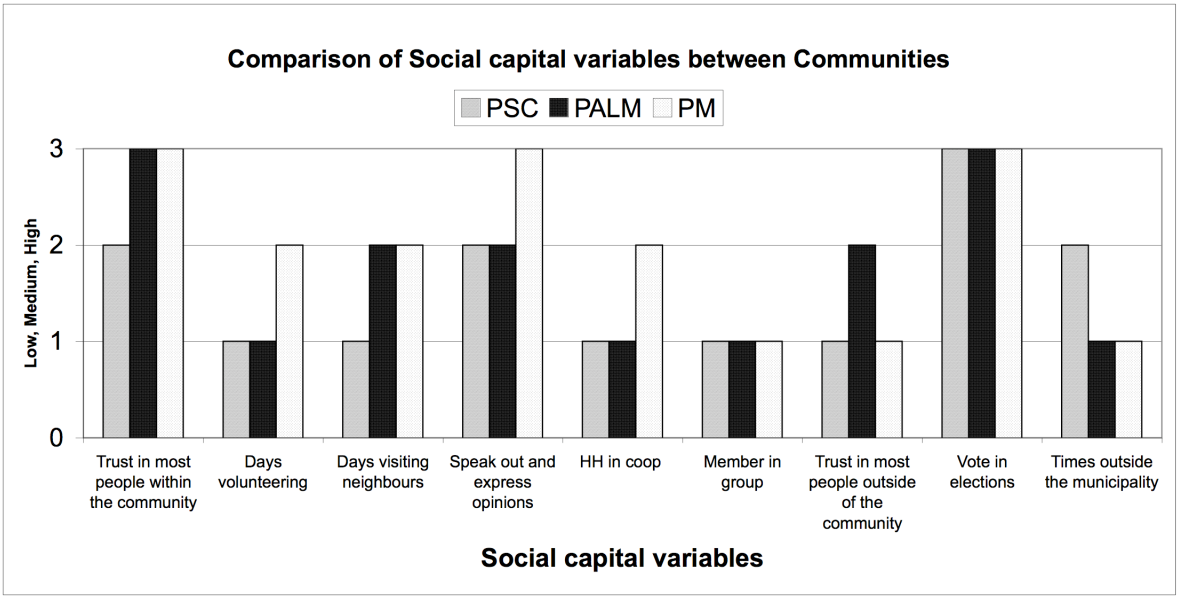
Table: Income generated from household involvement in tourism in each community

Average % of HH income generated from tourism	n	Mean annual income after expenses (Pesos/ 12 months)	Total income from tourism (Pesos/ 12 months)	n	Mean annual income after expenses (Pesos/12 months)	Total income from tourism (Pesos/ 12 months)	n	Mean annual income after expenses (Pesos/ 12 months)	Total income from tourism (Pesos/ 12 months)
	PSC			PALM			PM		
Nothing	3	56600	0	1	112500	0	1	97500	0
1-5% (3%)	12	80042	28815	10	72550	21765	2	45000	2700
6-10% (8%)	0	0	20400	5	51500	20600	0	0	0
11-20% (15.5%)	4	63750	175150	8	69163	85762	2	36000	11160
21-50% (35.5%)	7	161429	215663	17	69240	417865	0	0	0
51% or more (75.5%)	9	67500	2357713	12	39817	360739	0	0	0
Total	35	89223	**2797741**	53	62334	**906730**	5	51900	**13860**

Appendix F: Descriptive Data for Each Community

Variable	Cluster	Mean	SD	F/χ^2	df	P
Average age of respondent	PSC	41.7	12.8	F=6.0	2, 527	***0.003***
	PALM	43.8	13.3			
	PM	36.5	11.5			
	Total	42.1	13.0			
Gender – Proportion of Males	PSC	56%	0.50	F= 0.84	2, 527	0.432
	PALM	54%	0.50			
	PM	64%	0.49	χ^2=1.7	2	0.430
	Total	56%	0.50			
Household size	PSC	4.0	1.5	F= 2.3	2, 527	0.098
	PALM	3.9	1.6			
	PM	3.5	1.5			
	Total	3.9	1.6			
Years of formal schooling	PSC	8.0	4.2	F=2.2	2, 525	0.112
	PALM	7.3	4.4			
	PM	7.2	2.7			
	Total	7.7	4.2			
Years in the community	PSC	20.8	11.4	F=23.2	2, 526	***0.000***
	PALM	28.5	13.3			
	PM	23.6	14.6			
	Total	24.1	13.0			
Lived elsewhere	PSC	0.87	0.34	F= 8.23	2, 527	***0.000***
	PALM	0.73	0.45			
	PM	0.71	0.46			
	Total	0.80	0.40			
Wealth Index	PSC	0.70	0.27	F= 7.7	2, 519	***0.00***
	PALM	0.66	0.26			
	PM	0.53	0.25			
	Total	0.67	0.27			
Households involved in fishing or fish related activities	PSC	0.69	0.46	F= 7.8	2, 527	***0.000***
	PALM	0.65	0.48			
	PM	0.95	0.22			
	Total	0.70	0.46			
Households involved in tourism	PSC	0.13	0.34	F= 6.9	2, 526	***0.001***
	PALM	0.26	0.44			
	PM	0.12	0.33	χ^2=13.5	2	***0.001***
	Total	0.18	0.39			

Appendix G: Summary of Social Capital Variables in Each Community



Appendix H: Cronbach's Alpha Values for Social capital Variables

Social capital variables (Z-scores)	Does removing this variable affect the CA?	What is the value when it is not included?	Does removing this variable affect the CA? (Excluding certain variables)	What is the value when it is not included?
All variables		**0.403**		**0.459**
Trust in most people within the community	Decrease	0.367	0.414	Decrease
Trust in most people outside of the community	Decrease	0.379	0.436	Decrease
Days volunteering	Decrease	0.360	0.431	Decrease
Days visiting neighbours	Decrease	0.362	0.421	Decrease
How respond to a natural disaster	Decrease	0.388		
How resolve conflicts	Increase	0.456		
Speak out and express opinions	Decrease	0.309	0.361	Decrease
Vote in elections	Decrease	0.378	0.446	Decrease
Times outside the municipality	Decrease	0.389	0.466	*Increase*[13]
Household in cooperative	Decrease	0.382	0.428	Decrease
Member of group or association	Decrease	0.399		

[13] The CA of Times outside the municipality increases slightly when the other three variables are removed. However, it does not increase when all variables are included in the CA, and is important to consider with respect to bridging social capital.

Appendix I: Total Variance Explained from the PCA of Social Capital Variables

	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.723	21.534	21.534	1.723	21.534	21.534	1.437	17.959	17.959
2	1.315	16.435	37.969	1.315	16.435	37.969	1.414	17.673	35.632
3	1.087	13.588	51.557	1.087	13.588	51.557	1.274	15.925	51.557
4	0.920	11.499	63.056						
5	0.884	11.053	74.109						
6	0.784	9.796	83.905						
7	0.722	9.026	92.931						
8	0.566	7.069	100.000						

Appendix J: Rotated Component Analysis of Social Capital Variables

Figure: Rotated component analysis divided by definitions

	Component 1	Component 2	Component 3
Trust not in the community	Relations of trust		
Trust in the community	Relations of trust		
Days volunteering		Reciprocity and exchange	
Vote in elections		Common rules and norms	
Speak out and express opinions		Common rules and norms	
Days visiting neighbours		Reciprocity and exchange	
Times outside the municipality			Networks
Household in Cooperative			Networks

Figure: Rotated component analysis divided by bridging and bonding

	Component 1	Component 2	Component 3
Trust not in the community	Bridging		
Trust in the community	Bonding		
Days volunteering		Bonding	
Vote in elections		Bridging	
Speak out and express opinions		Bonding	
Days visiting neighbours		Bonding	
Times outside the municipality			Bridging
Household in Cooperative			Bonding

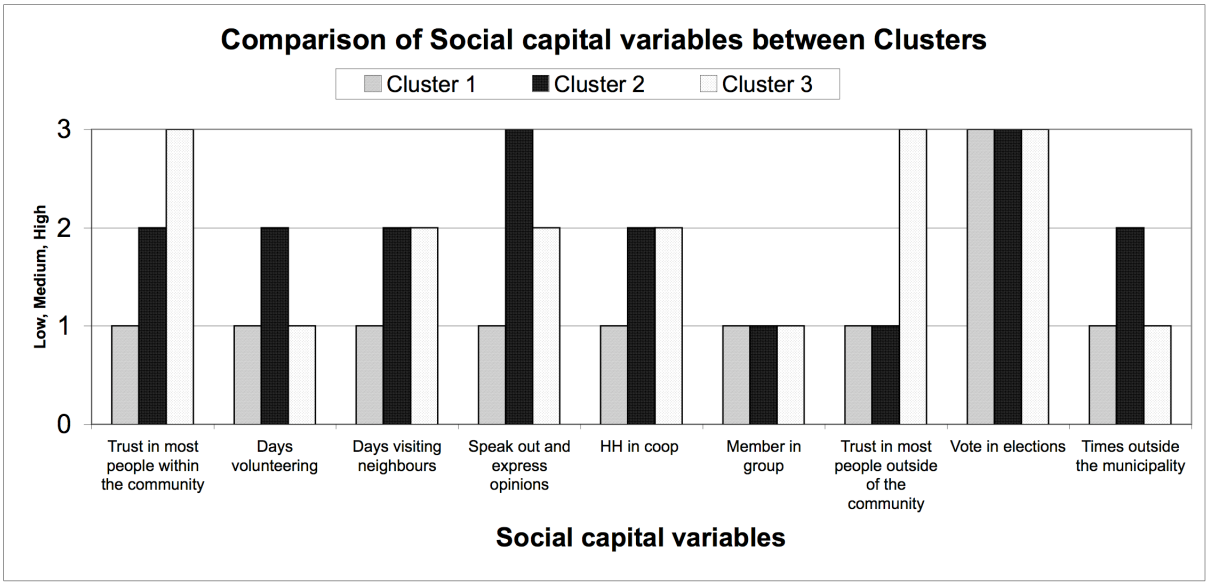
Appendix K: Agglomeration Schedule for Hierarchal Clusters

Stage	Cluster 1	Cluster 2	Coefficients	Differences between the coefficients
	Cluster combined			
493	1	3	770.3	108.6
494	19	491	905.8	135.5
495	1	19	1135.4	**229.6**
496	1	20	1488.0	352.6

Appendix L: Descriptive Data for Each Cluster

Variable	Cluster	Mean	SD	F/χ^2	Df	P
Average age of respondent	Cluster 1	40.0	12.0	F=10.2	2, 494	***0.000***
	Cluster 2	41.9	12.6			
	Cluster 3	46.6	13.9			
	Total	42.1	12.9			
Gender – Proportion of Males	Cluster 1	49%	0.50	F=4.5	2, 494	***0.012***
	Cluster 2	59%	0.49			
	Cluster 3	65%	0.48	χ^2=8.87	2	***0.012***
	Total	56%	0.50			
Household size	Cluster 1	3.9	1.6	F= 0.34	2, 494	0.710
	Cluster 2	4.0	1.5			
	Cluster 3	3.9	1.6			
	Total	3.9	1.6			
Years of formal schooling	Cluster 1	7.4	4.2	F=5.2	2, 494	***0.006***
	Cluster 2	8.6	4.1			
	Cluster 3	7.1	4.3			
	Total	7.7	4.2			
Years in the community	Cluster 1	22.5	12.7	F=3.5	2, 493	***0.030***
	Cluster 2	25.4	13.1			
	Cluster 3	25.9	13.5			
	Total	24.2	13.1			
Lived elsewhere	Cluster 1	0.83	0.38	F= 4.2	2, 494	***0.015***
	Cluster 2	0.72	0.45			
	Cluster 3	0.84	0.37			
	Total	0.80	0.40			
Wealth Index	Cluster 1	0.66	0.27	F= 1.1	2, 486	0.333
	Cluster 2	0.70	0.26			
	Cluster 3	0.67	0.26			
	Total	0.67	0.26			
Households involved in fishing or fish related activities	Cluster 1	0.68	0.47	F= 0.59	2, 494	0.557
	Cluster 2	0.72	0.45			
	Cluster 3	0.66	0.48			
	Total	0.69	0.46			
Households involved in tourism	Cluster 1	0.13	0.33	F= 7.8	2, 493	***0.000***
	Cluster 2	0.18	0.39			
	Cluster 3	0.30	0.46	χ^2= 15.3	2	***0.000***
	Total	0.18	0.39			

Appendix M: Summary of Social Capital Variables in Each Cluster



Appendix N: Functioning of Cooperatives and Number of Meetings

	Very badly	Badly	Neither well nor badly	Well	Very well
Cluster 1	0.0	2.7	1.3	4.9	2.0
Cluster 2	0.7	1.4	2.0	4.6	5.2
Cluster 3	0.0	1.0	3.1	4.1	4.5
Total	0.7	1. 8	2.2	4.4	4.2

The functioning of cooperatives differs significantly depending on the numbers of meetings in each cluster during a 12-month period (F= 3.3, df=4, 98, p=0.014).

Appendix O: Composition of Cooperatives in Each Community

Household in cooperative	Mostly family		Mostly friends and neighbours		From the community	
	% of households in coops	N	% of households in coops	n	% of households in coops	n
PSC	61	49	20	16	19	15
PALM	48	30	23	14	29	18
PM	50	12	13	3	38	9
Total	**55**	**91**	**20**	**33**	**25**	**42**

Appendix P: Attitudes on Marine Resources in Each Community and Cluster

The lower the mean is, the higher the agreement there is with the statement. The means of the opinions are: 1=strongly agree, 2=agree, 3= neither agree nor disagree, 4=disagree and 5=strongly disagree.

Table: Comparison of attitudes on marine resources in each community

Variable	PSC	PALM	PM	Total	F	Df	P
My community takes care of the environment.	3.5	2.5	3.0	3.1	45.7	2, 527	***0.000***
I take care of the environment.	2.2	1.9	2.1	2.1	6.5	2, 527	***0.000***
I plan on initiating a new business opportunity in the next 5 years.	2.3	2.4	2.3	2.4	1.1	2, 523	0.347
I can see myself taking a job in nature-based tourism if the opportunity arises.	2.1	2.0	2.0	2.1	0.5	2, 527	0.596
The permit system for fishing is equitably divided among the community.	4.0	3.3	2.8	3.6	29.9	2, 524	***0.000***
The permit system for whale watching is equitably divided among the community.	3.6	3.0	3.3	3.3	15.2	2, 527	***0.000***
The presence of whales in Magdalena Bay creates conflicts with fishing.	3.7	3.8	3.7	3.7	0.5	2, 527	0.617
Overall, a marine protected area would be beneficial for my community.	2.2	2.0	2.2	2.1	3.5	2, 526	***0.032***
I am concerned that an increase in development in the region would have a negative effect on the environment.	2.8	3.0	2.6	2.9	3.2	2, 526	***0.041***

Table: Comparison of attitudes on marine resources in each cluster

Variable	Cluster 1	Cluster 2	Cluster 3	Total	F	df	P
My community takes care of the environment.	2.4	1.9	1.7	2.1	14.2	2, 494	***0.000***
I take care of the environment.	1.2	0.9	0.9	1	9.7	2, 494	***0.000***
I plan on initiating a new business opportunity in the next 5 years.	1.3	1.4	1.4	1.3	0.67	2, 490	0.510
I can see myself taking a job in nature-based tourism if the opportunity arises.	1.2	0.9	1.1	1.1	6.0	2, 494	***0.003***
The permit system for fishing is equitably divided among the community.	2.7	2.6	2.4	2.6	3.6	2, 493	***0.027***
The permit system for whale watching is equitably divided among the community.	2.4	2.3	2.2	2.3	0.79	2, 494	0.450
The presence of whales in Magdalena Bay creates conflicts with fishing.	2.6	2.8	2.8	2.7	2.9	2, 494	0.057
Overall, a marine protected area would be beneficial for my community.	1.2	1.1	1.1	1.1	1	2, 493	0.354
I am concerned that an increase in development in the region would have a negative effect on the environment.	1.9	1.8	2.1	1.9	1.8	2, 493	0.169

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