



CRFM Secretariat



**The Consideration of
Socio – Economic and Demographic Concerns
in
Fisheries and Coastal Area Management
and Planning**

Belize Case Study

*Activity: Letter of Agreement (PO 152094) in support of
FAO Regular Programme Activity on fisheries activities*

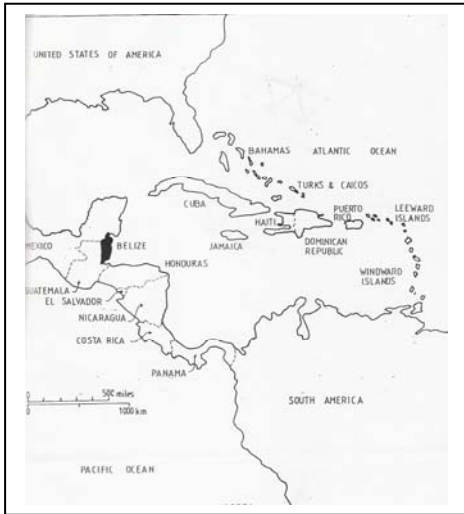
CRFM Secretariat
Belize City, Belize
January 2004



Submitted by:

Imani Fairweather-Morrison
August 2004

Map of Belize



Acknowledgement

The author acknowledges the following individuals and agencies for willingly sharing the details of their experience which facilitated the preparation of this report:

Michael Salton of Caribbean Regional Fisheries Mechanism (CRFM) Secretariat
Will Jones and Shalini Cawich of Friends of Nature
Robin Coleman and Will Mehia of Toledo Institute for Development and Environment
Herbert Haylock of Programme for Belize
Janet Gibson of Wildlife Conservation Society
James Azueta, George Myvette, Rigoberto Quintana of the Fisheries Department
Leandra Cho-Ricketts and Gina Young of Coastal Zone Management Institute
Leticia Vega and Glenn Avilez, Central Statistics Office
Dr. Joseph Palacio

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Cover page: Photo 1: Fisheries Department
Photo 2 & 3: Ian Morrison

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List of Acronyms

BELPO	Belize Environmental Law and Policy
CAC	Coastal Advisory Council
CARICOM	Caribbean Community
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CCA	Caribbean Conservation Association
CCAD	Central American Commission on Environment and the Environment
CCAP	Central American System of Protected Areas
CERMES	Centre for Resource Management and Environmental Studies
CITES	Convention for the Regulation of International Trade of Endangered Species
CSO	Central Statistics Office
CZM	Coastal Zone Management
CZMAI	Coastal Zone Management Authority and Institute
EEZ	Exclusive Economic Zone
EU	European Union
FAB	Fisheries Advisory Board
FAO	Food and Agriculture Organization of the United Nations
FDA	Fisheries Development Authority
FON	Friends of Nature
GCFI	Gulf and Caribbean Fisheries Institute
GDP	Gross Domestic Product
GEF	Global Environmental Fund
ICZM	Integrated Coastal Zone Management
MAFC	Ministry of Agriculture, Fisheries and Cooperatives
MBRS	Meso-American Barrier Reef System
MPA	Marine Protected Areas
NGO	Non Governmental Organizations
NOAA	National Oceanic and Atmospheric Administration
PA	Protected Areas
PfB	Programme for Belize
PHMR	Port Honduras Marine Reserve
TIDE	Toledo Institute for Development and Environment
TNC	The Nature Conservancy
UNDP	United Nations Development Programme
UNICEF	United Nations
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

Executive Summary

Belize is a relatively small country with a wide array of fairly well preserved natural environments that have not yet been overly exploited. It is perhaps best known for its Barrier Reef which is the largest coral reef in the Caribbean and the second longest in the world, extending for some 220 kilometres along the coast. Approximately 82,137 persons or 33% percent of the population resides along the coast; including the indigenous Garinagu's who view the sea (barana) and earth (mua) as primary givers of life.

With growing macro economic transformations, multiple hurricanes and declining stocks, coastal and fisheries resource manager's have been hard press to establish and operationalize frameworks that facilitate greater involvement of local level stakeholders in resource management. Such efforts have been largely successful seeing improvements in terms of increased equity in resource management, increased opportunities for information sharing and synchronization of policies amongst others. However, there are notable barriers such as legislative deficiencies and weaknesses and the costly nature of maintaining the framework at a time when there are growing financing challenges facing the government.

In incorporating socio-economic indicators in management resource managers have relied on data which is mostly available from government institutions. Site level partners, who generally develop their own data collection tools, seem less aware of the fact that national databases exist which highlights the need for greater awareness and accessibility of these databases. This can be enabled through posting on websites and issuance of publications on a more regular basis.

To further improve our understanding of the socio-economic dimensions of resource management we need to improve our understanding of how specific regional and international commitments (particularly economic and trade policies) are impacting on the poorest of the poor in the coastal areas. Furthermore, and perhaps as a result of the male dominated nature of the industry our research has failed to give meaningful understanding of gender and youth related issues.

Belize as a country has achieved quite a lot in terms of integrating socio-economic information in fisheries and coastal area management but there is still room for improvements in the way in which we develop fisheries management plan, coastal zone plans and marine protected areas plan.

1.1 General

1.1.1 Belize is located in Central America and is bounded by Mexico in the north, Guatemala on the south and west and the Caribbean Sea on the east. The country is relatively large in comparison to other Caribbean nations (22,963km² of land area, including 689km² on 450 offshore cayes¹ and an exclusive economic zone (EEZ) of approximately 170,000km², over 7 times its land area²). It has a wide array of fairly well preserved natural environments that have not yet been overly exploited and is perhaps best known for its Barrier Reef which is the largest coral reef in the Caribbean and the second longest in the world, extending for some 220 kilometres along the coast.

1.2 Demography

1.2.1 The 2000 census reports the population of Belize to be just under 250,000, almost equally split between males (50.5%) and females (49.5%). This represents a 26.8% change in growth from 1991 when the total population stood at just over 189,000, which brings the growth rate to 2.7% in 2000.

1.2.2 The predominant ethnic group in Belize is the Mestizo and the Creole which represents some 48.7% and 24.9% respectively, however a diversity of other ethnic groupings are reflected in the smaller segments of the population. This current ethnic composition represents over five-percentage point shift in composition from the 1980 census report, which reported a 33.4% Mestizo population and 40.0% Creole population. Such changes have consequently had some influence on the rural-urban population figures in that with the growth in Mestizo population has come growth in rural inland population. In 2002, approximately 48.6% of the population lived in urban centres, which is a noted shift from the 1980s when more than half (52.48%) of the population resided in the urban centres through out the country.

1.2.3 Today, approximately 82,137 persons or 33% percent of the population of Belize resides in eight villages, four towns and one city along the coast (See annex 1 for population distribution along the coast). The indigenous Garinagu's comprise approximately 14% of the coastal population and for Palacio (2002c) "*the sea is a primary source of food... and it has a sacred place in Garifuna spirituality. They pay homage to the sea (barana) and earth (mua) as primary givers of life*".

1.2.4 The structure of the population is typical of many developing countries in that there is a high incidence of youth as approximately 41% of the population is below the age of 14, and

¹ See Hartshorn, Gary et al (1984).

² See Gillet (2003).

approximately 20% are between the ages of 15 and 24. Dependency ratios are therefore very high. Child mortality rate is approximately 19.7.

1.2.5 The Belize Country Poverty Assessment of 1996, using a per capita measure of poverty, reports that 33% of the population and 25.3% of the households were below the poverty line. This estimate would place Belize's level of poverty second only to Guyana's in the CARICOM region³. Poverty is greatest in the southern most part of the country and women constitute 49.5% of the poor. The youthfulness of the poor is a reflection of the population structure itself as 53.5% of the poor are below the age of 14. The correlation between unemployment and poverty is evident as in 1996, 27.7% of the poor are unemployed as opposed to 15.5% of the non poor.

1.3 The Economy

1.3.1 GDP stands at \$1.28 billion⁴, agriculture, of which fisheries is a sub-sector, contributes some 18%. Real economic growth rate has drastically slowed from 10.8% in 2000 to 4.6 in 2001 and 3.7% in 2002 partly due to declining revenues from international markets and impacts of several hurricanes.

1.3.2 The Belizean economy up until recently has been dominated by its exports sectors which hinges on two to three agricultural products, namely sugar, bananas and citrus. More recently fisheries, specifically aquaculture has begun to contribute significantly to overall GDP. However, with the threats of erosion of preferential arrangements and growth in globally competitive export industries there is a looming risk for those employed in the traditional agriculture sector. Due to these macro economic transformations, the country is more recently turning to tourism (particularly cruise tourism) to facilitate economic growth. In 2003 tourism contributed 14.6% to GDP and the sector has been growing at a rate of 36.7% between 2002 and 2003.

1.3.3 Belize primarily exports to the United States (47.6%) and The United Kingdom (24.1%). Primary imports, derived mainly from the United States of America (29.5%) are machinery (28.3%), manufactured goods (17.78%), minerals and fuel (17.33%) and food (12.6%).

1.4 The Fishery

1.4.1 The fisheries sub sector is of growing importance to the Belizean economy. Although the capture fishery industry is primarily small scale and is undertaken within the shallow protected waters of the barrier reef and the atolls, the industry has grown from approximately 790 registered

³ See Pantin (2004).

⁴ 2002 Estimates.

fishers and 566 vessels in 1973 to approximately 3,527⁵ registered fishers and 800 vessels in 2002 (Marin, 2001). Over 500 persons are also employed in processing and marketing while approximately over 900 permanent and 700 part time workers are employed in the aquaculture industry. Its contribution to GDP is approximately 5% ranking it third in terms of importance to the agricultural sector of the economy of Belize (MAFC 2002b). In 2004, approximately 1800 licensed fishermen operated in Belize.

1.4.2 Artesian fishing vessels are generally the fibreglass skiffs, sailing dories or motorized dories of approximately 12 to 30 feet in length. The fishers also use wooden boats ranging in size from 24 to 42 ft and equipped with sails and outboard motors of 25 to 40 Hp. Artisan fishers fish a range of species according to the seasonality and geography of the stocks, an approach which is reflected by the wide variety of gears used. Gill nets, beach seine and cast nets, hook and line, rod and reel, lobster traps and “hook stick”, fish traps and shrimp trawlers are all used in the fishing industry. However, the industry has traditionally focused on the lobster and conch fishery. In comparison to 2003, Belize’s fisheries production for the year 2004 showed an increase of 2.6% for lobster, 17.3% for conch, 41.98% for marine shrimp, 728.2% for crab claws and 1.64% for lobster head meat. The total fishery production amounted to 12,115 metric tones (including 11,065 metric tones of farmed shrimp) with an estimated value of \$96.4 million dollars.

1.4.3 Aquaculture in Belize has grown by approximately 160% over the last ten years (Myvette et al 2002). The export earnings have grown from BZ\$1.8 million in 1990 to BZ\$51.7 million in 2002 and 6,788 acres of land was devoted to shrimp farms alone in 2002 reflecting a 12% increase from 2001 for the predominant farm type. In 2004, shrimp production amounted to 24.34m pounds and was worth an estimated \$73.93m Bze.

1.5 Political, legal and administrative structure

1.5.1 Belize has only recently gained independence (September, 1981) from the United Kingdom and administratively it is divided into six districts. Settlement of a longstanding territorial claim by Guatemala for terrestrial and marine parts of the country is currently being negotiated.

1.5.2 Decision-making like most Caribbean countries tend to revolve around the Executive Branch (Governor General, Prime Minister and Deputy Prime Minister and Cabinet; the Legislative Branch of Government, which consists of an upper house or senate, and a lower House of Representatives and the Judicial Branch which includes the Supreme Courts. Through recently enacted legislation the village council are empowered to become involved in decision making regarding resource use at the locals levels, albeit in an advisory capacity.

⁵ See CZMAI (2003), State of the Coast Report 2001/02. Coastal Zone Management Authority and Institute.

1.5.3 Belize has had a relatively long history of conservation efforts which has been readily supported as a result of its association with the broader eco-region, Meso-American Barrier Reef System (MBRS). It has also involved in several bilateral and regional conservation agreements.

2.0 Institutional and Legal Environment

2.1 The management and regulation of fisheries and aquaculture

2.1.1 Responsibility for marine resource management and conservation in Belize is stretched over three main ministries; the Ministry of Fisheries and Agriculture, the Ministry of Natural Resources and the Environment and the Ministry of Culture. McField et al 1996 identifies over ninety-four Acts, administered by eighteen permitting agencies through ten Ministries. Furthermore, Belize is signatory to over twenty-four international conventions and treaties relating to marine life and coastal protection, including Convention for the Regulation of International Trade of Endangered Species (CITES) Convention, the World Heritage Convention, the Convention on Biological Diversity and MARPOL (McCalla, 1995; Jacobs, 1998).

2.1.2 Notwithstanding this legislative and institutional fragmentation it is well recognized that the Ministry of Agriculture and Fisheries (MAFC) is the Government agency with primary responsibilities for formulating, executing, monitoring and coordinating policies related to fisheries management among other things. It executes these responsibilities through its primary legislative tool, the Fisheries Act (1980), Chapter 210 of the laws of Belize, which was revised in 1993. Through this Act the Fisheries Department is tasked with responsibilities for establishment of an advisory board, the preparation of a management plan, fisheries access agreements, local and foreign fishing licensing, fish processing establishments, fisheries research, including aquaculture developments and marine reserves establishments and management.

2.1.3 The Department is also tasked with oversight and regulatory responsibilities for the aquaculture sector as it relates to the formulation of policy and legislation, the issuance and administration of farming permits or licenses, technical advice to farmers and potential farmers, environmental compliance monitoring and enforcement (Myvette et al 2002). The legislative amendments have in fact served to strengthen the process for issuing fishing licenses and strengthening the regulation of the aquaculture sector.

2.1.4 Through this Act and subsequent regulations the Department has instituted gear restrictions, size limits and closed seasons applicable to most of the fishery. The Act also specifies conservation measures such as prohibiting the use of explosives, poison or other

noxious substance “for the killing, stunning, disabling or catching of fish”. The department also regulates the issuance of fishing vessels and other licenses.

2.1.5 Marine Protected Areas are declared primarily as fisheries management tools, and in this regard the Department has established 8 marine reserves and 11 spawning sites to ensure the conservation of critical habitats for key commercial species. These initiatives have been supported by those of the Forestry Department in that through the National Parks Act and other relevant legislation the Minister of Natural Resources has declared a number of other marine and coastal mainland protected areas to protect wetlands and other critical habitats. The Wildlife Protection Act (1981) for instance is administered by the Forest Department and it provides for protection against the killing, taking, molesting, exportation, importation, trade, and the transportation of critical and endangered species such as the manatee and turtles.

2.1.6 Notwithstanding the abundance of legislation and provisions under the Act there are recognized deficiencies in the management of the fishery to be noted. Firstly, the fishery is largely open access as the measures to regulate vessel licensing etc. does not effectively limit entry or does it control fishing effort (Gillette 2003 and McConney 2003). The department had a staff of 19 permanent employees as well as several who were not permanently appointed bring the total staff numbers to 66. The department’s allocation for 2004-2005 was approximately three quarter million US Dollar. Budgetary constraints have served to impair the department’s ability to further strengthen its capacity in its human resources and the ability to expand its research and monitoring activities. Budgetary constraints have also crippled its enforcement capabilities which are one of the more critical activities in ensuring sustainability of the fisheries resources. Similar problems also plague the Forest Department.

2.2 Regional planning and development in coastal areas

2.2.1 Like fishery management, regional planning and development legislation in Belize is equally splintered across a range of institutions. Trench - Sandiford (2003) identifies five primary pieces of legislations relating to planning and development in Belize (The Housing and Town Planning Act, Land Utilization Act, Coastal Zone Management Act, Reconstruction and Development Corporation Act, Belize Building Act) and several efforts without legislative authority. Under the Housing and Town Planning Act several orders for coastal communities have been promulgated namely the Corozal Town Planning Scheme (1964), Dangriga Town Planning Scheme (1964), Ambergris Caye Planning Scheme (1990) through which land use and zoning plans have been developed and is being implemented. Socio-economic data primarily sourced

from the central statistical offices has been used in the preparation of these plans. However, these earlier initiatives failed to give direct and detailed consideration to the socio-economic conditions of the fisherfolks, perhaps as a result of the top down approach to development planning that characterized the processes.

2.2.2 The origins of the move towards a more holistic and integrated approach to coastal zone management in Belize is often traced back to a meeting in San Pedro in 1989 where it was recognized that horizontal and vertical integration of decision making regarding Belize's coastal resources was necessary. The meeting therefore resolved that a CZM unit be established within the Fisheries Department to initiate the program, and by 1990 a small unit and technical committee was established. With the financial assistance of GEF/UNDP in 1993 a US\$5M coastal zone management project was launched, providing the basis for a permanent national programme.

2.2.3 Recognizing the need to formally approach coastal development in a coordinated and planned manner, the Government of Belize, passed the Coastal Zone Management Act (Chapter 329 of the laws of Belize revised edition 2000) in 1998, and thereby called for the establishment of the Coastal Zone Management Authority and Institute as a separate entity to primarily advise and coordinate the decision making processes in the coastal zone.. To support the strengthening of this agency UNDP/GEF/EU provided an additional US\$6.9M.

2.2.4 The Act called for the establishment of an Advisory Council and Board to provide for inter agency coordination and advise on coastal issues. The Board benefits from having a high level representation from key government agencies such as The Ministry of Economic Development, The Ministry of Natural Resources, The Ministry of Tourism and The Ministry of Fisheries while the Advisory Council has an even broader representation comprising various government department heads, private sector, cooperatives, NGO and academia representation.

Figure 1: Functions of the Coastal Zone Management

- a) advise the Minister on all matters relating to the development and utilization of the resources of the coastal zone in an orderly and sustainable fashion;
- b) advise the Minister on the formation of policies in regard to the coastal zone;
- c) assist in the development and implementation of programmes and projects that translate the marine and related policies of the Government into activities that contribute to sustainable development of coastal resources;
- d) assist in the development and execution of programmes and project that foster and encourage regional and international collaboration in the use of marine and other related areas of the environment;
- e) review the Coastal Zone Management plan prepared in accordance with the provisions of part v of the Act and furnish recommendations to the Minister;
- f) Commission research and monitoring in any coastal area or in relation to any activity which may impact on such areas;
- g) Promote public awareness of the unique nature of the Belize coastal zone and of the importance of its effective conservation and the sustainable management and utilization of its resources for the benefit of present and future generations of Belizeans;
- h) In consultation with government agencies, non-governmental agencies and the private sector, assist in the preparation of guidelines for developers for coastal zone development;
- i) Co-operate with government departments, statutory boards, non-governmental agencies and the private sector on matters that are likely to have an impact on the ecology of the coastal zone;
- j) In collaboration with government and private sector agencies, maintain a national coral reef monitoring programme and coastal water quality monitoring programme and any other technical monitoring programmes;
- k) Advise the Minister on any other matter relating to the coastal resources that may be referred to the Authority by the Minister.

Source: Coastal Zone Management Act, Chapter 329 of the Laws of Belize.

2.2.5 Of importance here is the fact that the Act calls for the preparation of a Coastal Zone Plan for all of Belize that should be developed through a broad based, consultative process allowing for input and by all sectors, including the fisheries sector. Towards the development of this plan the CZMAI has facilitated the development of The National Integrated Coastal Zone Management Strategy for Belize, through quite an extensive process, to provide the linkages between national and local authorities as well as NGOs and private sector partners. This strategy, which was officially adopted by the Cabinet of Belize in February 2003, refers to the role of the authority in poverty alleviation and it also acknowledges the important role and function of the various actors /partners in fisheries management and the need for a process of integration through stakeholder participation.

2.2.6 Furthermore the strategy lays out a more detailed methodology for the development of the plan utilizing series of regional coastal management plans for eight planning regions nationwide, each having a coastal advisory committee (CAC) with detailed terms of reference to facilitate a more bottom up approach to decision making thereby increasing local level ownership and inclusion in the resource management process as can be seen in the following section. Members of the CACs have received training in leadership skills, conflict resolution, consensus building and mechanisms for conducting effective meetings.

2.3 Co-management of fisheries and coastal aquatic resources

2.3.1 Perhaps the most comprehensive, current and accurate work on co-management is to be found in the work by McConney et al 2003 which

The definitions of co management focuses on "sharing of responsibility and authority for the management of resources between government and stakeholders" McConney (2003)

provides a most detailed case study report on the fishery management in the context of ICZM. The chronicle starts with the establishment of Fisheries Advisory Board (FAB) in 1965, which as he puts it, facilitated an interesting consultative form of co-management in Belize despite the fact that co-management, has not been legally institutionalized. McConney's review highlights that the FAB for over the last 35 years has met frequently to consider a diverse set of fisheries management (both development and conservation) issues and the fisheries cooperatives (four of which are active⁶), exercises considerable power in and through the FAB. The FAB's primary role is to plan for the management and development of fisheries, the development of proposals for access agreements, joint venture investments in fisheries or development projects in the fisheries sector amongst others. However, in the absence of a legal status, the FAB lacks the legal teeth to ensure implementation of its recommendations and is vulnerable to the personal agendas.

2.3.2 Recognizing the need for greater partnership in management, the department has also signed approximately five co-management agreements for management of marine areas even though there is a recognized lack of explicit legal basis and guidelines for doing so. To support management at these sites, there has been the establishment of Marine Protected Areas Advisory Committees (MPACCs) at five of the world heritage sites, membership consisting of government agencies, NGOs, CBOs elected community representatives, local non-government and community based organizations, local institutions and fisheries cooperative members. The primary purposes of these committees are to facilitate a more bottom-up and integrated approach to resource management, and more importantly to enable a better balance in the management of the site (i.e. an ideal mix of ecological and social considerations).

2.4 The integration of fisheries and coastal aquaculture management into coastal area management, planning and conservation.

2.4.1 The intervention towards the integration of fisheries and coastal aquaculture management into coastal area management planning and conservation has yielded quite a number of successes. Firstly, The Chief Executive Officer of the Ministry of Agriculture, who represents the governments' fisheries interest, sits on the CZM Board and has held the position of chair since the inception of the agency. As the Fisheries Advisory Board reports to the same

⁶ Northern, Caribena, National and Placencia fishing cooperatives are active with a total membership of 1,285 and assets of over \$20.1 million. In 2000, seafood exports from fishing cooperatives exceeded \$19 million, representing over 28% of the total fish exports.

CEO there is the potential for exchange and information and the synchronization of policies and programmes. Moreover, the Board also acted as the steering committee to the recently completed Sustainable use of the Belize Barrier Reef Complex Project funded by UNDP/GEF/EU, and as the project had major components related to the improvements of Belize marine protected areas system management, the Administrators of the Fisheries Department sat as an observer at board meetings. Through the advisory council to the CZM board, fishing cooperatives and the fisheries department has had representation again providing an opportunity for information exchange and policy harmonization.

2.4.2 Secondly, the coastal planning programme which facilitated the development of a cayes development policy and detailed land use planning and zoning guidelines stands to positively impact upon fishing interest in terms of reducing habitat destruction, pollution from land based activities and even land tenure conflicts which may arise.

2.4.3 Thirdly, the framework which establishes the coastal advisory council has been a useful forum for building knowledge of development initiatives if not for reconciling differences regarding resource use, as it provides an avenue to bring a balance between stakeholders concerned with coastal resource management, in terms of decision-making, power and equity.

2.4.4 Fourthly, through the FAB, Advisory Council, CAC and MPAACs level, fishers have used their organizations as vehicles for representation and have been very effective in doing so. As McConney (2003a) puts it, they “do not ...project themselves as being powerless in relation to other stakeholders in the coastal zone” such as the tourism related groups⁷.

2.4.5 Notwithstanding the above-mentioned achievements, there are numerous constrains to be found in integrating fisheries into coastal management as promoted by the Code of Conduct for Responsible Fisheries. Firstly, the legislation is notably lacking in various areas including its legal definition of the coastal zone, which does not include the EEZ and mainland/watershed areas, thereby inadvertently legally restricting the scope of all planning and resource management exercises.

2.4.6 Secondly, the CZMAIs mandate was legally restricted to that of initiating cross-sectoral planning with very limited additional responsibilities or powers. Sectoral agencies with recognized widely varied mandates retained all their responsibilities and on a discretionary basis chose what aspects of planning and actions they wished to coordinate with others through the CZMAI. So, while the responsibilities and mandates of sectoral agencies were analysed and

⁷ CZMAI (2002) contradicts this view in that only 16% of the fishers interviewed in a nationwide survey “believed that fishers are “very involved” in decision-making. Some 44% of fishers believed that they or their representatives (cooperatives) are not involved in decision-making process regarding to MPAs specifically.

defined they were never legislatively revised within the context of integration with intent to reduce overlapping or conflicting jurisdiction. In addition, appropriate coordinating and integrating arrangements were never established formally through instruments such as Memorandum of Understandings which could amongst other things establish the timelines and formal methodologies etc. for keeping all agencies informed of coastal area policies to ensure coherence in policy implementation.

2.4.7 Thirdly, the open access nature of the fishing industry has had some disadvantages in the management efforts of the sector in that it is difficult to control the entry of fishers to the sector under the present structure. The fishing industry has a hard time convincing other resource users of the need to restrict their activities when regulatory measures used to control resource use within the industry itself suffer from less than desirable enforcement partly due to economic constraints. Furthermore, within the coastal planning process it became apparent that conflicts within the industry between fishers from differing geographic regions using the same fishing areas, trawlers vs. small scale fishers, as well as between poachers from neighbouring countries, impacts on the ability to address intra-sectoral resource management issues.

2.4.8 Fourthly, the CZMAI in its role of facilitating integration is seen as being conservationist rather than production-oriented, contributing to a certain level of tension between the Fisheries Department and the CZMAI (McConney, 2003).

2.4.9 Lastly, the participatory processes and framework, as much as they were desirable in terms of building alliances proved to be demanding from a time and financial perspective (Johnson 2002). Fishers and other stakeholders found the process demanding and as the CACs and MPAAC had no legal basis, they were fear-full that their efforts stopped short of fully empowering them. Moreover, although members of the CACs benefited from conflict resolution training, the process did not clearly outline recommendations for dealing with and overcoming potential conflicts.

2.5 Future outlook and next steps to be taken

2.5.1 With the completion of the UNDP/GEF/EU project, there is an urgent need to develop and implement a coastal zone management program for Belize. There has been many accomplishments and lessons learnt under the project and those need to be built on and provide the basis for a national program. The failure to more firmly embed the program into the legal frameworks could easily result in the dissipation of the years of investments. It is therefore pertinent that the CZM Board reviews with intent to adopt the planning guidelines and more importantly the implementation framework, which have all been drafted. Likewise, legislative

amendments would be required to formally incorporate the MPAAC and co-management partners into the marine protected areas framework.

2.5.2 The protected areas issues could perhaps be addressed within the broader context of strengthening the overall framework for national policy and plan for both marine and terrestrial protected areas in Belize to ensure that amongst other things, there is the introduction of a strong legal basis for co-management, one which recognized the need to consider the socio-economic conditions of coastal communities that rely on these resources. Through the implementation of the National Protected Areas Systems Planning initiative, which is ongoing, the Government of Belize hopes to overcome some of the weaknesses identified in protected areas management.

2.5.3 However, even if there is the legal framework and a more participatory approach to resource management there is need for sustainable financing for site level efforts and coastal area planning initiatives, which will require not only international inputs but also private sector and government financial commitment.

3.0 Socio-economic and Demographic Considerations

3.1 Socio-economic and demographic information availability

3.1.1 Through the national census one is able to obtain extensive data on coastal fishing communities. The Central Statistical Office through the census exercise undertaken every ten years generates data on population, age, sex distribution, access to basic amenities, housing conditions, employment by industry and unemployment, income and poverty levels, educational attainment, amongst other variables. The data is therefore readily available. In fact, Belize is the only Caribbean country that has posted its entire census data for 2000 on the web (www.cso.gob.bz), an initiative facilitated by its link to Central American and its database. Through the CCAD and its CCAP initiative, data on labour force and other variables are also available. However, the CSO Belize has confirmed that to date there has been no request or query for *disaggregated data* on fisher folks specifically, although numerous request are made for information on the coastal communities broadly speaking, neither have they separately published disaggregated data on fisher folks or coastal communities.

3.1.2 Belize has also established a Social Indicators Committee⁸, chaired by the CSO, which has strengthened national capabilities of generating social data. Through this means some 77-80 indicators have been developed and information maintained and in 1998 the agency made its 1st and last publication (Glenn Avilez, chairperson: telephone interview). UNICEF has provided training to member agencies and equipment for storage and generation of the data; however, the national awareness of the efforts of this committee seems largely unknown by those in the fisheries management fraternity.

3.1.3 At the sector level, the cooperatives generate some catch effort data, which is submitted to the Fisheries Department on a monthly basis, and it is this data that is used by the Department in their annual publications etc. However, the fishing cooperatives and the Department of Fisheries confirmed that they generate very limited social data on fishers due to the perceived costliness of doing so. The cooperatives generate data on catch and the region fished while the Fisheries Department generates general information on the number of registered fishers, the number of aquaculture farms, employment in the sector and at a macro level - income generation and contribution to GDP for instance. More importantly, it is legally required that a permit be obtained from the department in order to undertake coastal research. All research findings, which must be lodged with the department and as such is available to the public.

⁸ The Social Indicators Committee was first established in 1997. It comprises various social government ministries and NGO to improve the timeliness, quality and accuracy of social data.

3.1.4 The generation of the micro level disaggregated data is more commonly undertaken through the initiatives of non-governmental organization such as in the preparation of management plans for the MPAs (within which there is often a component of the work dedicated to understanding the coastal communities that they work with) or through newly emerging initiatives such as the Soc-Mon research being undertaken by a number of co-management partners as highlighted in the following case study reports.

3.2 Use of socio- economic and demographic indicators

3.2.1 Outside of the earlier land use planning initiatives undertaken in coastal areas, which naturally utilized socio-economic and demographic indicators in profiling the communities, the most recent and more comprehensive initiative is the planning guidelines developed for all of the coastal regions of Belize⁹. The planning exercise was however restricted to cayes most of which are uninhabited. It reflected on the need for safeguarding of the interest of fishers through the protection of traditional use areas such as beaches and fishing grounds. While it was notably weak in its use of detailed information on fishers its usefulness to policy and the permitting agencies are high from a land use planning perspective. Data used was primarily population data derived from CSO and interviews with fishers found at the fishing camps at the time of conducting land use assessments. Interviews focused on occupancy and density rather than other quality of life variables. The exception in the coastal planning program was Caye Caulker (a pilot area under the planning program), which is described in details as a case study.

3.2.2 One research dedicated to understanding the socio-economic conditions of coastal communities is that of an MSc student Perez who undertook an assessment of socio-economic conditions of Placencia, Hopkins, and Monkey River as a part of fulfilling her academic requirement and a request of Friends of Nature (FON). Pantin et al work undertaken in the early part of 2004 addresses the barriers to introducing alternative sustainable livelihoods strategies such as access to credit.

3.2.3 Dr. Joseph Palacio undertook another extremely useful assessment in 2002 for the Community Management of Protected Areas Conservation Project (COMPACT) project, where he extensively looked at coastal communities cultural, economic and social use of marine resources and their role in the economic development and the possible community based interventions to mitigate threats. The assessment, which was intended to inform the UNDP/GEF small grants program for the world heritage sites, derived its data primarily from questioners and focus group

⁹ See Figure 3 for a listing of relevant reports.

meetings comprising a range of coastal users such as (fishers, tourism, elders, media, civil society, local government). His questioner captured the following socio-economic data:

Figure 2: Data captured by Dr. Palacio's questioner

Data Type		Description
Demography		Age, source of income, household size, ethnicity, time period in the community.
Environment	Geography	Methods of livelihood from the sea, areas exploited relative to the reef, distance from community
	Awareness of Reef	Level of knowledge of basic reef features
	Threats to the reef	Awareness of treats and ranking of them
	MPA	Awareness of MPAs purpose and contributions
Social Values		Level of acceptance of various kinds of livelihoods
Cultural Attitudes		Community specific uses, cultural memories etc
Economic		Income generation possibilities, alternatives

3.2.4 Melanie McField's (2002) evaluation of management effectiveness of the Belize Marine Protected Areas System (a consultancy for CZMAI) is perhaps the most comprehensive attempt at determining the extent to which protected areas in Belize have been useful tools for conserving ecosystems and fisheries stocks amongst other uses. Using WWF/CATIE evaluation protocol the assessment concluded that MPA network was being managed "moderately satisfactory (71%)". Her assessments were instrumental in highlighting the deficiencies in MPA, which were primarily "weak policies, laws, knowledge, biogeography characteristics and the management of legal and illegal uses". Government managed MPAs were managed "minimally satisfactory (46%)" and those administered by NGOs ranked "satisfactory (77%)" depending on the management model.

3.2.5 Despite this moderately satisfactory rating and due to continued expression of concerns from fishers and the strong lobbying for de-reservation of some sites, CZMAI with support on MPA working group later conducted a survey of fishers in 2002 to determine fishers' perception of MPAs in Belize. The findings of this survey along with several related studies are posted on the web at www.coastalzonebelize.org. The questioner, which targeted 247 fishers¹⁰ nationwide highlighted that some 42% of fishers lacked understanding of the concept of MPAs and often equated it with the closing of the area to facilitate tourism. Some 45% felt that MPAs impacted negatively on the fisheries, and 23% said MPAs did not change the state of the fisheries whatsoever. 68% of the fishers indicated that they knew the regulations of the MPAs while 58% of the fishers who believe fishers did not comply with the regulations suggested that they deliberately choose to ignore them due to economic needs. Undoubtedly this research was illuminating in that it underscored the fact that despite the many planning initiatives and attempts

¹⁰ Margin of error is reported as +_ 5% at a confidence level of 90%.

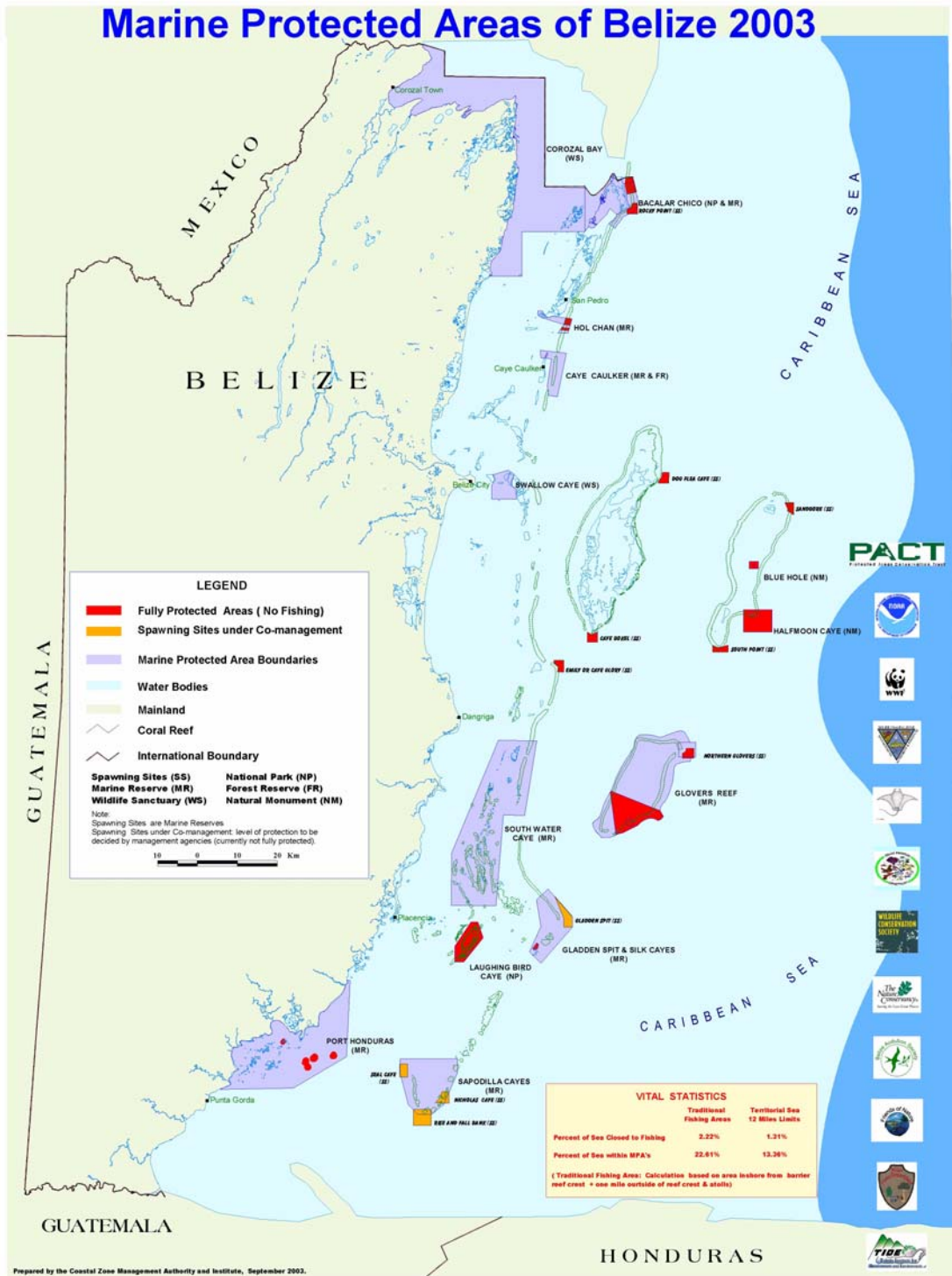
at bringing fishers closer to the heart of decision-making regarding resource use, there was still much to be done to improve the appreciation and understanding of the benefits to be derived from the management and conservation measures.

3.2.6 Perhaps as a consequence of this recent research much of the site level initiatives in the last two years have been directly oriented to improving the integration of socio-economic and demographic data in management of the resources. Several co-management partners have commenced the implementation of social monitoring programs, influenced methodologically by NOAA and Pomeroy, therefore generating their own data through questioners. Primary data is often supported by the work of Heyman and Graham (2000) on fisheries resources, Palacio (2002) on community perspectives, Brown and Pomeroy (1999) for coastal resource management issues, McField (2000) co-management and management effectiveness in MPAs and CZMAI (2000) on policy and planning matters. Several of these recent initiatives are featured in the case study reports as they provide useful insights into the complexity and challenge to be encountered in considering the socio-economic dimensions of resource management.

Figure 3: List of Key Published Reports

Year	Title of Study	Geographic Scope	Author	Data Source	Issues Address
2000	National Census	Nationwide	Central Statistical Office	Household Surveys nationwide	Age, sex distribution, access to basic amenities, housing conditions, employment by industry and unemployment, income and poverty levels, educational attainment etc.
2002	Community Management of Protected Areas Conservation Project (COMPACT)	Nationwide	Dr. Joseph Palacio	Questioner & Focused group meetings	Use of coastal resources, knowledge of treats and sources, MPAs contribution to welfare of coastal community, degree of social values to various forms of exploitation, willingness to alter behaviour, extent of economic reliance, benefits to women and youths.
2002	Fishers Perception of Marine Protected Areas in Belize	Nationwide	CZMAI (Tanya Williams)	Questioner	Purpose of MPAs, impacts on fisheries, knowledge of regulations, involvement in decision making, primary fishing grounds, source of income, interest in MPA education programmes.
2000	The Voice of the Fishermen of Southern Belize	Southern Belize	Will Heyman and Rachel Graham	Questioner & Secondary Data	Distribution of fishers, time fishing, vessel & gear type, geography and seasonality of fishing, cost and marketing of fisheries, economic alternatives of interest, knowledge of laws and regulations, estimated landings and value of the fisheries, species harvested perceptions of the resource, suggestions for improvements.
2000	Evaluation of Management Effectiveness	Nationwide	Melanie McField	Evaluation workshops	Administration at sites, policy, legal issues, planning, management programs, knowledge, illegal uses, legal uses, threats and bio-geographic characteristics.
2000 & 2001-2002	State of the Coast Reports	Nationwide	CZMAI (various contributors)	Each article within report usually describes its methodology and source of information	Manatee program reports, status of MPA reports, MPAAC initiatives, status report on the fishing and aquaculture industries, coastal area panning initiatives, policy development, water quality reports etc.
2003	Fisheries Statistical Report	Nationwide	Fisheries Department (Villanueva & Carcamo)	Cooperatives and Department Records	Description of the capture fisheries and aquaculture sector, number of fishers, vessels, status of production for major species.
2003	Fisheries Department Annual Report	Nationwide	Fisheries Department	Combination of sources	Capture fisheries production levels, efforts to improve Management of specific species e.g. Queen Conch, Management of High seas fishery, ecosystems management (enforcement), Monitoring of commercial species, spawning aggregations, turtles, Aquaculture (production levels, policy, employment etc).
2004	Socioeconomic impacts of the Port Honduras Marine Reserve on the Coastal Communities of Southern Belize (1999-2004)	Southern Belize	Emily Collins	Questioners & Secondary Data	Ethnicity, age, education, No. persons per household, Type of fisher, years fishing, occupation, involvement in tourism, involvement in management of PHMR, Fishing effort (trips /week, hours/day), ownership of vessel, type vessel, size vessel, power, perception of marine environment, major impacts and threats, status of resource, and species, effect on income and livelihoods, perception of TIDE as manager, foreseen challenges for tide.

3.3 CASE STUDIES



3.3.1 CASE STUDY 1: Community Based Planning at Caye Caulker

The Coastal Zone Management Authority and Institute's in fulfilling its mandate for the preparation of a coastal zone plan for all of Belize piloted the development of a plan for an 986 acres island called Caye Caulker which lies north east of Belize City. Over the last 15 years this small island has been transitioning from a fishing community to one based on tourism. Today there are approximately 150 active fishers on the island. The planning exercise commenced in 1999 and comprised three major components, land use planning, socio economic studies and tenure analysis. The approach used in developing this plan was to guide the formulation of all plans throughout the other planning regions especially the more developed islands.

The land use-planning component was intensive in that it served to document and categorizing all parcels/lots on the island (north and south), resulting in the establishment of categories for all existing and proposed land use include residential, hotel, commerce, community, recreation, mixed use, unoccupied and others; public infrastructure like piers, as well as recommendations for densities an exercise considered highly valuable to the municipal managers.

The second component of the planning exercise was a socio-economic survey of occupied and developed parcels and lots on the more developed southern portion of the island, which includes the village. The survey instrument used was a questionnaire developed by the Senior Planner at the Central Housing and Planning Department and the Coastal Planner at the CZM Institute and University of Belize interns assisted in administering the questioners.

Some 53% of the population responded to the survey and data on various socio-economic indicators such as those captured in Figure 4 was generated.

Figure 4: Socio Economic Indicators Captured in Caye Caulker Assessment

Household /Tenure	No. of people occupying dwelling, ownership of lot and house, how long living at location, if respondents were born on island
Housing	Number of rooms, materials of outer wall, condition of structure, housing preferred, vision for upgrading island
Basic infrastructure	Availability and access to drinking water, reliability of service, availability and access to electricity, location of kitchen, sharing of kitchen, fuel for cooking
Waste Disposal Systems	Type of toilet provision, disposal of liquid waste, adequacy of surface drainage
Socio Economic	Members of household with regular incomes, main source of income, type of employment, other skills of members of house, location of employment, transportation type, household income level, cost for rent, mortgage bills, If fish or grow part of food supply, ability to save and with whom
Education	Children attending school, type of school, how do they travel to school
Improvement Desired	Improvements desired at dwelling, urgent needs of neighbourhood and community, interest in residing permanently on the island

The tenure distribution identified lands currently being utilized as fisherman’s camp and the extent to which land as an asset was owned by the community members. The data derived was then used in the Cartographic modelling developed to determine areas suitable for development on the island. While the socio-economic data was not plugged into the cartographic model, the data derived from the surveys was used to support the drafting of the development of the planning guidelines by the Caye Caulker Advisory Council. The magnitude of the exercise was such that the CZMAI decided that the planning program had to be a “rolling one” as there is a dearth of physical planners in the agency and country as a whole.

3.3.2 CASE STUDY 2: Programme for Belize (PFB)

Under the “*Capacity Building for the Sarteneja Fishing Community Project* “ supported through the Caricom Regional Fisheries Mechanism (CRFM), Programme for Belize, a national non-profit non-governmental organization, worked with the residents of Sarteneja, a northern coastal community which is home to approximately 1/3 of licensed commercial fishers Belize to develop a strategy and focus on alternative livelihoods for fishers to reduce the overall fishing pressure on commercial and non-traditional species. The aim of the initiative was to build capacity of Sarteneja fishers to enable them to better articulate their development priorities and become meaningful participants in the planning of local development activities.

Some thirty males and eight females participated in the visioning and planning exercise, which resulted in the formulation of a vision, mission and four development oriented strategic objectives for the community. The workshop session was partly informed by a survey that was administered in the latter part of 2002. This survey captured socio economic data such as those listed in Figure 5 below.

Figure 5: Indicators Captured in PFB's Survey

Data Type	Description
Personal	Age, Gender
Geography	Distance travel for livelihood, Region/ area work
Treats and Mitigation	Perceived problems and treats to livelihoods, priority ratings and suggestions for solving
Social Values	Acceptability of methods of earning living, interest of the youth, reliance on sea today vs. years ago and reason for reliance.
Economic	Sources of livelihood, best alternative income generating options, options most suitable for women, interest in employment options other than fishing, family members working for a salary or paid employment, employment type of family members and changes to employment for family.
Socio-Demographic	Length of time in community, persons in household, ethnicity, educational attainment, training after school.

PfB as a result of their intervention is undoubtedly expected to play a key role in assisting the community in the implementation of the strategy, which in itself is a formidable task as historically the community has been polarized politically, its geographic remoteness and socio-economic characteristics are such that economic alternatives are limited, and fishers from this village is

often sighted as the major over exploiters of the marine resources but claim to be unjustly accused¹¹. In PFBs case (which is still being documented by the researchers) the broadening of the understanding through use of socio-economic data amplifies the multidimensional nature of the management challenge and the need for a coordinated approach in solving in.

3.3.3 CASE STUDY 3: Friends of Nature (FON)

FON is a non-governmental organization, which has co-management responsibilities with both the Forestry and Fisheries Department for the management of Gladden Split, Silk Caye Marine Reserve and Laughing Bird Caye National Park. Through the Caribbean Coastal Co-management Guidelines Project, undertaken with support of the Caribbean Conservation Association (CCA), and The University of the West Indies Centre for Resource Management and Environmental Studies (CERMES), a case study report was produced in 2003 for the Marine Protected Areas (MPAs) co-managed by Friends of Nature.

Unlike many of the other case studies, the work of Pomeroy and Goetze leaned considerably on the less costly secondary data gleaned from existing reports and the census data to highlight various resource and socio-economic attributes as well as community level Institutional and organizational arrangements in the management of the coastal resources. Data on the ecosystems characterization seem largely to be derived from the management plans for the parks and a host of other related reports developed primarily within the last seven years. Several socio-economic indicators were addressed in the report such as land tenure and traditional use by fishers and their families during the various seasons, economic mainstay of coastal communities that utilize or impact on the parks, characterization of the fisheries in terms of vessel type, distance operate, range of species exploited, gear type; information largely derived from the works of Perez (2000), Heyman and Graham (2000), Jacobs (1999) and Palacio (2001) and (2002). The report impressively made the linkage to the need for effective management and it is in this component that it generated much primary data through the documentation of information gathered through interviews with key informants. Several recommendations for improvements to management to facilitate greater inclusion of the socio-economic dimension and overall improvements to management were made.

With the technical and financial support of The Nature Conservancy (TNC), the management team at FON is developing measures to, in a more systematic way, incorporate socio-economic indicators in the overall management and strategic plans. Activities are underway to further analyse threats to the conservation targets and to make direct links of the threats to socio-economic indicators. This initiative sees the team at FON partnering also with World Resources

¹¹ Dr. Joseph Palacio (2001).

Institute through an initiative called “Reef at Risk “ through which it is intended to develop more complex databases to model human–derived threats to coral reefs. However, the challenge remains the incorporation of the findings in the strategies to effect change in management methodologies such that biodiversity is conserved and the well being of fishers and their families are improved.

3.3.4 CASE STUDY 4: Wildlife Conservation Society (WCS)

The Wildlife Conservation Society has been working with the management team at Glovers Reef Atoll (one of the most remotely located marine reserve) for over 15 years in conserving biodiversity at the atoll through proper management of the resources. To this end WCS, using NOAA’s Soc Mon guidelines for the Caribbean has begun the implementation of a project which seeks to develop and conduct a socio-economic monitoring program for Glover’s Reef to enhance existing conservation activities, to inform future management efforts and to provide a mechanism to balance conservation objectives with community needs and concerns over the long term, thus building support for MPAs through improved management and demonstration of benefits of the Glover’s Reef Marine Reserve.

The initiative strikes an interesting balance in the use of primary and secondary data. Much of the secondary data includes a set of alternative livelihood research financed by DFID, the works produced by Palacio and Perez and other national statistical publications such as the Abstract of Statistics and the Belize Travel and Tourism Statistics. Socio-economic data is captured in a survey recently administered to fishers, tour-guides and households which includes queries into community perception of involvement and effectiveness of management, level of awareness, perceived threats and problems and demographics and material style of life as highlighted in figure 6 below.

Figure 6: Data captured in survey instrument used by WCS

Data Type	Description
Demographics	Age, educational attainment, household occupancy levels, employment ranked by contribution to household income, involvement of women in fisheries.
Coastal and Marine/ Fishing Activities	Years fished at glovers, percentage catch from glovers, number of days on fishing trip, trip to glovers, species targeted, gear type used, crew size, where sell commodity, personal description of condition of fisheries 5 years ago vs. today, perception of cooperative spirit, interest in supporting management team at glovers.
Attitudes and Perceptions	Awareness of the MPA and its zones, rules and regulations, feelings of cooperatives representative on advisory committee, membership in other organizations, willingness to change occupation, selection of alternative option etc
Treats and Problems	Problems identified and recommended solutions
Material style of Life	Ownership various assets including land, house, fishing equipment and vessel, household items, land-based transportation. Material used for roof, walls, windows and floors of dwelling unit.

Although the initiative has recently started, the main constraint encountered has been the reluctance by some fishermen and households to provide answers to the questionnaires. Initially

some fishermen and tour guides didn't want their wives to participate in the survey, but eventually many agreed when the purpose was explained in a detailed and simplistic manner. Another reason for this reluctance is the feeling that many surveys are being conducted but fishermen never seem to benefit and no one learns about the results¹². Some respondents were suspicious that the survey was being carried out by the government and felt that if they were open with their comments, they would be reported. Others were very skeptical as they felt it was pointless to participate, as the enforcement of the reserve in their opinion is so weak. Impressively, the fishermen in Sarteneja were the most willing to participate and were very supportive of the survey.

Although it is may be too early to chronicle achievements under the initiative, a final report is to be produced along with some leaflets of summary findings for dissemination to the three coastal communities targeted at the end of 2004 or early 2005. WCS will also present the findings of their work at community meetings and the WCS team also plans to present preliminary findings of the work at the GCFI meeting in November 2004.

3.3.5 CASE STUDY 5: Toledo Institute for Development and Environment (TIDE)

Perhaps the most advanced and comprehensive attempt at utilizing socio-economic data in the management of coastal resources can be found in the management efforts of the Toledo Institute for Development and the Environment (TIDE). Through the financial support of the Coral Reef Conservation Grant, TIDE has implemented the "*Enhance Management Effectiveness of Marine Protected Areas Project*" intended to amongst other things develop a complete adaptive management framework for the management of Port Honduras Marine Reserve (PHMR) a 500 sq miles reserve in southern Belize.

A major objective of the initiative includes the monitoring and evaluation of the status and/or changes in resource populations, the health of the ecosystems, the governance and the socio-economic effects of the reserve. Various socio economic and governance indicators including those listed in Figure 7 guided the study. The data was generated largely through primary data collection methods, specifically questioners of which there were three; a Commercial/ Sport Fisherman Survey (22 pages), Household Survey (13 pages) and a Stakeholder Interview (17 pages). TIDE utilized community members in data gathering and analysis, and where available secondary data and information supported the work. TIDE has just completed the first draft of its work (though the efforts of an MSc student), but it is clear that the methodology used and the indicators covered are comprehensive and perhaps even costly.

¹² WCS survey was conducted only recently and after the other case studies. As a result of the lack of a coordinated approach between co-management partners' through out the network, respondents seem to be feeling bombarded by the many researchers, all asking the same or similar questions at different times.

More important is the fact that the next stage of the TIDE initiative involves communicating the results to the stakeholders and the development of an adaptive management framework for the PHMR. This process involves the evaluation of the success of the organization in meeting the goals as stated in the management plans based on the evaluation results. It is intended that TIDE will re-prioritise its goals based on evaluation and needs of management and stakeholders; and will make whatever necessary changes are required to the management system and daily activities. This process is expected to continue on an annual basis but may very well prove too much of a costly exercise for management if undertaken at the same scope. Indicators that are most susceptible to changes may be chosen for annual evaluations.

Figure 7: Indicators Captured in TIDE’s Assessment

Socio – Economic Indicators	Governance Indicators
Household perception of availability of local seafood	Existence of management plan and adoption of plan
Local attitudes and beliefs regarding the resources within PHMR	Understanding of PHMR rules and regulations by community
Local fishermen and tour guide (fly-fishermen) perceptions of catch	Degree of stakeholder participation in management of PHMR
Perceptions of non market and non use value of PHMR	Level of Stakeholder satisfaction with their participation
Level of understanding of human impacts on the marine and coastal resources	Amount and quality of training provided to the community to enable them to take part in management of PHMR
Distribution of management information to buffer communities	Availability of resources (human and capital) for monitoring of the reserve
Material state of life of households	Clearly defined and realistic enforcement procedures
Distribution of income by household	Number of patrols carried out per time period and the distribution of patrols over the reserve area
	Effective education program in place regarding PHMR and marine resources
	Number of stakeholders involved in sustainable income generation activities
	Number of stakeholders involved in monitoring and surveillance

3.4 Lessons Learnt

3.4.1 Without a doubt there are existing datasets to allow assessments for a broad range of societal issues such as characterization, governance, educational attainment, access to services and infrastructure, economic well being in terms of income generation, and standard of living and basic household assets of fishers amongst others. Much of the primary data generation being undertaken currently seek to fill existing gaps on resource use patterns and while not much regional and national trend analysis has been undertaken outside of the work of Pantin et al, data is available to facilitate such comparative kinds of assessment, particularly on standard of living and likelihood of displacement due to rapid growth in coastal developments such as tourism etc. However, there seems to be little *awareness* of the fact that fairly recently generated and comprehensive datasets exist and there is also an issue of *accessibility* to that data as not all datasets are posted on the web or in annual publications.

3.4.2 To a lesser extent, the literature as well as primary data collected has given the kind of consideration required for understanding gender specific issues such as the role of the women and youth in the fishery which remains largely un-documented¹³. While the review highlights that there is an understanding of the income levels of households it underscores the lack of a comprehensive understanding of the expenditure patterns of these households, which may assist in determining the extent to which they are able to save and invest as opposed to living on the edge of poverty.

3.4.3 It is also evident that the socio-economic data available is used by many for resource management purposes; utility generally found by those “outside of the fishing community” who try to ensure that fishers and their families are not marginalize and that their realities are factored into management strategies. However, it is remarkable that the fishing community has not been able to assist its membership in telling its story in a way that goes beyond the annual publications which speak to the production levels but in addition they really should address the extent to which lives are improved and/or marginalized as the national economy transitions from being agriculturally based to tourism oriented.

3.4.4 For many of the managers the utilization of the socio-economic variables brings into sharper focus the multidimensional nature of the challenge. It highlights the need for coordinated approaches in understanding it as well as for solving it especially where such an approach might prove to be more cost effective as well as pragmatic e.g. data collection.

¹³ Women and youths in the coastal community of Monkey River, for example are usually the ones who are tasked with “cornering” the fish enabling its preservation.

4.0 Conclusions and Recommendations

4.1 Extent to which socio-economic and demographic concerns have been addressed

4.1.1 The efforts of Belize at incorporating socio-economic concerns in management focuses on transforming governance frameworks from a top down approach to one that is built on the principles of improving horizontal and vertical integration (horizontal in terms of the various sectors and vertical in terms of bridging the top/government with the bottom/community level). This approach has enabled recognized improvements in the exchange of information and synchronization of policies and programs. It has also served to provide local benefits by laying the foundations and prerequisites for increased equity and sharing in decision making.

4.1.2 This framework has also supported the consideration of resource use at regional and local levels and the plans produced for the planning zones established nationwide will undoubtedly impact positively upon fishing interest in terms of reducing habitat destruction, pollution and land tenure conflicts. At the more localized levels, through MPAs and co-management interventions, it has resulted in growing attempts to integrate socio-economic and demographic concerns in the routine management at PAs, so that the park management is not so divorced from the human dimension of things.

4.1.3 These efforts have been extremely challenging, in terms of framework maintenance, and continued cooperation and interest. Without strong legal basis, weaknesses have become evident. Moreover, integration has proved to be more costly from a time and human and financial resource perspective. The efforts have highlighted the need for the implementation of sustainable livelihoods programs but they have also illuminated various barriers for communities and underscores that the challenge is of great magnitude and complexity.

4.2 Recommendations for strengthening use of socio-economic and demographic indicators

4.2.1 Legal Issues

Notwithstanding these advances made there is significant scope for the deepening of efforts, specifically as it relates to the legal basis for co-management as well as the legal basis for the establishment and functioning of the MPAACs which largely serves to influence decision-making regarding resource use and management by providing an avenue for stakeholders to raise issues that are pertinent. A process of legislative review and the drafting of specific recommendations for amendment to relevant legislation could contribute greatly.

4.2.2 Awareness of Data and Accessibility

There is also the need to further build awareness of the availability of key datasets which can be enabled through further support to the CSO and the social indicators committee in areas of advocacy and awareness building of the data it generates. Moreover, there needs to be improvements in the frequency of the publication of its data, if only for indicators that are deemed to be more sensitive and therefore subject to frequent changes.

4.2.3 The same follows through for data collected and research authorized by the Fisheries Department. There is need for increased access of its data (whether it be reports or raw data) by the public through regular uploading to a website. MPAs including co-management partners should also do the same so as to allow a reduction in duplication of efforts (particularly in data collection) and improvements to the sharing of information. Technical and financial assistance in this area may be required for these organizations.

4.2.4 Improved Understanding

Despite the commendable efforts and accomplishments in the use of indicators in management, there still exist the need to use these indicators so as to understand specific issues such as how international and regional commitments as well as national economic development trends are impacting at the local levels; in an era of globalisation and declines in stock for certain species how does the poorest of the poor fair-off? Are they able to adapt the alternative livelihood strategies promoted by many? In addition, the mainstreaming of gender and youth issues in resource management, particularly the fisheries sector has a long way to go as is the need for improved understanding of household expenditure patterns. International and regional assessments would best be undertaken through the CRFM, perhaps in collaboration with other relevant arms of the CARICOM.

In concluding, Belize as a country has achieved quite a lot in terms of integrating socio-economic information in fisheries and coastal area management but there is still room for improvements in the way in which we develop fisheries management plans, coastal zone plans and marine protected areas plan.

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Annex 1: Population of Coastal Communities in Belize

Settlement Name	Population	Percentage
Corozal	7,589	9.24
Sarteneja	1,640	1.99
San Pedro	4,499	5.48
Belize City	49,040	59.71
Caye Caulker	630	0.77
Dangriga	8,814	10.73
Hopkins	1,027	1.25
Seine Bight	871	1.06
Placencia	501	0.61
Punta Negra	27	0.03
Punta Gorda	4,329	5.27
Barranco	241	0.29
Mango Creek / Independence	2,929	3.57
Total	82,137	100

Source: Compiled from CSO data for 2000

Annex 2: Estimated Landings in 2003

Commodity		Estimates Lbs	% change over 2002	Dollar Value BZ\$
Lobster	Head	50,463	8.4 ↑	104,229
	Tail	547,180	6.9 ↓	13,488,982
	Sub-total	564,792		13,593,211
Conch	Meat	416,542	28.6 ↑	4.1m
	Fillet	33,719.50	?	
	Sub-total	450,261.50		
Marine Shrimp (export)		147,866	37 ↓	998,154.25
Shrimp Aquaculture (export)		22,300,000		91.8m
Fin-fish Farmed	Whole Fish	21,124	?	Uncertain sold domestically
	Fillet	54,769		
Aquarium	Invertebrates	350	159.6 ↑	2,450
	Fish	8,270		39,148.71
Others	Stone Crabs	868	64.6 ↓	?
	Squids	591	26 ↑	?
Total		34,284,371		

Source: Derived from the Draft Fisheries Statistical Report 2003