MANAGEMENT CAPACITY IN BELIZE'S PROTECTED AREAS SYSTEM

AN ASSESSMENT OF THE MANAGEMENT OF EIGHT PROTECTED AREA SITES AND DISCUSSION ON SYSTEM IMPLICATIONS

Prepared by

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Belize City, Belize

Prepared For

National Protected Areas System Plan Project

August 24, 2005

This consultancy was carried out by Launchpad Consulting under the National Protected Areas System Plan Project, in conjunction with the Protected Areas Conservation Trust (PACT).

The findings of this consultancy are based upon Launchpad Consulting's interpretation of the material collected and data from consultations, site visits, and surveys. All attempts have been made to ensure the accuracy of both the results and the interpretation.

All views expressed are those of the authors.

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ACKNOWLEDGEMENTS

The consultants would like to thank and acknowledge the assistance of all persons who made information available or took the time to speak with us individually or at any time during this exercise. In particular we would like to thank the members of the National Protected Areas Policy and System Plan Project (NPAPSP) task force, the management and staff of the Forest Department in particular Mr. Osmany Salas, David Perrera, Santiago Baeza and Domingo Ruiz, Mr. Miguel Alamilla from Hol Chan Marine Reserve, Mr. Mario Perez and Ms. Lily Galdamez from the Friends of Five Blues Lake Association, Programme for Belize in particular Mr. Ediberto Romero, Wilbur Sabido and Herbert Haylock, Ms. Nellie Catzim and Ms. Anna Hoare from the Belize Audubon Society and from SATIIM, Mr. Josh Lichtenstein, and Mr. Gregorio Cho. We appreciate the candour and willingness to share.

We would also like to acknowledge and thank Mrs. Valerie Woods and Ms. Yvette Alonzo for their facilitation and indulgence.

ABBREVIATIONS AND ACRONYMS

BAS	Belize Audubon Society
CARICOM	Caribbean Community
CBD	Convention on Biodiversity
CBO	Community-based Organization
CBWS	Cockscomb Basin Wildlife Sanctuary
CFO	Chief Forest Officer
CITES	Convention on International Trade in Endangered Species
CLO	Community Liaison Officer
CSO	Central Statistical Office
CTWS	Crooked Tree Wildlife Sanctuary
EU	European Union
FBL	Five Blues Lake
FFBLA	Friends of Five Blues Lake Association
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GOB	Government of Belize
HCMR	Hol Chan Marine Reserve
IADB	Inter American Development Bank
ICDF	International Cooperation and Development Fund (Republic of China)
ITCF	International Tropical Conservation Foundtion
IUCN	World Conservation Union
MBC	Mesoamerican Biological Corridor
MBRS	Mesoamerican Barrier Reef System
NGO	Non-Governmental Organization
NPAPSP	National Protected Areas Policy and Systems Plan
OIRSA	Regional Organization of Plant and Animal Health
PA	Protected Area
PACT	Protected Areas Conservation Trust
PfB	Programme for Belize
RAPPAM	Rapid Assessment and Prioritisation of Protected Areas Management
RBCMA	Rio Bravo Conservation and Management Area
REA	Rapid Ecological Assessment
SATIIM	Sarstoon Temash Institute for Indigenous Management
STNP	Sarstoon Temash National Park
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCPA	World Commission on Protected Areas
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund

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In May of 2005, Launchpad Consulting, was contracted by the National Protected Areas Project and System Plan (NPAPSP) task force to conduct an Assessment of Management Capacity of eight (8) protected areas in Belize. The objectives of the commission were stated as follows:

- to assess the capacity in the management of 8 protected areas in the Protected Areas System and provide recommendations on ways to optimize efficiency and effectiveness in the management of these sites;
- recommend strategies and actions to improve management capacity of the protected areas system based on the finds using the 8 sites.

THE APPROACH

Given the significance of this exercise to the broader protected areas framework and the sensitivities inherent in evaluation exercises, Launchpad considered it important to design an approach that would: (1) Facilitate a variety of channels for primary data collection; (2) provide for a literature search and review of secondary data; (3) be simple to use and easy to understand and communicate, (4) be consistent with internationally recognized and widely adopted frameworks and principles; (5) stand to scrutiny. A priority was to clearly define management effectiveness as it relates to PA management because that would be the basis upon which institutional and technical capacity would be assessed.

MANAGEMENT EFFECTIVENESS

The protected area system in Belize has not to date provided guidelines or standards that would help to define management effectiveness in its system. Thus by default, Belize's PA system has to rely on the international standards established to measure management effectiveness at both the system and site levels.

According to the World Commission on Protected Areas (WCPA), the protected area component of the International Union for Conservation of Nature and Natural Resources (IUCN)[1], PA management effectiveness includes three main components, as follows[2]:

- Design issues relating to both individual sites and to protected area systems. Design includes both the design of the individual protected areas and of protected area systems. This includes size and shape of the PA and the PA system, the existence of buffer zones

[1] The world's largest conservation network of 82 states, 111 government agencies, 800 NGOs and 10,000 scientists and experts from 181 countries (courtesy IUCN.org)

[2] Hockings M., Stolton S., Dugley N., Evaluating Effectiveness, A Framework for Assessing the Management of Protected Areas, World Commission on Protected Areas, Best Practice Protected Area Guidelines Series No. 6, IUCN, 2000, pg. 3 – 4.

and links between protected areas, ecological representation, and the appropriateness of the PA design to achieve their stated function;

- Appropriateness of management systems and processes. Appropriateness looks at how management is conducted and how well management responds to challenges. It includes areas such as planning, training, capacity building, social relations and implementation.

- Delivery of protected area objectives. Delivery assesses whether the PA and the PA system are achieving their stated goals. Measures include biological, economic and social aspects.

THE EVALUATION TOOL

A number of evaluation models were considered, including the WCPA framework[3], the WWF and World Bank's tracking tool[4], and the WWF's Rapid Assessment and Prioritization of Protected Area Management (RAPPAM)[5]. Underpinning the review was a cognizance that any selection would have to be weighed and adjusted for jurisdictional asymmetries and relevance to local context.

Having considered all the variables, the consultants decided that the most appropriate tool would be an adjusted version of the RAPPAM. The RAPPAM's strengths, specifically the ability to identify overall strengths and weaknesses in management capacity and PA policies at site level based on the ability to assess and mitigate against threats and stresses[6], and its use of the widely endorsed WCPA evaluation framework, formulated the basis for the selection. *The tool is not intended and was not used in this exercise to assess individual PA management effectiveness and policies in detail*[7]*, or to identify steps to mitigate against specific threats or stresses in each protected area, or develop specific policy interventions for each PA*[8]*.*

LIMITATIONS AND CONSTRAINTS

This commission has been faced with a number of important challenges, which forced some deviation from the envisaged approach. These are set out here because they influence the outcomes of the commission to a large extent

The first is that the data collection timelines and process had to be adjusted to accommodate a general reluctance to release information considered sensitive by administrators. Instead of a three week timeframe, data collection became an ongoing process throughout the consultancy, with activities to fill in the information gaps taking place up to the report drafting phase of this exercise. This lead to a general failure to review the complete sample, having instead to take a decision after a two week extension, to complete the task using seven instead of eight PAs and using incomplete data sets for four out of the seven sites evaluated. ***Please note that having***

[3] www.iucn.org/themes/wcpa/pubs/pdfs/evaluating effect.pdf
[4] http://Inweb18.worldbank.org/ESSD/envest.nsf/48ByDocName/Biodiversity
[5] www.panda.org/downloads/forests/rappam/pdf
[6] Which is the overarching objective of this consultancy in relation to institutional and technical capacity
[7] which clearly was not the intent of the commission, given the time frame and sample size
[8] Although it must be stated that where the opportunity existed to address any of these issues, it was included in the recommendations.

received no information from Gladden Spit, it could not be considered here and its experiences did not inform the results or recommendations. The breakdown of the sample collection and information deficits on a per site basis is available in Annex II.

Failure to collect complete sets of organizational design information i.e. (organizational structure, job design (job descriptions), communication channels and authority and accountability patterns), from all but two sites, influenced the result in that area to a large extent. As a result, the only irrefutable conclusion on the issue of system capacity is that it does exist. However, the extent of the deficiency and identification of the specific areas of deficiency (with the exception of a general lack of scientific knowledge throughout the sample, indicated by the import of expertise in this area for all sites), could not be determined with any certainty.

In addition, the lack of a shared system definition for management effectiveness and a management categorization system (similar to the IUCN's system), invariably meant that in some cases an evaluation using international standards was tantamount to trying to fit a square peg into a round hole. In addition in some cases the experts[9] disagreed on the IUCN categorization indicating a difference of opinion in regard to the reasons for declaration and the specific management objectives. This made categorization for purposes of this exercise a complex process and apologies are offered at this juncture if in the view of site management they were unfairly assessed based on their categorization.

Finally, this exercise called for a capacity review of the management agencies related to the eight sites. In the case of six out of the seven reviewed, the managing agency is a government department with complete or partial management responsibility. It had to be considered that these entities are part of a broader management system and rarely have complete control over actual inputs and processes (except in the case of Hol Chan and the fisheries department). Assessing capacity to manage in this context would be incomplete without a complete assessment of the broader system, its inputs and processes and specific articulation on how these influence the management of the agencies that oversee protected areas. This is beyond the scope of this exercise. Thus the results are inconclusive on the management capacity of the administrators of these agencies and in relation to the appropriateness of management systems.

THE RESULTS

Site assessments are based on specific elements of evaluation, criteria and data sets (provided in detail in the body of the document), intended to establish the appropriateness of design and management systems to the objectives for management, and to establish delivery of objectives over a one to three year period. The data that was requested from each site, through both personal and impersonal approaches is available for review in Annex II. Where complete data was not available or not forthcoming, the information provided by the written survey, and data collected through personal interviews and site visits formed the basis for the evaluation.

Complete scoring information for each site is available in Annexes III – VII. The site evaluations include both the narrative (available in the main body of the document) and the scoring sheets. A complete review of the evaluation requires attention to both the detailed

[9] Referent of site managers and experts who have worked with these sites in various capacities

elements of the evaluation (found in their respective annexes) and the highlighted elements and conclusions in the main document. A summary of scoring and gaps for all sites is provided below.

Protected Area **IUCN Management Category** **Overall Score**	**FBL** **II** **21/77**	**HCMR** **II** **65/77**	**Xuna n.** **II**	**STNP** **IV** **49/60**	**RBCMA** **IV** **54/60**	**MPR** **VI** **33/68**	**CBWS** **Non assigned**
Management Agency	**FFBL and FD**	**Fisheries Dept. Statutory Board**	**Dept. of Arc**	**SATIIM & FD**	**PfB**	**FD**	**BAS & FD**
Institutional Gaps							
Delivery of Output and Results	✓		**NOT ENOUGH INFO**	✓		✓	
Planning	✓	✓				✓	
Stakeholder involvement in planning	✓	✓				✓	✓
Leadership						✓	
Organizational Management (structure, job design, accountability and communication)	✓	Not enough info				Not enough info	
Human Resource and Staff Development	✓	✓		✓	✓	✓	✓
Fundraising and Marketing	✓					✓	
Financial Management/Sustainability	✓	✓		✓		✓	✓
Application of Technology in Management Processes	✓	✓				Not enough info	✓
Access to legal expertise	✓	✓		✓	✓	✓	✓
Promote sustainable livelihood opportunities	✓					✓	
Technical Gaps							
Biodiversity Research (Baseline)	✓		**SAME**			✓	
Prioritising of Cons. Values	✓					✓	
Monitoring	✓	✓		✓	✓	✓	✓
Enforcement and Resource Protection	✓			✓	✓	✓	✓
General Technical Capacity (Scientific knowledge)	✓	✓		✓	✓	✓	✓

SITE IMPLICATIONS

With the exception of the Forest Department and the Belize Audubon Society[10], the agencies managed or co-managed only one site in the sample. Even though the Fisheries department has responsibility for eight sites, the structure of management it has created (statutory body with a legislated mandate) for the management of Hol Chan allows a singular focus. Accordingly then, management performances at the site level is a valid indicator of those at the agency level. In fact the two are inextricably linked as in all cases where information was available, policy, direction and management were the responsibility of employees within the agency framework. Site managers were typically directed from the agency as it relates to site organization, systems and work programs.

[10] which was not evaluated under this exercise

Although only a sample of eight, the conclusions suggested that private agencies and NGO's who are focused and have access to external funding have a higher management effectiveness rating than their counterparts within the GOB system who may be disadvantaged by a wider scope of authority, increasing priorities and shrinking resources. Hol Chan is an interesting example of a creative method of management that involves the government systems but provides alternatives where it matter most like focus and financing. In terms of governance structures, the results suggest that a co-management structure does not necessarily guarantee results, evidenced by the spectacularly divergent results of FBL and Sarstoon Temash, but is instead dependent on the commitment, will and creativity of the engaged NGO or CBO.

INSTITUTIONAL GAPS

As it relates to institutional issues the most recurrent gaps occurred in the areas of financial management, staff development and legal expertise.

Six out of the seven sites reviewed were found to have no financial or business plans. Although due recognition is awarded to the fact that PA management in Belize has developed using an almost altruistic rather than a business approach to conservation, effective PA management in the current context, demands the exploration and exploitation of alternative sources of funding. A review of the general economic and monetary context, (see Conservation Context, pg. 32), indicates that GOB is increasingly challenged by fiscal constraints and as a result may be increasingly limited in its ability to meet the costs of PA management. Add to that the narrowing focus of some funding agencies and the investment assurances required by international development and lending agencies, who insist that financial sustainability be a routine condition of loans and grants for protected areas, and the importance of adopting a business approach to PA management becomes apparent. Biodiversity conservation and the management of protected areas are now dependent on a deliberate plan of fiscal sustainability through mechanisms employed by the area's management, whether revenue-generating or behavior changing. In turn, the success of any plan for financial sustainability relies exclusively on the strategic objectives for the PA and an organized, systematic approach to the practice of PA management.

Seven out of seven sites had no formal capacity building systems (training plans and development trajectory for staff). This however does not imply that the system is without capacity building efforts, only that it is sporadic and reactive, occurring only when and if the opportunities arise, rather than the result of a deliberate strategy to build sustained capacity for the site/agency.

In no case was there resident legal counsel or an established process to acquire access to legal counsel, and no established mechanism to access this competency at the system level. However two of the seven reviewed either paid for (PfB) or acquired these services on a pro-bono basis from their membership (BAS), when it was deemed necessary. Given the increasing complexity of the legal context associated with sustainable development and PA management, and the challenges associated with effective enforcement at the site level (discussed further below), access to legal counsel for all sites is an increasingly important consideration for the system.

In terms of the evaluation of existing capacity, the failure to receive employee qualification and experience information from all except two agencies impaired this effort to a great extent. Nevertheless the information that was received suggests that *there is capacity* in the system. Developing a critical mass and minimum standards of qualification as well as priority areas for capacity development is an issue for the system.

All agencies understood the value of strategic planning and have engaged in a strategic planning process at some point in their evolution, the most recent being the Forest Department whose strategic plan was approved and accepted on July 13, 2005[11]. As a result all the agencies evaluated have vision, mission statements, guiding principles and a definition of specific objectives. However, institutionalizing the strategic planning process presented some difficulty at both the site and agency level. At the site level it was mostly due to the practice of sourcing funding from outside the agency to develop the plans, and at the agency level it depended on the level of commitment to sound management practices. In addition, expanding the process to include wide stakeholder input was an issue for all sites and expanding the perspective of the plan to promote sustainable livelihood opportunities and consider other issues beyond the boundaries of the site was the domain of only the most progressive of the agencies in the sample.

TECHNICAL GAPS

Detailed biodiversity monitoring and resource protection and enforcement were the most prevalent technical gaps among the PAs evaluated. A unit focused on biodiversity monitoring was not found to be among the core activities in the organizational design at the site or agency levels of any of the PA's reviewed. Rather they were part of thematic programmes as in the case of PfB, or conducted in a general fashion (sightings of wildlife), as in the case of SATIIM. Even when biodiversity monitoring was considered under a specific program, there were difficulties associated with capacity.[12] In most cases, biodiversity evaluation and monitoring programs depended on capacity or financial resources, or both that were not available internally, or from within the system. Developing a critical mass of natural resource scientists, technicians and specialists in the areas of importance to Belize's biodiversity should be regarded as a priority for the system.

A site protection program that involved activities to clearly delineate the boundaries of the PA and provide for security against activities inimical to the management objectives of the PA was a management priority for most of the sites examined. In most cases enforcement and resource protection by mutual agreement, is the responsibility of the Government of Belize. This appears in agreements with CBOs, NGOs and private protection agencies.

Yet, in each case there had been some activity on the part of the management agency to address site protection. The majority of the sites had an in-house ranger unit to provide security and resource protection. Some were actively working with law enforcement authorities (Belize Defense Force) on formal partner agreements to increase the efficacy of the resident force.

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[11] Email Correspondence, Osmany Salas, Chief Forestry Officer, July 14th, 2005

[12] either in the amount of available capacity or in the calibre

Clearly there are deficiencies in the mechanism established for the provision of security and resource protection for protected areas. In its agreements with site management the GOB is obligated to provide these services to the PA. Performance however is an issue, forcing most PAs to develop internal mechanisms to deal with activities that are, in some cases, a significant threat to PA values. However, in most cases[13], the members of the resident patrols do not have the necessary training or authority for legal arrest and enforcement. In addition, according to PfB's Ediberto Romero, the system is plagued with issues that make effective enforcement and thus site protection an increasingly challenging proposition. He asserts that enforcement and prosecution are carried out in an inefficient system plagued by delays and ineptitudes. Additionally, the penalties applied upon conviction are not significant enough to deter reoccurrences. While the deficiencies are manifested at the site level, this is an issue that requires a broad systems approach to address the inefficiencies associated with the current enforcement and legal procedural modalities as well as the review of the egregious issues in the legislative framework.

ACCOUNTABILITY

Management failures such as that which has occurred at FBL and the issues associated with agency non-performance in key areas indicate a general lack of accountability for effective management in the PA system. Co-management agreements are used widely throughout the system. According to the Forest Department's strategic plan, co-management has been in place since 1984 and allows the FD to "save on its resources." The terms of the collaboration are set out in an agreement that is legally binding and enforceable against the parties, and there are specific remedies for non-performance. The first requirement of all co-management agreements is for the development of a management plan. Yet key requirements of these agreements are not complied with, with virtual impunity, resulting in management failures and heightened site exposure to threats and stresses. FBL has neither a management plan nor a functioning management organization and this has been the case for the past five years.[14] To date the Forest Department has not exercised its option to terminate the agreement. The FBL scenario and the system wide security issue indicates that non-performance and a lack of accountability at the agency level does affect the caliber of management, across the system.

In sum, when evaluated against established effectiveness criteria, the study established that there are pockets of effective site management in the national system. However, the overarching inference from the results is that the level of active management varies among agencies, and is completely dependent on available resources, and the capacity and commitment to manage.

SYSTEM RECOMMENDATIONS

In terms of system implications, the evaluation clearly demonstrated that there is not system-wide consistency in application of management objectives and based on the diversity of responses provided to the question of categorization, there is not consensus on how sites contribute to the protected areas system. In addition the gaps at site and

[13] There are a few instances that we know of where rangers have been trained as special constables (CBWS for instance)
[14] The plan expired in 1999 and administrative failures followed shortly after

agency levels cannot be considered without considering the failure at the systems level to provide guidance on the broader framework for PA management.

The challenge for the system is to increase and improve the level of active management among agencies by providing them with the direction and support they need to provide effective management at the site level. For Belize, this involves looking at issues that provide direction on what effective management is within the broader framework of biodiversity and sustainable development. Then providing the guidance and structures to support the elements of effective PA management but specifically as it relates to biodiversity monitoring, capacity building (both management and technical), stakeholder involvement in planning at the system, agency and site levels and promoting sustainable livelihood opportunities.

Achieving the goals associated with sustainable development, through effective PA management will require deep structural system changes and new ways of working and interacting in all areas of economic, social and political life. For example at the national and local levels, it requires cross-sectoral and participatory institutions and integrating mechanisms which can engage governments, civil society, private sector and indigenous communities in developing shared visions, planning and decision-making. All involved agencies (including Government) need to be more open and accountable for their actions. In addition the system must engage in and attempt to influence the broad issues that impact effective PA management. For example the legal environment as it relates to enforcement and prosecution needs to be reformed, economic growth patterns that positively impact the poorer communities (many of which are buffer communities along PA's) should be favoured and embraced by the system. Fiscal policies that negatively affect these communities or promote unsound environmental practices should be addressed and reform lobbied for by the system.

PROVIDING DIRECTION FOR EFFECTIVE MANAGEMENT

Understanding the core elements of effective PA management dictates an understanding of the regional and international context of sustainable development and protected areas management and how Belize contributes (in terms of its biological systems, cultural landscapes and landforms to the regional and international attempts at biodiversity conservation. As a result an inventory of biodiversity (genetic, species and eco-system), landform types and cultural landscapes of the country is a good place to start. This will provide the information necessary to prioritize and identify those areas that provide "the minimum foundation for the long term persistence of biodiversity." [15] "Preferred sites are those that provide the greatest benefits for biodiversity and generate sustainable economic and social services and/or imply the lowest opportunity to local stakeholders."[16]

[15] Eken, G, Bennun, L, Boyd, C. ,Protected Areas Design and Systems Planning: Key Requirements for Successful planning, site selection and establishment of protected areas, Key Biodiversity isses for protected areas, Birdlife International; Conservation International, pg. 37
[16] ibid, pg. 43

Re-establishing the criteria for PA protection as biodiversity conservation and sustainable resource use and extraction, is key for Belize. According to Meerman, currently the majority of the areas under protection in Belize are for the management of resource use and extraction[17]. Awarding a classification of "management" rather than "conservation" is more realistic, he opines. Thus the protected areas system will need to reconcile this reality with the demands of biodiversity conservation. However once areas of importance are identified, it provides the platform for transparency in site selection, also currently lacking in the current system. In addition, a framework for management can be developed that allows system-wide consensus on how the PA contributes to the wider system and its management objectives, as well as provides measurable key performance indicators based on PA type. The importance of this framework to effective PA management cannot be overstated, and attention to developing the appropriate framework should be a priority for the policymakers in the system.

Once a basic framework for site prioritization and management has been devised and made a part of the legal framework for protected areas, then it becomes necessary to provide the administrative framework to promote system wide consistency in the application of management and clarity of roles and functions at the agency and site levels.

The system should consider a new structure that allows an integrated approach to PA management, providing opportunity for input to as many stakeholder groups, and which actively participates in the national policy making machinery. Its functional aims should be to close the existing gaps through effective, sustained management effort. Some of the core activities would include:

- Improve the scientific knowledge base and strengthen the institutional framework for biodiversity management;
- Enhance skills and capabilities in PA management;
- Encourage private sector participation;
- Enhance institutional and public awareness;
- Promote the exchange of information;
- Establish funding mechanisms;

To achieve this, the system needs to develop a high level policy formulation, coordination and advisory body (National Integrated Protected Areas System Advisory Council (NIPASAC)[18], involving representatives from all key stakeholder groups. The main function of this entity would be to carry out the program of work for protected areas devised under the CBD.

[17] Meerman, 2005, pg. 51
[18] for want of a more creative acronyn

A secretariat should be established to assist the advisory council, the main function of which is to:

- Assess and monitor protected area status and trends and provide position papers for Council consideration;
- Develop the framework for and act as a clearing house mechanism for the exchange of information within the system;
- Provide legal expertise to the council and act as a common resource for legal expertise for the sites;
- Develop training and capacity development trajectory for the system and oversee its implementation;
    - (reinforce and establish biological diversity programmes and facilities in existing institutions)
- Provide recommendations to Council on reservation/dereservation issues;
- Oversee standards, assessment and monitoring;
- Strengthening communication, education and public awareness;
- Establish and oversee funding mechanisms;
    - Seek new and additional incentives, funding sources and mechanisms at the national and international levels
    - Administrate trust fund
- Encourage the formation of appropriate joint venture projects with multinational and other corporations to encourage technology transfer.

One consideration is to expand the mission of the Protected Areas Conservation Trust (PACT), to accommodate the additional roles and functions envisaged for the secretariat. PACT (it would likely have to undergo a name change), is already legislated as a statutory body and is structured to fund activities on the protected areas, raise funds and receive gifts and donations and maintain the institutional arrangements, for effective and efficient management. This would require legislative adjustments and expanding the administrative resources and capacity to include specialists for the more technical elements of the secretariat's responsibilities. However, it would provide a ready-made funding mechanism for system initiatives that would directly and indirectly impact agency and site administration. In addition, given the integrated systems approach, it would allow for targeted investments in areas where it would provide the most significant benefit to the system.

The secretariat and by extension the advisory council would have to consider how best to address horizontal issues such as enforcement and security, and issues that may arise from possible overlaps with the current governance structures. It would also have to consider its funding options but some considerations include;

- % of the receipts from site activities (which could be earmarked for capacity building and or a legal fund,
- Continued receipts from the conservation fee
- Regional and International donor agencies for specific capacity building projects, technical assistance and technology transfer initiatives

There should also be a mandated % of receipts returned to the sites in the form of capacity building initiatives in PA management and/or biodiversity conservation (through scholarships), legal counsel, effective clearing house information facility and the like

In addition, NIPASAC should advocate for and contribute to the establishment of a National Centre for Biodiversity, whose main responsibility will be;

- To undertake and intensify biological resource inventories and systematic studies to document species diversity;
- Undertake and intensify research on the functional aspects of ecosystems and their ecological processes;
- Develop and manage a database of biological diversity and an effective information dissemination information;
- Monitor the status of the components of biodiversity;
- Survey and document threats and stresses;
- Study the impact of national and state policies and priorities on conservation and sustainable use of biological diversity;

This organization would carryout its work in accordance with Article 7 of the CBD and resolution V/7, paragraph 1 (6), which defines the commitments of signatories in relation to biodiversity monitoring, and provide guidelines on elaborating indicators at the ecosystem, special and genetic levels, using the principles of the ecosystem approach.

CONCLUSIONS

In the final analysis, the study did not reveal anything that was not already alleged. The application of management is inconsistent throughout the system and dependent on commitment and will to manage effectively. Although only a sample of eight, the conclusions

suggested that private agencies and NGO's who are focused and have access to funding have a higher management effectiveness rating than their counterparts within the GOB system who may be disadvantaged by a wider scope of authority and shrinking resources. Hol Chan is an interesting example of a creative method of management that involves the government systems but provides alternatives where it matters most like focus and financing. In terms of governance structures, the co-management structure widely employed throughout the system, is without effective regulation and enforcement. The conclusions of the study suggest that success under this system is dependent on the commitment, will and creativity of the NGO or CBO.

Recommendations to address the deficiencies at the site and agency level had to consider the broader framework and those issues in the system that influenced effective management at the site level. Providing the facilities that would allow sites to understand their value and where they "fit" into the wider PA system and providing a system-wide standard for management, would bring more transparency, accountability and consistency to the system. In addition there needs to be a trajectory for the PA system that must be carefully managed to maintain management effectiveness at the site and agency levels, while meeting the requirements of the wider demands associated with biodiversity and sustainable development.

In the short term, the system may want to look at trying to address the issues associated with enforcement and security and providing access to training in both scientific knowledge and management of PAs, to start building a critical mass of trained individuals. This alone however will not be enough to address the issues associated with management effectiveness. Consideration will have to be given to a fundamental restructuring of the system to provide for focus, the exchange of ideas and opinions and for better allocation of the system's indigenous resources.

PROJECT CONTEXT

PREMISE

Belize has a high proportion of its land and sea resources protected under a variety of management structures including almost two (2) million acres of terrestrial reserves; 400,000 acres of marine reserves; and a further 300,000 acres protected through private conservation initiatives. Given its rich heritage, biological diversity, and internal and external signals of a broad based commitment to sustainable development, Belize has a responsibility to ensure greater understanding about the nature of protection and the mainstreaming of conservation concerns into its national development agenda.

Over the years, Belize's protected areas have evolved from resource, research reservoirs into a network of large and small "enclaves having a diversity of purposes and under a variety of management regimes, some more effective than others".[19] In addition, not enough attention has been paid to the harmonization of the management of protected areas with other initiatives under the sustainable development umbrella such as land use planning initiatives, responses to natural disasters and socio-economic development agendas. To this end, in 2004, the Ministry of Natural Resources and the Environment in conjunction with the Ministry of Tourism and the Ministry of Agriculture and Fisheries established a task force to focus on policy and planning for the protected areas, to be accomplished through the implementation of a National Protected Areas Policy and System Plan (NPAPSP).

The NPAPSP project is premised on a work plan, which is itself underpinned by five (5) key result areas, specifically (1) the formulation of a comprehensive PA policy, (2) Protected Areas System Assessment and Analysis, (3) Review of Management Procedures and Sustainable Use, (4) Identification and Delivery of Economic Benefits, (5) Strengthening Management and Monitoring of the System.

In keeping with the work plan and specifically the requirements under result 5, in May of 2005, Launchpad Consulting, a consulting firm headquartered in Belize, was contracted by the task force to conduct an Assessment of Management Capacity of eight (8) protected areas in Belize. The objectives of the commission are:

- to assess the capacity in the management of 8 protected areas in the Protected Areas System and provide recommendations on ways to optimize efficiency and effectiveness in the management of these sites;

- recommend strategies and actions to improve management capacity of the protected areas system based on the finds using the 8 sites.

[19] Work Plan for the Formulation of Belize's Protected Areas Policy and System Plan, Task Force on Belize's Protected Areas Policy and System Plan, February 2004.

Specific duties include:

1) Identify core competencies for 8 protected area site and system management, including but not limited to the following categories:

   (a) Institutional - Strategic Vision and Planning, Leadership, Organizational Management, Human Resources and Staff Development, Fundraising and Marketing, Financial Management, Technology (networks and systems), and Legal expertise.

   (b) Technical - Management Planning and Prioritizing, Biodiversity Research (especially for baseline biodiversity gaps), Monitoring, Enforcement, Resource protection, Constituency Building/Outreach, IT, and Programmatic Capacity

2) Identify capacity gaps within protected area management agencies, related to the 8 sites chosen for this consultancy, through a gap analysis of institutional and technical capacities based on the identified core competencies (site managers including government agencies, NGO's, and CBO's), with regard to their current skills and their potential ability to absorb additional capacities;

3) Recommend mechanisms for improved management capacity and increased benefit sharing including strategies for addressing the gaps in institutional and technical capacities and for intra and inter-agency coordination of the 8 sites chosen for this consultancy. Formulate procedures for the system to support existing management capacity.

4) Recommend strategy for addressing gaps in biodiversity research and guiding biodiversity monitoring efforts.

THE APPROACH

Given the significance of this exercise to the broader protected areas framework and the sensitivities inherent in evaluation exercises, Launchpad considered it important to design an approach that would: (1) Facilitate a variety of channels for primary data collection; (2) provide for a literature search and review of secondary data; (3) be simple to use and easy to understand and communicate, (4) be consistent with internationally recognized and widely adopted frameworks and principles; (5) stand to scrutiny. A priority was to clearly define management effectiveness as it relates to PA management because that would be the basis upon which institutional and technical capacity would be assessed.

MANAGEMENT EFFECTIVENESS

The protected area system in Belize has not to date provided guidelines or standards that would help to define management effectiveness in its system. Thus by default, Belize's PA system has to rely on the international standards established to measure management effectiveness at both the system and site levels.

According to the World Commission on Protected Areas (WCPA), the protected area component of the International Union for Conservation of Nature and Natural Resources (IUCN)[20], management effectiveness includes three main components, as follows[21]:

- Design issues relating to both individual sites and to protected area systems
- Appropriateness of management systems and processes
- Delivery of protected area objectives

> Design includes both the design of the individual protected areas and of protected area systems. This includes size and shape of the PA and the PA system, the existence of buffer zones and links between protected areas, ecological representation, and the appropriateness of the PA design to achieve their stated function
>
> Appropriateness looks at how management is conducted and how well management responds to challenges. It includes areas such as planning, training, capacity building, social relations and implementation.
>
> Delivery assesses whether the PA and the PA system are achieving their stated goals. Measures include biological, economic and social aspects.

Given its prestigious origins and logical formulation and expression, this definition was adopted and used to guide the work of this commission. It directly informed the decision regarding the selection of the evaluation tool and the analytical and reporting framework.

THE EVALUATION TOOL

Within the field of natural resource management there is a significant amount of work completed on the management of protected areas. Launchpad conducted a search for a tool that would meet the objectives and guidelines established for the commission[22] and facilitate the aims of the approach.

A number of evaluation models were considered, including the WCPA framework[23], the WWF and World Bank's tracking tool[24], and the WWF's Rapid Assessment and Prioritization of Protected Area Management (RAPPAM)[25]. Underpinning the review was a cognizance that any selection would have to be weighed and adjusted for jurisdictional asymmetries and relevance to local context.

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[20] The world's largest conservation network of 82 states, 111 government agencies, 800 NGOs and 10,000 scientists and experts from 181 countries (courtesy IUCN.org)
[21] Hockings M., Stolton S., Dugley N., Evaluating Effectiveness, A Framework for Assessing the Management of Protected Areas, World Commission on Protected Areas, Best Practice Protected Area Guidelines Series No. 6, IUCN, 2000, pg. 3 – 4.
[22] i.e. an eight week timeline to review a sample of eight, diverse PA and their management agencies
[23] www.iucn.org/themes/wcpa/pubs/pdfs/evaluating effect.pdf
[24] http://Inweb18.worldbank.org/ESSD/envest.nsf/48ByDocName/Biodiversity
[25] www.panda.org/downloads/forests/rappam/pdf

Having considered all the variables, the consultants decided that the most appropriate tool would be an adjusted version of the RAPPAM. In its original form the RAPPAM is a comprehensive questionnaire covering nearly 100 different indicators of management effectiveness *using the six key elements of the WCPA framework*[26]. The tool was designed to evaluate and compare the effectiveness of protected areas within a given system, and to "prioritize policy, management and funding interventions based on such issues as degree of threat, management performance and biological importance"[27]. It is usually implemented through participatory workshops with site managers.

The RAPPAM's strengths, specifically the ability to identify overall strengths and weaknesses in management capacity and PA policies at site level based on the ability to assess and mitigate against threats and stresses[28], and its use of the widely endorsed WCPA evaluation framework, formulated the basis for the selection. The tool *is not* intended and was not used in this exercise to assess individual PA management effectiveness and policies in detail[29], or to identify steps to mitigate against specific threats or stresses in each protected area, or develop specific policy interventions for each PA[30].

The RAPPAM is underpinned by five key steps. These are:

1. Identifying the protected areas to be included in the assessment,

2. Assessing existing information for each PA,

3. Filling data gaps through questionnaires and workshops,

4. Analysing the findings, and

5. Identifying the next steps and priorities.

The process used in this exercise embraced the substantive composition of the RAPPAM but differed to the extent that step one was not a responsibility under the project[31] and step three was adjusted for local context, and resource constraints. The details of the process utilized are as follows:

1. Assessing existing information for each protected area in the sample.

Phase duration: One week

This included review of web sites, legal and policy studies, gap analyses, scientific research, needs assessments and other information available from the internet as well as from agencies involved in PA and/or biodiversity issues in Belize. These included but were not limited to, the

[26] Context, planning, inputs, processes, outputs and outcomes
[27] A Proposal for Assessing Protected Area Management Effectiveness
[28] Which is the overarching objective of this consultancy in relation to institutional and technical capacity
[29] which clearly was not the intent of the commission, given the time frame and sample size
[30] Although it must be stated that where the opportunity existed to address any of these issues, it was included in the recommendations.
[31] These were decided by the task force and formulated part of the TORs

NPAPSP, PACT, Ministry of Natural Resources and the Environment and Ministry of Tourism and the Belize Tourism Board.

2. Filling in the data gaps

Phase duration: Three weeks

Limited by time and budget, the remaining information was gathered through a graduated approach which involved in the first instance, a comprehensive survey instrument (See Annex 1 for sample of survey instrument and distribution list[32]), delivered electronically to oversight organizations for delivery to, or deliberation with the appropriate site personnel[33]. Where a co-management agreement existed, the instrument was distributed to both parties. In addition to questions related to the six WCPA assessment elements, the survey also asked for a number of organizational documents including a copy of the management plan, financial information, annual reports, organizational charts, curriculum vitae of relevant individuals, employee handbooks, personnel manuals, a biodiversity plan[34] annual work programs, and communication plans.

This was followed by a telephone interview and arrangement for a site visit. The objective of the site visit was to follow up on the outputs and outcomes articulated in the management plan, clarify or expand on information collected by the survey, collect any organizational data that could not be transmitted electronically, and to conduct a personal interview with all the key personnel involved in site management. This was also an opportunity for administrators to ask questions of the evaluators and to develop the tone and spirit for the communication pattern that would influence the rest of the data collection process conducted via email and telephone[35].

3. Analysing the findings

Phase duration: Two weeks

The data was analysed in accordance with the following WCPA recommended framework and adjusted to support the guidelines for the commission and the local context. It is important to note that although the assessment tools and analytical framework included strategies to assess the PA system, this was not a part of the terms of reference for this commission. As such both the survey instrument and the analytical framework were adjusted to reflect a narrower, site/agency specific focus. References and information pertaining to system design elements such as links between protected areas, and ecological representation were not included in the evaluation. In addition, evaluation of site design issues as it relates to; significance (i.e. significance within the national context in terms of conservation values), threats (type and severity of external and internal threats) and vulnerabilities (a measure of the extent to which a protected area can withstand or absorb the impacts of the threats), were not a part of the terms of reference for this commission. As such, as it pertains to these design elements, existing design

[32] These were personalized and specific to the site under review
[33] A list of these are available in Annex 1
[34] if articulated separately from the management objectives
[35] should the need arise

information[36], was used and accepted as reported. The information *was not* evaluated on any substantive level for accuracy.

Where this type of contextual information was not available (i.e. as in the availability of a current management/strategic plan, REA or co-management agreement), it was not possible to carry out a review of the management of the site, using the RAPPAM. The objectives of management and the current state of the biological, social and cultural environment underpin evaluation at the site level. Demand for resources cannot be properly estimated without an understanding of the context and the reasons for the demand. In turn outputs and outcomes cannot be evaluated if there were no articulated or understood management objectives to begin with. The lack of an appropriate contextual framework and its impact on management effectiveness was used to inform the gap analysis.

The specific elements of the analytical framework are as follows:

Table 1 – Analytical Framework – Management Capacity Assessment

	Design (Contextual Framework)		Appropriateness of Management Systems		Delivery of Protected Area Objectives	
Elements of Evaluation	Context	Planning	Input	Process	Outputs	Outcomes
Explanation	*Where are we?* Assessment of importance, threats and policy environments	*Where do we want to be?* Assessment of PA Design and Planning	*What do we need to get there?* Assessment of resources needed to carry out management	*How do we go about it?* Assessment of the way in which management is conducted	*What were the results?* Assessment of the implementation of management programs and actions, and delivery of products and services	*What was achieved?* *Assessment of the outcomes and the extent to which they achieved objectives*
Criteria used	1. significance 2. threats 3. vulnerabilities 4. Review of national context and relationship to system plan	1. Reserve design 2. Management planning	1. Resourcing of Site 2. Resourcing of Agency (where appropriate) 3. Partners	1. Suitability of management processes	1. Results of Management Actions 2. Services and products	1. Impacts, effects of management in relation to objectives

To establish a context for evaluation, the IUCN management categorization structure was utilized. Sites were asked to ascribe an IUCN category based on their understanding of the

[36] found in a Rapid Ecological Assessment, RA and/or Management Plan

objectives for management. Where an assignment was not forthcoming from the site, the J.C. Meerman ascription, provided in his report entitled Protected Area System Assessment and Analysis, dated April 2005 was used.

Design elements were accepted as reported and evaluated based on the *availability* of the criteria. No attempt was made to evaluate the context or its suitability to the PA. To evaluate the input and process elements, standards for each issue area were developed and arranged into a scorecard for each site. The standards were expressed in a descriptive rather than a quantitative fashion and developed based on studies of best practice applications, professional experience and knowledge of local circumstances. The standards directly informed the design of the survey and allowed the survey to be presented in a fashion that invited site personnel to, in a sense rate their own performance based on the description best suited to their particular PA circumstance. Then the information gathered from the surveys and the other methods detailed above was amalgamated and used to fill in the score card for each site.

Note that congruent with the RAPPAM and the guidelines provided by the commission, input and system elements were not evaluated on a detailed level for each site. Evaluations were conducted here on the *determination of availability and use of the input systems and processes*, rather than an evaluation of the caliber of the system/process itself. To illustrate, the availability and use of a financial system which directly informed management decision making, was the criteria, rather than the specific elements of the system. The disadvantage of this of course is that recommendations specific to these elements (i.e. improvements in collection of financial data and reporting) are not a part of this evaluation. This would require a smaller sample, more time to observe the management cycle, and the development of standards specific to each type of input and process.

Output and outcome elements were evaluated based on the ability to meet the desired outcomes expressed by the management plans and the objectives of the IUCN categories of protected areas. Information for this was collected from management reports and personal communication with staff and was not verified for accuracy.

Scoring

Score sheets were designed for each type of PA, based on the IUCN categorization. The concordant management objectives also defined by IUCN were then used as the measure of performance. Where stated management objectives differed significantly from those provided by the IUCN, these were included in the assessment. A scale of 1 through 4 was used to rate performance under each of four elements starting with overall objectives (output/outcomes), design elements and input/process elements. A score of 1 was awarded to the issue area if it was established that there was complete or near complete failure to meet the standards in that area. On the other hand a rating of 4 was awarded if the performance was in full compliance with the management standards. Partial compliance was delivered a rating of either 2 or 3, depending on the extent of compliance. These were gauged based on the description provided under the standard of performance weighted against the information collected on the issue area from each site. One additional point was added to the score if sites were found to be engaged in

activities above the standard[37]. A maximum and minimum score was calculated for each category and the following criteria were used to rate performance. A score of 50% or less of the maximum allowable points (which differed depending on the management category), indicated that management is generally ineffective in key areas exposing conservation values to risk. A score of 75% or less of the maximum allowable points indicated that management is partially effective but some areas need to be addressed urgently to avoid site exposure to risk. Higher than 75% indicated that management is generally effective, site values are not exposed to undue risk and management practices may need only minor adjustments.

The indicators used in each element of the evaluation process are as follows:

Table 2 – Indicators Used in the Evaluation Process

	Design		Appropriateness of Management Systems		Delivery of Protected Area Objectives	
Elements of Evaluation	Context	Planning	Input	Process	Outputs	Outcomes
Indicators	Determination of conservation values Assignment to a management category Assessment of threats and vulnerabilities Consideration of conservation needs in the national context, An indication of whether policies are followed through in practice Ability to meet the costs of	Determination of clear objectives for the PA Existence of a management plan Existence of a planning process Existence of an evaluation and monitoring system	Determination of the Financial and Human resources of site and oversight management organizations Presence and adequacy of facilities and equipment; field and agency	Evidence of: Planning Natural resource assessment management Cultural resource management Maintenance Facilities development Patrol and enforcement Communication Education and advocacy Training	Product/Service Delivery No. of Users Work outputs Measures of physical outputs (park boundaries delineated/ marked) Achievement of planned work program Extent of implementation of management plan	By IUCN Category[38] <u>Category II</u> Population estimates Extent or use related degradation or stress Extend of encroachment considered inimical to purposes of designation Visitor experiences/satisfaction Extent of visitor-related degradation or stress No of visitors <u>Category IV</u> Population estimates Estimates of extent and condition of critical habitats Extent of encroachment

[37] these areas can be clearly gleaned from a review of the score card
[38] these are the categories applicable to the sites under review.

	Design		Appropriateness of Management Systems		Delivery of Protected Area Objectives	
	management Indications of national and international support			Research Monitoring and evaluation Reporting Visitor management Personnel management Budget and financial control		considered inimical to purposes of designation Visitor understanding and satisfaction levels <u>Category VI</u> Population estimates Register of non-confirming land uses and activities Income from sustainable production
Data Collection	Management Plan REA System plans policies Economic reports Environmental/ biodiversity reports, Reg./int. reports	Management, Strategic Plan, REA, Vision, mission, stmts., Annual work plans, relationship of these to management plan	Site/agency total annual budget allocation Budget separated at site level according to expenditure type, source of funds, Total staff numbers categorized by location, function, skills and training, Site visits and/ or management reports on adequacy of equipment and infrastructure	Management Plan/Agency policies Best practice guidelines Site Staff	Annual work programs and relationship to management plan Management reports on implementation process over time Budgets i.e. actual versus planned expenditures	Management/Strategic Plan Identification of specific threats Field Studies/surveys Visitor Satisfaction surveys Mapping of encroachment areas Management Reports

4. Identifying the Next Steps and Priorities

Phase duration: Two weeks

Every effort was expended to ensure the information is reported in a clear, concise, balanced fashion, identifying gaps and both the site and agency level and with specific recommendations for improving management performance at the systems level.

The information was analysed to provide the required GAP analysis for each site and answers to the following questions:

At the Site level . . .

- Is management of the site effective? (Measured by the degree to which the site is managed to achieve its goals and objectives and offset by the context)
- Are PA management or co-management implementers accountable?
- Is there sufficient physical infrastructure within institutions and at the PA sites to provision PA goods and services effectively and efficiently?
- Are there sufficient and adequately trained human resources to allocate to protected areas management activities?

And at the systems level . . .

- Is there system-wide consistency in application of management objectives?
- Do sites understand how they contribute to the protected areas system as a whole?
- Is management of the protected areas system effective? (based on sample review)

LIMITATIONS AND CONSTRAINTS

This commission has been faced with a number of important challenges, which forced some deviation from the envisaged approach. These are set out here because they influence the outcomes of the commission to a large extent

The first is that an assessment of site management effectiveness is best developed within an appropriate framework of systems management which provides guidelines and clear criteria for PA site selection within the PA system (thus providing an objective for management with reference to its value to the system), establishes the priorities for PA site management based on the system objectives and identifies the criteria for management effectiveness, based on the type

of PA. Effective system management will also consider a clearinghouse mechanism and forums for exchange of information and ideas with a view to promoting an atmosphere of collaboration and concord across the system.

In practice however, protected areas conservation in Belize has developed without the benefit of a national systems approach. In fact by all accounts protected area conservation has developed without consideration of the national interests or the needs of a majority of stakeholders. Instead it is the result of the work of individuals or groups of individuals with differing approaches and agendas for conservation. As a result there exists a fragmented community of conservation advocates often with competing demands and power imbalances, operating within an informal, obscure system. This has lead to a general atmosphere of mistrust and turf protection at the agency and site level, which translated into a significant challenge for the consultants during the data collection process. The data collection timelines and process had to be adjusted to accommodate a general reluctance to release information considered sensitive by administrators. Instead of a three week timeframe, data collection became an ongoing process throughout the consultancy, with activities to fill in the information gaps taking place up to the report drafting phase of this exercise. This lead to a general failure to review the complete sample, having instead to take a decision after a two week extension, to complete the task using seven instead of eight PAs and using incomplete data sets for four out of the seven sites evaluated. ***Please note that having received no information from Gladden Spit, it could not be considered here and its experiences did not inform the results or recommendations.*** The breakdown of the sample collection and information deficits on a per site basis is available in Annex II. Failure to collect complete sets of organizational design information i.e. (organizational structure, job design (job descriptions), communication channels and authority and accountability patterns), from all but two site, influenced the result in that area to a large extent. As a result, the only certain conclusion on the issue of system capacity is that it does exist. However the extent of the deficiency and identification of the specific areas of deficiency (with the exception of a general lack of scientific knowledge throughout the sample, indicated by the import of expertise in this area for all sites), could not be determined with any certainty.

In addition, the lack of a shared system definition for management effectiveness and a management categorization system (similar to the IUCN's system), invariably meant that in some cases an evaluation using international standards was tantamount to trying to fit a square peg into a round hole. In addition in some cases the experts[39] disagreed on the IUCN categorization indicating a difference of opinion in regard to the reasons for declaration and the specific management objectives. This made categorization for purposes of this exercise a complex process and apologies are offered at this juncture if in the view of site management they were unfairly assessed based on their categorization. This is a system issue that needs attention and is discussed later on.

Finally, this exercise called for a capacity review of the management agencies related to the eight sites. In the case of six out of the seven reviewed, the managing agency is a government department with complete or partial management responsibility. It had to be considered that

[39] Referent of site managers and experts who have worked with these sites in various capacities

these entities are part of a broader management system and rarely have complete control over actual inputs and processes (except in the case of Hol Chan and the fisheries department). For example, as part of the wider government service, the Forestry and Archaeology department must subscribe to the established government processes as it relates to budgeting, staffing and other resource allocation guidelines. These are generic processes which may or may not be suitable to the PA management context[40] but to which these administrators must subscribe. In addition, by all accounts, the administrators within government departments are rarely free to manage without influence from the wider system. Thus assessing capacity to manage in this context would be incomplete without a complete assessment of the broader system, its inputs and processes and specific articulation on how these influence the management of the agencies that oversee protected areas. This is beyond the scope of this exercise.

Instead information from secondary and where available primary sources[41] were used to compile a profile of the agencies and their capacity assessed without regard to influences by the wider system. Thus the results are inconclusive on the management capacity of the administrators of these agencies and in relation to the appropriateness of management systems.

[40] there is no evidence to suggest they are or are not
[41] plans and personal interviews

THE BROAD PERSPECTIVE: THE LINK BETWEEN CONSERVATION AND BIODIVERSITY

The idea of setting aside areas for conservation is not new and dates back as far as 2000 years ago when "protected areas" were actually set aside as hunting reserves. In fact the idea that protection might be for nature without hunting, or for aesthetic appeal was only recognized in the latter half of the 19th century.[42] Most of the growth in the establishment of protected areas occurred in the latter half of the 20th century and a considerable proportion has been set aside since the global commitments made at the 1992 Earth Summit[43], which included adoption of the Convention on Biological Diversity (CBD).

Under the CBD, protected areas are addressed in Article 8 on *"in situ"*[44] conservation and are defined as *"a geographically defined area which is designated or regulated and managed to* ***achieve specific conservation objectives****."* Article 8 (a) and (b) state that a system of protected areas forms a central element of any national strategy to conserve biological diversity. The word "system" implies that the protected areas of a country may be designated and designed to form a network, in which the various components may conserve different portions of biological diversity, using a variety of approaches to management. Article (c) calls for the regulation and management of protected areas and Article (d) for PA systems to promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings. Establishment of protected areas by parties to the convention can be seen a commitment to *"in situ"* biodiversity conservation.

The global interest and commitment to sustainable development and biodiversity punctuated by the Earth Summit and the CBD, provided the impetus for an evolution in the concept of conservation and protected areas. The traditional model of a protected area was of a place set aside for conservation, wilderness and scenic values, owned and financially supported by governments as national assets, with a reactive, narrow, scientifically influenced management focus. Management "tended to treat the protected area as an island, isolated from the rest of the land or sea."[45] The new model is fashioned by the repositioning of conservation concerns and protected areas under the broader themes of sustainable development and biodiversity. It includes management for social and cultural reasons, with more partners, where management decisions are longer term and on a larger scale, "looking beyond the park's borders to its place in the wider landscape or seascape."[46]

Under the new model, protected areas are the foundation of all national and regional biodiversity conservation strategies, and usually represent a significant portion of land

[42] Mulongoy, K., Chape S., Protected Areas and Biodiversity, An Overview of Key Issues, United National Environmental program, UNEP-WCMC Biodiversity Series No. 21. February 2004, pg 7.
[43] UN Conference on Environment and Development
[44] In-situ Conservation is defined by the Convention on Biological Diversity as the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated species, in the surroundings where they have developed their distinctive properties.
[45] Mulongoy, K., Chape., S., Ibid, pg. 8
[46] Ibid, pg. 8

allocations. As such, protected areas are increasingly required to justify their existence to governments and other stakeholders who want accurate reports on both the material and non-material values of the areas. Besides the high socio-economic value of biodiversity conservation[47], which is itself increasingly reliant on protected areas, protected areas also play other key social and economic roles. For example a disproportionate amount of the world's drinking water comes from forest protected areas[48]. Marine protected areas maintain fisheries stocks. In short "the values of protected areas and a national protected areas network are thus more than the traditional issues of wildlife conservation and extend spatially far beyond the boundaries of the sites". [49]

However, beyond biodiversity conservation, protected areas also have a significant role to play in poverty alleviation and sustainable development. "Recently, a strong consensus has developed that protected areas need to make a solid contribution to poverty alleviation, going far beyond simply doing no harm."[50] A primary objective of development and poverty alleviation is the distribution of sustainable benefits to local communities. Usually, protected areas occur in parts of a country furthest removed from mainstream developments and which support some of the least economically affluent segments of the country's population. People living in rural areas often depend on natural resources, and are likely to support protected areas to the extent that such areas continue to provide benefits to them. If sustainable benefits are to accrue to local communities, more effective controls may be required to ensure that populations of plants and animals are maintained at viable and productive levels[51]. How this is achieved will vary, but management for sustainable development should be built on four main principles[52].:

- The major functions of protected areas deliver different benefits at different scales. Compensation must be captured at the global, national and local levels;

- The way resources of a protected area are used is the result of an accommodation among conflicting interests. Widely endorsed management objectives based on dialogue and compromise is fundamental;

- Major problems facing protected areas need to be addressed by institutions at the appropriate scale, with appropriate roles. For example, local communities can frequently deal with day to day threats better than governments, while governments can resist major abuses better than local people if they have the resources and political will;

- Protected areas are best conceived as parts of a national system of land use. In other words a nation must define its development agenda and the value of its land to that agenda. This in turn will drive the decisions regarding land use and provide the basis not only for biodiversity strategies and the protected areas

[47] Benefits are derived directly from the genetic potential in plant and animal species.
[48] ulongoy K., Chape, s., Ibid, pg. 16
[49] Ibid
[50] ibid, pg. 17
[51] either for their direct use through sustainable extraction and/or the tourism value
[52] ibid, pg. 18

system but also for areas of the productive sector reliant on land for its sustainability such as agriculture and tourism. In such a situation the linkages are established and can be exploited and conflicts due to competing interests are minimized.

In the final analysis, given the widening and deepening of the issues related to protected areas, management of protected areas now demands a national focus and significant management capacity. Managers need multiple skills to handle the broader roles and responsibilities and efficiently manage the broad array of sources that provide financial, logistical and popular support for the protected areas.

THE NATIONAL PROTECTED AREAS CONTEXT – ELEMENTS OF SYSTEM DESIGN

BELIZE COUNTRY PROFILE

Belize is located on the Central American mainland forming part of the Yucatan Peninsula and shares borders with Mexico (North and part of Northwest) and Guatemala (South and rest of Northwest). Its Eastern border is the Caribbean Sea. It covers a land area of 8,867 square miles or 22,966 square kilometers of which 95% is located on the mainland, and 5.0% is distributed over more than 1,060 islands. Total national territory including territorial sea is 18,000 sq miles or 46,620 square kilometers.

According to the Central Statistical Office at mid-year 2004, the population count stood at approximately 282,600 an increase of 8,900 over the same period in 2003. According to the last full population census in 2000, the ethnic composition is as follows: 48.7% Mestizo, 24.9% Creole, 10.6% Mayan, 6.1% Garifuna, 3.6% Mennonite, 3.0% East Indian, 0.7% Chinese and 2.1% other.

Belize consists of six districts, comprised of cities, towns and villages. The capital city is Belmopan. The northern districts of Corozal and Orange walk consist predominantly of Mestizo and Spanish-speaking ethnic groups. The Belize district is comprised primarily of English-speaking Creole. The Cayo district in the centre of the country is mixed, but all four districts have Mennonite communities. The majority of the population in the South is a mix of Garifuna and Mayan with the majority of the Garifuna population in the Stann Creek district and the majority of the Mayan population in the Toledo district. English and Spanish are the primary languages but there are also Garifuna and three Mayan languages[53] spoken across the country.

Belize is a sovereign state, having gained independence from the United Kingdom in 1981. It is governed under the principles of a representative democracy with a bicameral legislature based on the Westminster model. The Head of State is the Governor General and the Head of Government the Prime Minister. The Prime Minister and the Cabinet form the executive branch, while the National Assembly forms a bicameral legislature comprising of a 29 member elected House of Representatives and a 13 member appointed Senate.

[53] Kek'chi, Mopan and Yucatec.

Belize is a member of the United Nations, the Commonwealth, the Organization of American States, the Caribbean Community (CARICOM), the World Trade Organization, the African, Caribbean and Pacific Group, The Association of Caribbean States, and the Central America Integration System.

THE SOCIO-ECONOMIC CONTEXT[54]

According to the Central Statistical Office, Belize's nominal Gross Domestic Product in 2004 totaled $2.12 Bz billion, an increase of $147 Bz million over 2003. After a 9% growth in 2003, economic growth in 2004 is estimated at 4.2%, mostly due to the continued growth in the Tourism industry (driven mostly by the steep climb in cruise tourism) and "strong performances"[55] in the Agriculture and Constructions sectors. Per Capita GDP was estimated at $6,859 and $7,270 for 2002 and 2003 respectively.

The economy of Belize has traditionally relied on agriculture as its mainstay, with the principal source of income coming from sugar, bananas and citrus. In 2003 the agriculture sector continued to be a significant contributor to the economy, although there was no significant growth in either citrus or sugar. However from among the primary industries, marine production doubled (over 2002 figures), due mostly to the significant increase in the production of farmed shrimps. Contribution from the primary industries was 13.2 and 14.6% in 2002 and 2003 respectively. In 2004, sugar production rose by 11.6% and earnings from sugar increased by 12.7%[56] but although citrus yields increased by 25.4%, citrus juice earnings shrank by 28.5%. Due to a downward pressure on prices, the average price per box for bananas fell by 4.6%, leading to only a marginal increase in total receipts over the previous year. Marine products in 2004 also yielded a marked reduction in export earnings as the figure fell by 4.2% to $98.2 Bzd. million, due largely to a sharp fall in the average price per pound of farmed shrimp.

Contribution to GDP from the tertiary industries (service sectors) continued to be substantially greater than any other sector in 2003. The sector contributed a consistent 59.1% in 2002 and 2003. Wholesale and retail trade, general government services and transport and communication were the most important sub-sectors within this category in 02 and 03.

Belize estimates that tourism is about 16% [57] of the country's GDP or 66%[58] of receipts from all services. This is a significant contribution and places the tourism sector at the forefront of the country's economic activity. Tourism continues to be one of the fastest growing sectors in Belize with tourist arrivals exceeding the 1 million visitor mark in 2004. Of this, 851,000[59] were cruise tourists. In 2004 receipts from tourism were $172.7 Bzd. Million,[60] an increase of $17 million over the previous year.

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[54] Note that 2003 is the last complete year of information reported by the Central Statistical Office. 2004 performances are reported when the information was available

[55] www.cso.gov.bz

[56] Budget Speech, fiscal year 2005/2006, Prime Minister of Belize, January 2005, www.belize.gov.bz

[57] 15.8% 2003 and 15.4% 2004. Belize Tourism Board Statistics

[58] last complete year 1999, www.belizetourism.org

[59] 851, 436 to be exact, which exceeded total visitor figures in 2003 (795,770), Tourism Policy 2005, Launchpad Consulting , April/May 2005, pg. 6,7

[60] ibid, pg. 9

Consumer prices in 2004 continued its upward trend reaching its highest level (3.1%) in eight consecutive years[61]. Higher international oil prices played a significant role in pushing up the domestic price level. Year to year increases occurred across all major commodity groups except for Personal Care. "Higher acquisition costs for butane, diesel and gasoline products caused the largest growth in prices to be recorded in rent, water, fuel and power (6.2%), followed by transport and communication at 6.0%.[62]"

Despite the economic growth and reduced purchases by consumers and businesses alike in 2004, Belize continued to be highly dependent on imports. Imports in 2004 totaled $227.56 Bzd million. The majority of imported products originated from the United States. In contrast major domestic exports totaled $115.12 Bzd million in 2004, with the United States and Britain as the main markets.

Fiscal Performance[63]

Government recorded a fiscal deficit of 10.8% of GDP in 2003, after having narrowed it to 3.7% in 2002. This reversal is the result of an 11% increase in total spending and a 15% drop in income, including from grants. The deficit, which was financed primarily with external resources, was one of the factors that drove up the level of public debt. In 2003 the public sector's domestic and external debt expanded by 48% and 30%, respectively, reaching 13% and 76% of GDP. The downturn in income was due to the behaviour of non-tax revenues, which reflected a decrease in the recovery of old public loans (-59%) and a sharp drop in official grants (-89%). Tax revenues expanded moderately (4.6%), in keeping with the level of economic activity, owing to higher receipts from profit and income taxes and from levies on goods and services. By contrast, receipts from international transactions taxes were limited by the wide range of exemptions granted to firms operating in free trade zones.

The increase in government spending in 2003 reflected higher current spending (22%), since capital expenditure decreased by 3.2%. Current spending expanded to 14% of total expenditure, driven mainly by payments of interest on the public debt. Expenditure on wages and salaries was also higher than in 2002, rising by 10% and accounting for 28% of total spending. This was a result of pay increases awarded to several categories of civil servants, including police officers, teachers and members of the armed forces. Spending on goods and services was also up, exceeding the 2002 figure by 20%.. Trends in capital spending showed a decline in capital III expenditure (-27%); this more than offset the net loan to the Development Finance Corporation, which pushed up capital II spending by 11%. Capital expenditure was channelled into infrastructure improvement and natural disaster preparedness, among other areas.

In 2004/05, GOB expected government operations to result in an overall deficit of $94.3 Bzd. million, with total revenue and grants of $477 million and total expenditure of $571.3 million. Revenue performance was boosted by the increase in sales taxes introduced in 2004 but this was offset by a reduction in both capital revenue and grants. Debt servicing, pension and

[61] cso.gov.bz, Statistical Highlights
[62] Budget Speech 2005/2006, Prime Minister of Belize, www.belize.gov.bz
[63] 2003 performance is courtesy of the Economic Survey of the Caribbean and Latin America 2003-2004, Country Report – Belize, www.eclac.cl/publicaciones/desarrolloEconomico/ 5/LCG2255PI/Belize.pdf, pg. 283 & 285

increases in fuel accounted for the 6% increase in expenditures over the approved budget for fiscal 2004/05[64].

Social Indicators

According to the 2002 Poverty Assessment distributed by the CSO, "the population of Belize remains young"[65]. In 2002 children under 18 years accounted for almost one half of the population. There were 82 dependent persons for every 100 persons in the working age population. The average household size in 2002 was 4.6 persons with rural households slightly higher than urban households. At the last complete census in 2000, the adult literacy rate was established at 76.6%. Females were expected to live longer than males with an average life expectancy of 73.5 years. Male life expectancy was an average 66.7 years.

The unemployment rate increased steadily between 2001 and 2003, expanding from 9.1% in 2001 to 12.9% in 2003. Southern Belize has the highest unemployment rates while the lowest rates are in Northern Belize. Over 61% of employed worked in tertiary industries while 20% were employed in the primary industries[66]

The 2002 poverty estimates indicate that 10.8% of the population was very poor or indigent while 33.5% were considered poor. The rate is much higher in the rural areas (44%) than the urban areas (24%). The highest amount of poverty was found in the Toledo district where 79% of the population was considered poor. The lowest was in the Belize district (24.8%). Children represented the highest rate of poverty when compared to any other group. The level of poverty among children was 39%, while the corresponding rates among the youth and elderly were 33.9% and 26.5% respectively. The working poor accounted for 29.8% of the labour force. At the household level, 7.5% were very poor and 24.5% were poor. The Mayas show up as the poorest ethnic group.

THE ENVIRONMENTAL CONTEXT

By all accounts, Belize is considered committed to the conservation and sustainable use of its natural resources. This is signaled through its involvement in many regional and international environmental conventions and treaties, the designation of 36% and 7% of its terrestrial and marine areas as protected areas, and a tourism product aggressively marketed under an "eco-tourism" label.

Belize has developed with a tradition of sustainable forest management, aware of the merits of conservation long before it became a global mainstream issue.[67] While biodiversity is a term that was introduced later in Belize's conservation history, protection of natural environments, critical habitats and species has gained increased national attention over the last twenty years, mainly due to the establishment of protected areas.[68] As of 1999, Belize has ratified twenty (20) environmental treaties, including the International Plant Protection Convention, the Ramsar

[64] 2005/06 Budget Speech, Prime Minister of Belize, www.belize.gov.bz
[65] 2002 Poverty Assessment Report , Central Statistical Office, Belize, www.cso.gov.bz, Executive Summary pg. x
[66] Environmental statistics 2004, pg. 8
[67] Belize's First Interim National Report, Ministry of Natural Resources, January 1998, pg. 4
[68] ibid, pg. 4

Convention[69], Convention concerning the Protection of the World Cultural and Natural Heritage, International Convention for the Prevention of Pollution from ships and the 1978 Protocol (MARPOL), The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention of the International Regional Organization of Plant and Animal Health (OIRSA), the Convention on Biological Diversity (CDB) and the United National Framework Convention on Climate Change.

The requirements under the CBD provided the impetus for an integrative, national approach to conservation management in Belize, demanding that conservation issues and priorities be addressed through a national strategy and considered among the issues that influence the national development agenda. Since ratification of the CBD in 1993 and the development of the national biodiversity strategies, from a national perspective protected areas have been repackaged as a component of the broader issue of biodiversity conservation. In fact, according to the 1998 Biodiversity strategy, "the centerpiece of biodiversity conservation in Belize is the National Protected Areas system."[70] As such the success of the nation's biodiversity conservation efforts[71] is inextricably tied to the success of the national protected areas system.

Biodiversity and Protected Areas in Belize

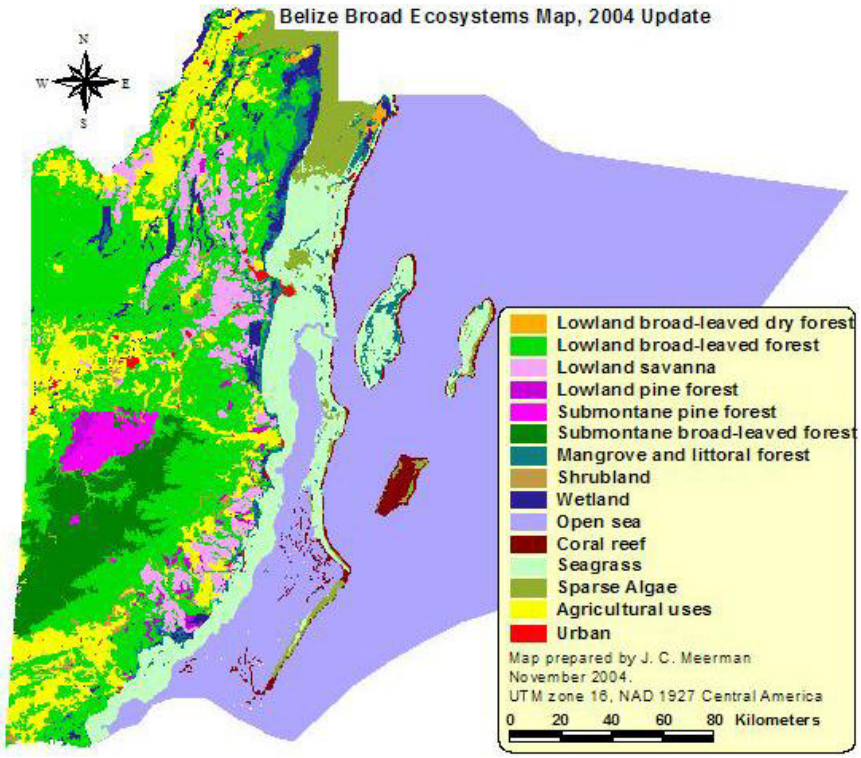
The most comprehensive catalogue of biodiversity in Belize appears as a part of the 1998 Biodiversity Strategy and is as follows:

Table 3 – Documented Biodiversity in Belize[72]

Type	No. of Species
Birds	576
Mammals	166
Reptiles	122
Fresh Water Fish	43
Total Inland Fish	116
Mollusks, Crustacean	158
Amphibians	42
Lepidoptera	288
Odonata	176
Terrestrial invertebrates	2
Endemics	2 amphibians 1 reptile

[69] Convention on Wetlands of International Importance especially as Waterfowl Habitat
[70] Belize's National Biodiversity Strategy, September 1998, pg. 1
[71] biodiversity issues of course are concerned with considerably more than protected areas management. It involves several horizontal issues, including public health and safety, population and immigration, tourism, biosafety and land use planning .
[72] ibid, pg. v

Figure 1 Broad Eco-Systems Map, (courtesy http://bological-divesity.info/ecosystems.htm



Of the estimated 4,000 species of native flowering plants, 2,500 species are dicotyledons and 1,500 are monocotyledons (including 317 species of bromeliads/orchids). 613 species of plants have medicinal value.[73] In addition, Belize boasts the largest coral reef in the Western hemisphere and the largest cave system in Central America.

Currently the amount of national territory under some form of conservation management (marine and terrestrial) is 18.5%[74] (see representation left). This translates into a total of 94 protected areas in Belize, grouped into the following broad categories:

Table 4 Protected Areas by Category[75]

Category	Count
Conservation Management Categories	
Marine Reserve incl. Spawning Aggregations	11
National Parks	16
Natural Monument	5
Nature Reserve	3
Spawning Aggregation Adds	11
Wildlife Sanctuary	7
Archaeological Reserves	12

[73] Belize National Biodiversity Strategy, September 1998, pg. v.
[74] J.c. Meerman, Protected Area System Assessment and Analysis, April 2005, pg. 10
[75] Courtesy J.C. Meerman, Protected Area System Assessment and Analysis, April 2005, pg.10. Note that while the count is at 94 several of the reserves have management zonation. When this is taken into account, the number of management units increases to 115.

Category	Count
Bird Sanctuaries	7
Extractive Reserves	
Forest Reserves	16
Marine Reserves	8
Private Reserves	8

Of the nation's land holdings, 36.46% is under conservation. This number is significantly less at 7.33% for marine holdings[76].

Legal and Policy Environment

There is no specific law or institutional structure that addresses protected areas management in Belize. Several pieces of legislation and several institutional arrangements have to date provided the legal and institutional basis for the declaration and establishment of protected areas. These are discussed briefly below.

The National Parks System Act

The National Parks Systems Act provides for the creation of protected areas to be kept primarily in their natural state. Use is limited to scientific study, education, tourism and recreation, with fishing permitted under special license. It does not provide for extraction.

The Forests Act

Forest Reserves are established under the Forests Act. The act provides for extractive use and for leasing arrangements within the reserves as well as the assignment of special enclaves for the development of tourism.

The Fisheries Act

The Fisheries Act [Chapter 210, Revised Edition 2000] seeks to regulate commercial fishing by establishing criteria for minimum sizes and types of fishing equipment used. The jurisdiction is primarily marine but it makes allowances for inland waters and rivers to be added by order of the Minister. It allows the minister to declare any area within the fishing limits of Belize and the appropriate adjacent surrounding land, a marine reserve either for protection, stock regeneration, or study and research but also gives him the discretion to revoke the order. Fishing, extraction and willful damage are prohibited in the reserve.

The National Institute of Culture and History Act

The National Institute of Culture and History Act repeals the Ancient Monuments and Antiquities Act and governs the protocol for the declaration of Archaeological Reserves. It

[76] Ibid, pg. 11 & 12

prohibits the removal of earth or stone (unless under permit for excavation purposes) from and willful damage and destruction to the reserves. It provides for the transfer of care and control from the Director of Archaeology to the Minster of Tourism, for public visitation. Once transferred, the Minister of Tourism can made regulations pertaining to charges, sanitation, safety, appointment and duties of wardens and caretakers and generally for all matters of general management and may establish the penalties for breach of the rules. If the reserve or any part thereof, at the discretion of the Director of Archaeology, is required for excavation or research, public access can be restricted or denied.

Institutional Arrangements

Associated with each piece of relevant legislation is an administrative framework fashioned off the traditional government structure, each with their respective responsibilities to protected areas management. The Forest Department currently has responsibility for the forty-eight (48) forest reserves declared under the Forest Act and the protected areas declared under the National Parks System Act. The Fisheries Department administrates those areas declared under the Fisheries Act, 8 in total, and the Department of Archaeology manages the 11 declared protected areas under the Ancient Monuments and Antiquities Act, now the National Institute of Culture and History Act.

In addition, several non-government and community based organizations are involved directly with protected areas management. Roughly twenty seven (27) sites are on record as having some form of exclusive or co-management agreement with the Government of Belize. The Belize Audubon Society currently manages nine (9) protected sites on behalf of the Government of Belize, in every category except for declared forest and marine reserves[77]. Roughly ten (10) sites are on record as managed through Community Based Organizations (CBO) and co-management agreements, including Five Blues Lake, (Friends of Five Blues Lake Forest Reserve), Gra, Gra Lagoon (Friends of Gra Gra lagoon National Park), and Gladden Spit/ Silk Cayes Marine Reserve (Friends of Nature) . In addition there are several privately owned and managed reserves, including the Rio Bravo Conservation and Management Area, currently managed by Programme for Belize, Shipstern Nature Reserve, operated by the International Tropical Conservation Foundation (ITCF) and Monkey Bay (Private individual land owners)[78].

Given the number of responsible agencies, according to Homer, the level of coordination and active management varies among agencies, and is dependent on natural resource allocation, stakeholder priority and the capacity and commitment to manage. "There appears to be consensus among key stakeholder groups, on the need for better coordination and management

[77] i.e. National parks, Nature Reserves, Wildlife Sanctuaries, Natural Monuments

[78] In compiling this information there were several inconsistencies in the number, classification, and co-management responsibility. For example in the Meerman report, Five Blues Lake is said to be co-managed by BAS, in information provided by the NPAPSP team and the Forest Department, the co-management is completed by Friends of Five Blues Lake. We could not locate complete listings of all the reserves (and not management areas, as is listed by Meerman), with consistent categorization or management information. This information was compiled from information provided by Ms. Yvette Alonzo, the Task Force Coordinator and the Meerman Report.

of protected areas, which reflect the socio-political realities of governance, and the needs of these stakeholder groups.[79]

A clear example of this he suggests, are the different approaches to co-management practiced by each government agency. "There appears to be no written procedures or guidelines that are consistently utilized by government agencies to assess the feasibility of co-management and to guide the process of co-management."[80] The results he suggests are varying degrees of co-management success (or failures) and individual[81] failures to include a majority of stakeholders leading to increased conflict and a lack of awareness on protected areas functions and benefits.

Also an issue under the established institutional framework, is the absence of a widely endorsed, published framework for categorization, management objectives and standards of performance of the declared protected areas in Belize. This does not appear in any national legislation or policy and according to Homer, the results of a survey conducted earlier this year among senior decision makers in Belize, indicated "widely varying opinions and often, conflicting primary objectives".[82] The lack of such a framework he posits, encourages an obscure, informal decision making process regarding declaration, and de-reservation, independent of a majority of key stakeholders.[83]

At this juncture, it becomes necessary to re-introduce the NPAPSP project and its efforts to deliver a Protected Areas System that seeks to address the existing legislative and institutional weakness. The work-plan appears to engender all the key components of an effective systems approach, starting with a revised policy that "provides the guiding principles for declaration, modification and re-designation where necessary; management and administration, socio-economic assessment and analysis, ecological assessment and analysis, and monitoring and evaluation of marine and protected areas in Belize."[84]

At the time of this assessment however, no significant adjustments had been completed to either the legislation or institutional frameworks that would significantly affect either system or site management. Thus the prevailing context for this assessment is as described in this section.

In the final analysis, Belize can be proud of its long tradition and commitment to conservation. However the prevailing socio-economic conditions suggest that Belize is at a critical juncture in its relationship with conservation and protected areas. Ever increasing social and economic demands and competing priorities at the national level continue to challenge and test the resolve and commitment of the decision makers who may be inclined to approach development with a narrow focus. Perhaps for their own survival, protected areas in Belize must find ways to justify their existence and establish their synergy at a national level with other

[79] Homer, Floyd, Alternative Institutional Arrangement for Managing Protected Areas in Belize, March 2005, pg. 1
[80] Homer, Floyd, Guidelines for Approaches to Site Management of Protected Areas in Belize, April 2005, pg. 2
[81] department
[82] Homer, Floyd, Guidelines on Protected Areas Categories and Related Natural Resource Use, March 2005, pg. 8
[83] Homer, Floyd, Proposed Regulatory Criteria and Procedures For Declaration, De-Reservation, Reclassification or Alteration of Protected Areas in Belize, April 2004, pg 1
[84] National Policy on Protected Areas in Belize – Final Draft.

development priorities such as poverty alleviation (through sustainable use) and economic stability and prosperity.

Although many of the protected areas in Belize were declared and developed within a context where the desire to conserve was enough, given the national challenges, this is likely to change. The site assessments were therefore conducted against a juxtaposition of these realities.

SITE ASSESSMENTS

As indicated earlier, site assessments are based on specific elements of evaluation, criteria and data sets, intended to establish the appropriateness of design and management systems to the objectives for management, and to establish delivery of objectives over a one to three year period. The data that was requested from each site, through both personal and impersonal approaches are available for review in Annex II. Where complete data was not available or not forthcoming, the information provided by the written survey, and data collected through personal interviews and site visits formed the basis for the evaluation.

Complete scoring information for each site is available in Annexes III – VII. Following is the description of the key assessment elements of each site, along with the overall score and gap analysis. The site evaluations include both the narrative (below) and the scoring sheets. A complete review of the evaluation requires attention to both the detailed elements of the evaluation (found in their respective annexes) and the highlighted elements and conclusions featured below. A summary of scoring and gaps for all sites is available at the end of this section.

Site assessments are arranged by category and adhere to the following organization, except where there was not enough information provided to make a thorough assessment.

- Background
- Design Elements
  - Assessment of Conservation Values and Significance
  - Assessment of Threats
  - Planning
    - Management Context
    - Management Goals and Objectives
- Inputs and Processes
  - Resource Inventory
  - Partners
  - Management Systems
- Delivery of Objectives
  - Outputs and Outcomes
- Gap Analysis and Scoring

GAP ANALYSIS

To satisfy the specific requirements of the commission, deficiencies encountered during the assessment exercise were identified and arranged by the management categories identified in the terms of reference. These along with explanations are provided below.

Institutional Gaps	Indicators
Delivery of outputs and results	Ability to complete work plans and attain stated and/or category objectives.
Planning	An institutionalized planning period and process.
Involving stakeholders in planning	Planning process involves polling relevant stakeholders

	(landowners, buffer communities, employees, users, regulators) in planning the strategic trajectory for the site and in key planning decisions.
Leadership	Clear designation of authority and appropriate aims and objectives.
Organizational Management	Org structure, job descriptions, communication channels, accountability (performance appraisals) and clear responsibility, authority channels.
Human Resource and Staff Development	Human resource plan and/or implemented annual training schedule.
Fundraising and Marketing	Funding sources and composition, availability of web sites, advertising literature (where appropriate), market, visitor surveys.
Financial Management/Sustainability	Long term (3-5 yr) financial and or business plan, funding plan.
Technology	Availability of all or a combination of the following: maps, Geographic Information Systems (GIS), databases of relevant policies and/or species statistics, Decision Support Systems, access to the Internet.
Access to legal Expertise	Established affiliation with legal expertise either in-house or out-sourced.
Sustainable livelihood planning	Planning for relationships beyond the borders of the PA as it relates to alternative, sustainable livelihood planning for buffer communities.

Technical Gaps	**Indicators**
Biodiversity Research	Biodiversity and conservation baseline values established and analyzed for threats and vulnerabilities.
Prioritising of Conservation Values	Indication of established priorities for conservation, translated into management programs.
Monitoring	Institutionalized biodiversity monitoring for priority values.
Enforcement and Resource Protection	Effective mechanisms for enforcement and resource protection.
General technical capacity	Access to scientific knowledge, trained technicians in areas relevant to PA values.

Figure 2 – Five Blues Lake National Park Picture Courtesy of www.ambergriscaye.com

BACKGROUND

Five Blues Lake National Park is a 4,200[85] acre area located in St. Margaret's Village, roughly 32 miles into the Hummingbird Highway in Southern Belize. The park was designated in 1991 (SI 56) and expanded to more definitive and appropriate limits in 1994 (gazetted 1994/52). The main feature of the park is a spectacular lake; the result of a collapsed limestone cave system covering ten acres and reaching depths of 200 feet[86]. At the time of its establishment it was one of the only protected areas in Belize managed by a community-based organization (CBO). Current management arrangement involves a co-management agreement between the Forest Department and the CBO, the Friends of Five Blues Lake Association.

Besides the lake, the park consists of rugged karst (limestone) terrain and lush broadleaf forests. In addition almost 167[87] species of bird have been recorded there along with 20 species of bats and all five varieties of wildcats[88]. Visitor amenities are basic and comprise of a trail network, self guided tourist facilities, a visitor center, campground and a guesthouse. Entrance fees into the park are US$4 for foreign visitors and US$1 for Belizeans.

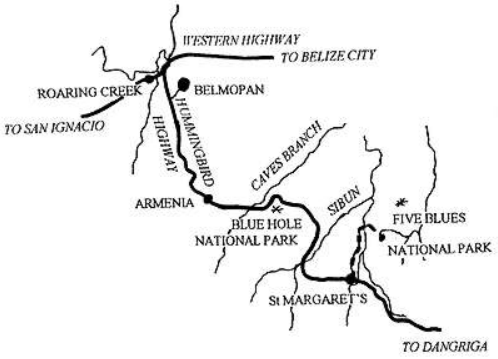


Figure 3 – Location Five Blues Lake, courtesy of www.ambergriscaye.com

DESIGN

Five Blues Lake is co-managed by the Forest Department and the Friends of Five Blues Lake Association (FFBL). Under the terms of the co-management agreement, The Association is responsible for the day to day management of the park and the GOB (through the Forest Department) is responsible for providing security and enforcement for the park, and assist in providing infrastructure. Both parties are required to "formulate and implement detailed management plans … to explicitly include goals, objectives, permitted activities, standards, methods of implementation and control, priorities, budget, personnel requirement, target dates

[85] References have been made to 4,250 (Forest Department Survey) and 4,292 (Report of the Five Blues Expedition to Belize, pg. 3).
[86] Five Blues Lake Brochure and Report on the Five Blues Lake Expedition, Southampton University, January – March 1996.
[87] Reference has been made to 200 (ambergriscaye.com), 217 (travelbelize.org, BTB),
[88] www.travelbelize.org/spanish/guide/pa/pa09.html

and such other matter as shall be agreed."[89] In addition, the plans are required to specify the assessment methods to monitor accomplishments and provide the necessary evaluations and refinements. The agreement was signed in 1997 for a period of five years, automatically renewable except under the objection of either party. The co-management agreement is still in effect.[90]

Five Blues Lake does not have a current Management Plan or Ecological Assessment and efforts to secure a copy of an expired plan[91] were not successful. Thus there was no information available on the significance of the park, threats, vulnerabilities, boundaries and zoning or specific management objectives. However, the site survey returned by the Forest Department provided the following design information.

The site is classified as IUCN category II by the Forest Department[92]. Resource inventory includes "two old pick up trucks not running,"[93] a small office, cabinets, table, chairs, book shelves, cabinet filing system. Besides the vehicles the site has no other tools used in PA conservation and no IT infrastructure. The survey lists a complement of seven/support and administrative staff but these are from the Forest Department and the Board of directors of FFBL. This exercise was not provided with the information requested (during the survey exercise) and required to formulate an assessment of the appropriateness of capacity of the human resources currently involved in the management of Five Blues Lake. The site does not have any full time employees.

Earnings in 1994[94] were listed at $5,187.21. Expenses, which were not itemized was listed at $4,779.21 Bzd. However this included a caveat that explained that the "park operates under small grants, they do not have full employment or finance for maintenance."[95] Current and or past sources of funding include the PACT and the United Nations Development Program (UNDP).

MANAGEMENT SYSTEMS

According to the survey, patrol and enforcement, visitor management, maintenance and facilities development and reporting are current activities in the management of FBL. Site visits and interviews with park administration did not bear this out. In addition, the only management system currently employed in PA management, according to the survey is a maintenance program, although again the site visit and the state of the vehicles did not bear this out *(see picture below).*

Based on the survey, resident communities are actively involved in the management. Hypothetically that is the case. Five Blues by all accounts established the precedent for co-management by CBOs, and this arrangement did meet with some success at an earlier stage.

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89 Agreement G.O.B. and Association of Friend of Five Blues Lake, dated 11th February, 1997, pg.
90 Personal Communication, David Perera, Forrester, June 10th, 2005
91 expired in 1999 according to Mario Perez, President of the FFBL Association board
92 this agrees with the Meerman classification and so for purposes of this exercise this site was classified as such
93 direct quote from survey
94 which was the only time frame made available to the study despite a three year request
95 Returned survey form, available in Annex IV

However, interviews with site administrators and the state of the site suggest that despite the co-management agreement and the specific terms and arrangements therein, internal issues and administrative changes within the FFBL Association have impaired active management of the site. In addition the Forest Department who shares management of the site with the FFBL Association has not made any meaningful attempts to enforce the agreement or address the lack of management with the options available to it through the agreement.

Figure 4 - Approach to Five Blues Lake Visitor Center taken June 10th, 2005, Property of Launchpad Consulting

DELIVERY OF OBJECTIVES

Since information on delivery of objectives is based on appropriateness of design elements and management systems, which in this case is not available or does not exist, it is impossible to meaningfully assess or expand on management results or achievements. However the site visit and interviews did unearth indicators that suggest that whatever attempt at management exists, it is not effective and in fact may be adversely affecting conservation values.

According to the association's representatives, the site requires clearing and regular upkeep and the only trail that is currently maintained is the main trail that delivers visitors to the lake[96]. None of the administrators have any information on the biodiversity of the area or degradation of stocks. They do know that "unregulated visitors to the area are degrading the resources, due to lack of monitoring."[97]

GAP ANALYSIS

Having no management plan to guide the process, the assessment of Five Blues Lake was conducted on the basis of the management objectives defined for Category II sites by the IUCN[98]. As a category II site, the role of management is to perpetuate the natural state of resident biodiversity and ecosystems, to eliminate exploitation and/or occupation and to manage visitor use at a level that will maintain the area in a natural or near natural state. None of the mechanisms needed to contribute to the achievement of these goals were found.

In all categories pertaining to the attainment of management objectives, Five Blues management did not score higher than a 1 out of a possible 4. A score of 1 in these areas indicate that management is unguided and ineffective to the detriment of the conservation values of the park. Design elements such as planning, resource inventory and management, were clearly not featured in the current management of the park. Failure in these areas naturally led to

[96] Interview with Perez and Galdamez, June 10, 2005, Five Blues Lake
[97] direct quote from survey form, pg. 5
[98] these are available in Annex IV

failures in input/process areas. Management was awarded some credit (3/4) for community involvement. This is because the mechanism exists and where decisions are required, both the Forest Department and the FFBL Association contribute to decision making. However, failure to use the process to effectively manage the site reverses any acclaim achieved in this area.

Five Blues Lake was awarded an overall score of 21 out of a possible 77 points. The score indicates that management is considered ineffective in key areas, exposing park values to risk. The complete scoring information including specific criteria used to measure each element of effectiveness and relevant explanations for Five Blues Lake is contained in Annex IV.

Table 5 – Gap Summary – Five Blues Lake

Overall Score - (21/77) or 21%	
Management is considered ineffective in key areas, exposing park values to risk	
Institutional Gaps	**Technical Gaps**
Delivery of outputs and results Planning Involving stakeholders in planning Leadership (not apparent from either Forestry or FFBL) Organizational Management Human Resource and Staff Development Fundraising and Marketing Financial Management/Sustainability Technology (in management processes) Access to legal Expertise Sustainable livelihood planning	Biodiversity Research (no baseline established) Prioritising of Conservation Values Monitoring Enforcement and Resource Protection General technical capacity (exists but is unfocused)

HOL CHAN MARINE RESERVE - CATEGORY II

BACKGROUND

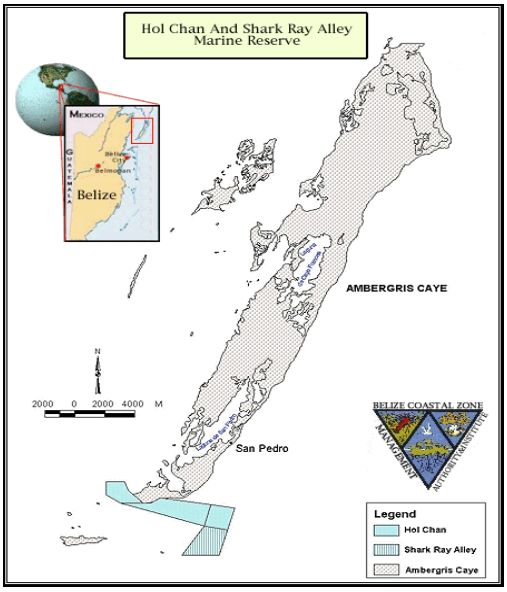


Figure 5 – Location of Hol Chan Marine Reserve (Courtesy of www.holchanbelize.org/loc.html

In July 1987, the Hol Chan Marine Reserve was granted reserve status under section 7 of the Fisheries (Amendment Act) of 1983, thus creating the country's first marine reserve. In December 1988, the Hol Chan Marine Reserve Regulations was gazetted into law, creating three management zones and rules and regulations governing each zone. They are Zone A (the reef), and area measuring 2.29km² where recreational (non-extractive) activities such as diving and snorkeling can occur, Zones B (the Seagrass beds) the largest zone encompassing an area of 7.77km² and Zone C (Mangroves), an area measuring 2.59km². Both Zones B & C accommodates Sports and Commercial fishing under a special license from the Fisheries Administrator.

In 1999, the HCMR regulations were amended to include another section of reef adjoining Zone A. Section 8A of the HCMR (Amendment) Regulations of 1999 was used to designate Zone D (Shark Ray Alley) as a multi-purpose use zone consisting of a General Use Area and two Exclusive Recreation Areas. Within the General Use Area commercial 8 fishing is allowed in all of Zone D except for the exclusive recreational areas of "Shark Ray Alley" and "Amigos del Mar Dive Wreck". Scuba diving and feeding of fish by tourists is prohibited at Shark Ray Alley. The Hol Chan channel, the major focus of the reserve, is located approximately four miles southeast of San Pedro, Ambergris Caye.

DESIGN

Significance and Key Conservation Values[99]

Immediately outside the reef crest exists a flat rocky area of 5m depth with numerous soft corals, including Gorgonia ventalina, Plexurella sp. and Pseudopterogorgia sp. Moving seaward the water depth increases gradually and at 9m evident East-West ridges are apparent. Relief at these initial ridges is slight, approximately 0.5m and gorgonian cover persists. As depth increases familiar corals take on different configurations to adjust to light attenuation. Platey formations of Montastrea sp. And Porites astreoides are evident at 14m along with large specimens of Verongia and Xestospongia. At this depth the spur and grooves are more evenly separated and

[99]Due to the technical nature of this representation it was excerpted in its entirety from the Hol Chan's Management Plan. This information appears on pages 17-21 of the Management Plan. This was the most complete and up to date biological information available to this study.

mostly continuous. The reef wall of 'drop-off' occurs approximately 3/4 miles seaward of the reef crest.

The Reef Crest

A foundation of dead A. palmata and M. annularis underlie the reef crest and provide support for the live corals, A. palmata, P. porites and A. agaricites. The dead corals are often extensively bored and covered by an algal turf. At various locations, small channels run perpendicular to the reef crest thus allowing water exchange between the open sea and the lagoon. These channels are often extremely shallow and lined with outcrops of the hydrocoral Millepora complanata. The outer reef crest is subject to nearly constant wave swell and A. 17 palmata can be found in great abundance. The faces of the coral branches most often form perpendicular to the angle of wave direction to prevent excessive breakage.

The Back Reef

The area extending to 40m west of the reef crest contains many patch reefs situated in the midst of coral rubble often covered with an algal turf. Coarse sand and gravel underlie the rubble in this shallow wave swept region. Depth varies form 1.0 to 1.75m. Patch reefs occur in this area due to displacement of coral fragments during periods of intense wave action. Encrusting corals such as Porites asteroids and Diploria sp., often grow on dead coral formations, building patch reefs closer to the surface of the water, the corals Agaricia agaricites and Siderastrea siderea also appear consistently on patch reefs in the back reef. Many of the smaller reef fish can be found living amongst the patch reefs, especially the many herbivores. Overturned coral formations are often partially exposed at low tide just north and south of Hol Chan channel.

Hol Chan Channel

The channel walls are formed of dead Acropora palmata leaving small caves and ledges on both the north and south sides of the cut. Walls are sporadically covered with the live corals Siderastrea,Agaricia, Diploria and Gorgonia. Thick coral growth, specifically Acropora palmata, occurs in the upper two meters of the walls. The channel curves southward in a slight U-shape as one travels seaward, the width of the channel ranging from 20m to 30m. The18 sandy bottom of the channel is mostly barren of life and approximately 10m deep throughout. Scouring due to wave action displaces coral fragments outside the channel and leaves only coarse sand.Moving seaward, the coral walls discontinue and water depth decreases to 6m. More growth appears on the bottom with abundant algal cover.

Shark Ray Alley

Located in the calm protected waters of the back reef, Shark Ray Alley is named for its resident nurse shark and southern stingrays that gather together for an effortless meal from the fishermen or tourist guides that visit the area. This feeding activity has also attracted large schools of gray snappers and other species of reef fish. The bottom type is composed of coarse to fine sand dominated by the seagrass Thalassia. The hard bottom supports a thriving community of marine life including sponges, corals, and various coralline algae. Encrusting corals such as Porites, Asteroides and Diplora spp. can be found growing on dead coral rubble. The rose coral, Manicina aero - lata, is also common among the grass beds.

The Lagoon Habitat

Considering the lagoon to be the area from just outside the Boca Chica Channel to within 40m of the reef crest, it consists chiefly of coarse to fine sand and the seagrasses Thalassia and Syringodium. In lesser amounts occur sand and rubble zones, which support a high diversity of marine life including sponges, small coral formations and various coralline algae. There appears to be no distinct pattern as to where grass patches in sand flats of sand patches in grass flats will occur. A rough approximation of 50% grass patch 19 cover from just outside the Boca Chica Channel to within 40m of the reef crest, it consists chiefly of coarse to fine sand and the seagrasses Thalassia and Syringodium. In lesser amounts occur sand and rubble zones, which support a high diversity of marine life including sponges, small coral formations and various coralline algae. There appears to be no distinct pattern as to where grass patches in sand flats or sand patches in grass flats will occur. A rough approximation of 50% grass patch covers the phytoplankton and algae for photosynthesis. Fish such as Surgeonfish and Parrotfish graze on the algae and seagrasses and return to the reefs, depositing the nutrient there in their faeces, such as turtles, manatees, conch and loster. Thalassia roots and leaves provide shelter and attachment sites for a microcosm of marine life.

The Mangrove Habitat

This area of the reserve is comprised of seven mangrove cayes lying just off the southern tip of Ambergris Caye, separated from the caye by the Coca Chica “cut”. This series of channels are used by sportfishermen for harpoon fishing. The nearby sand flats are fished for bonefish. The most common plants existing in these highly saline conditions are Conocarpus erectus (buttonwood), Laguncularia racemosa (white mangrove), Avicennia Germinans (black mangrove) and Rhizophora mangle (red mangrove). The roots of the latter, the red mangrove, provide abundant surface area for epiphitic growth thus providing food and shelter for various fauna. These mangrove areas provide nurseries for juveniles of many reef fishes; they also provide feeding grounds and introduce fixed nitrogen and organic detritus into the trophic system of the reef. The bottoms of the mangrove channels are composed of fine silt and sand mixture, often heavily covered with the seagrasses Thalassia and 20 Syringodium. Calcareous algae, mainly Halimeda and Penicillus, are interspersed randomly throughout the seagrass beds. A gentle gradient form 1.5m to 3.0m occurs form mangrove thicket to the center of the channels. The depth of the Boca Chica channel remains fairly constant at 3.0m. Besides the flora mentioned above, the following fish are found in great numbers within the mangrove habitat: Haemulon sciurus (blue striped grunt), H. flavolineatum (French grunt), H. plumieri (white grunt), Lutjanus apodus (schoolmaster), L. griseus (grey snapper), Urolophus jamaicensis, Pomacanthus paru (French angelfish), P. arcuatus (grey angelfish), Chaetodon striatus (banded butterflyfish), C. capistratus (four-eye butterflyfish). The invertebrate Ecteinascidia turbinata is also very abundant.

In addition to the protection of the diverse and complex ecosystems, and commercially viable native fish stock, Hol Chan’s significance is established by the need to protect and preserve for posterity, the longest barrier reef in the Western hemisphere.

Threats

The reefs within the Hol Chan area, have been stressed by over collecting, over fishing and damage from boat's anchors. Other major disturbances are habitat alteration caused by hotel and

marina construction and choking of corals by siltation resulting from dredging and sand mining. More recent management challenges include the clearing of mangrove and habitat alteration adjacent to the reserve, inadequate waste management practices of the nearby communities and the tremendous increase in tourist visitation with the explosion of cruise tourism.

Planning

Management Context

A board of trustees, recognized as a statutory body (quasi-government) is legislated as the management authority for the HCMR. The function of the Board is to manage the affairs of the reserve and disburse moneys for the purpose of maintaining the integrity of the ecosystems within the reserve. The Board comprises nine members from the private and public sectors and meets at least once every quarter for the transaction of business. Current board composition is as follows: Fisheries Administrator, Chair of the Fisheries Advisory Board, Financial Secretary, Chair of the Caribena Fishermen's Cooperative (San Pedro Town), President of the San Pedro Tour Guides Association, Green Reef (the NGO representative), Manager Belize Bank (the business representative), the Manager of the reserve and the Director of Coastal Zone Management[100]

Day to day administration is carried out by the reserve manager, under the management of the Fisheries Department. Policies and laws governing the reserve are provided for at the Ministerial level. Implementation of the department plan is the task of the Fisheries Department and site management. The board of trustees manages the financial affairs of the reserves and serves in an oversight capacity in administrative affairs.

A draft management plan was created in 1994 and updated in 2000.[101] The plan has not been revised since that time. The site manager admits that a revision is "overdue".[102] The existing management plan is comprehensive and addresses all the key elements of general MPA management including, an assessment of the values, management goals and objectives per zone, management constraints, administrative framework and a financial sustainability plan. The plan does not make provisions for revision or provide monitoring and evaluation guidelines and criteria as it relates to management performance. Although the plan is regarded as an important tool in guiding the management of the site, according to site manager Miguel Alamilla, deviations are common. Instead the staff at Hol Chan work from operational plans prepared prior to the beginning of each year and approved by the board of trustees, but which are not necessarily reconciled with the objectives and activities of the management plan.

Management Goals and Objectives

Categorisation for the purposes of management is unclear for Hol Chan. Site management offered option VI under the IUCN categorisation. Meerman offered category II. For purposes of this exercise, management objectives aligned with category II are used along with the park's stated goals and objectives to measure effectiveness.

[100] Personal communication, Miguel Alamilla, July 12, 2004
[101] ibid
[102] ibid

Hol Chan's management plan sets out the following management goals and specific objectives.

Table 6 Management Objectives – Hol Chan

Goal	Specific Objectives
To maintain a sample coral reef ecosystem in its natural state	▪ To restore the earlier beauty of the Hol Chan area; ▪ To preserve areas of critical habitat for several endangered species; ▪ To regulate the use of the area by tourists and fishermen;
To provide recreation and tourism services and preserve the value of the area for fisheries	▪ To provide an undisturbed area for tourism and recreation in a controlled and well informed manner; ▪ To promote uses compatible with conservation and sustainable development objectives, primarily through zoning; ▪ To provide protected habitats for commercially important species; ▪ To enhance the social and economic benefits of the area
To provide an area for education and research	▪ To foster general interest in and knowledge of the coastal environment through education and interpretative programs; ▪ To encourage scientific research in all sections of the reserve;
To conserve genetic resources	▪ To provide an undisturbed area for increased recruitment to the fisheries of the adjacent areas; ▪ To conserve an ecosystem

Although the description of day to day activities suggest that these have been translated into three thematic management programs, specifically; (1) Site Protection, (2) Education and Outreach, and (3) Monitoring and Research, the Management Plan does not specifically provide for this translation As a result there are no specific methods of implementation or performance standards provided for the thematic areas.

Resource Inventory

Hol Chan currently employs nine full time staff whose positions are as follows: (1) Site Manager, (2) Administrative Assistant/Finance Officer, (3) a Technical Assistant, (4) an Education Coordinator (4) 4 park rangers (5) an office assistant (stationed in Caye Caulker). According to site manager Miguel Alamilla, the reserve will add a Biologist to its roster in August of 2005.[103] This exercise was not provided with the information requested (during the survey exercise) and required to formulate an assessment of the appropriateness of capacity of existing human resources. The office is equipped with a fax machine, scanner, three computers, a laptop and an overhead projector as well as a base radio and antenna, seven complete sets of scuba gear, three hand-held radios, one hand gun, one cellular phone and four boats (two used for patrols and two for research and monitoring).

Initial funding for Hol Chan in the sum of $300,000 Bzd was provided by the World Wildlife Fund in 1987 for its first three years of operations. Another $200,000.00 became available for another two years of operations. The site also received US $40,000 from USAID during this time.[104] "In March 1990, a visitor fee system was introduced to generate revenues and ensure long-term financial capability to manage the reserve. Since the regulations had to be amended before the money could be spent, a Trust Fund to hold the money and a Board of Trustees to direct and manage the affairs of the reserve was established in 1994. This savings became the "seed" money for the operational expenses of the reserve after funding support from WWF ceased in 1994"[105] Since then Hol Chan has become a success story in terms of its ability to ensure its financial sustainability through site receipts and other site related activities. In 2003 and 2004, almost 100% of its income came from money raised at the site and this trend is expected to continue into 2005.

The following is the aggregate income/expenses reported by Hol Chan between 2003–2005.[106]

Table 7 Aggregated Income/Expense Figures –HCMR (2003 – 2005)

Category	2003	2004	2005 (Estimated)
Income (Total)	494, 526.00	661,558.00	816,000.00
% raised at site	99%	92%	98%
Recurrent Expenses	384,402.00	393,063.00	435,656.19
Capital Expenses			
Land	20,000.00	20,000.00	
Buildings	21,821.00	251,893.00	200,000.00
Equipment	29,741.00	24,277.00	15,000.00
Furniture and Fixtures	8,061.00	7,971.00	8,500.00
Boat & Equipment	25,956.00	57,118.00	40,000.00

[103] Personal Communication, Miguel Alamilla, July 12, 2005
[104] Hol Chan Management Plan, pg. 5
[105] ibid
[106] A breakdown can be obtained from the scoring sheet in Annex IV

Hol Chan's management plan references its success from visitor fees but cautions against over exposure, stating " . . .as the number of visitors to the reserve increase, the level of deterioration will also increase if the level of protection and regulation remains the same. It is therefore very important to increase enforcement and surveillance activities, increase the size of the reserve boundaries and staffing and expand the education and research programs. . ."[107] This underscored the challenge for Hol Chan's planners, highlighting the fact that sustainability in the conservation context is a moving target, causing a direct relationship between increased revenue, and costs associated with maintaining conservation values. Other strategies mentioned in the plan include increasing the entrance fees, adjusting the fee structure (to reduce transaction costs), and incorporating a subsidy from GOB, the San Pedro Town Board and local businesses, local NGOs and foreign donor agencies.

Partners

Hol Chan's partners include Green Reef, a San Pedro based NGO and the broader San Pedro and Caye Caulker communities, the World Bank, GEF and other regional agencies through their support of the Mesoamercian Barrier Reef Systems Project and the Government of Belize.

Management Systems

Site administration systems extend to a well defined and annually audited financial system, annual work programs and a maintenance program. These are used by the human resource compliment to aid in natural resource management and protection of ecosystems, patrol and enforcement, visitor management, community liaison and development, planning, education and advocacy, monitoring and evaluation of resources, reporting and the management of resource use by humans. According to the site manager, specific activities include Patrols between 6am – 8pm everyday, general education and outreach programs and annual monitoring of conch, fish and lobster stocks. The management system does not include personnel management, training and development programs, a formal internal and external communications program or automated systems for archiving or record keeping of biological data. In the opinion of the site manager, management effectiveness is most compromised by a lack of staff and appropriate levels of capacity[108].

DELIVERY OF OBJECTIVES

By all accounts management of Hol Chan has resulted in positive, perceptible outcomes. In terms of outputs, while it could be established that there are programs in place for surveillance and enforcement, education and communication, and monitoring, there are no specific qualitative or quantitative measures in place that could provide a measure of the effectiveness of these programs, based on an activity prescription and performance standards.

In terms of outcomes, according to the management plan, prior to declaration, " . . the Hol Chan channel and its adjacent seagrass and mangrove habitats were subjected to heavy pressures

[107] pg. 83
[108] Personal Communication, Miguel Alamilla, July 12, 2005

from uncontrolled fishing practices, which had led to the removal of the large predatory fishes from the reef and the depletion of commercially valuable conch and lobster populations. On the island developers were clearing mangroves and dredging seagrass adjacent to the propsed reserve boundaries for housing and hotel project and boat marinas"[109] . . . By the time the plan was updated in 2000, apparently most of these issues had been addressed. According to the plan, through enforcement and surveillance, education and community outreach, scientific research and monitoring and environmental management programs, mangrove clearance was halted in areas near the reserve boundaries, the use of spear guns, nets and trawlers by fishers were successfully banned and only the traditional fishers fished the zones designated for that purpose. In addition safe diving and snorkeling conduct had been defined and was enforced. More recently, the web site reports that due to the protected status of the area, "the fish populations have exploded" and there are healthy strands of corals and seagrass in shallow water."[110]

GAP ANALYSIS

Hol Chan was awarded 65 out of a total of 77 points under the category II scoring scheme or 84%, indicating that management is considered effective. However this rating must be considered with the caveat that as the first marine protected area in Belize, it did not have to compete (on the level that it will have to now) for external resources. Independent biodiversity studies, financial grants, and staff volunteers are all a part of Hol Chan's organizational landscape and this to a large extent has allowed it to successfully mature to this point. Changing realities in PA management and shrinking resource pools, demand a more focused approach to management than has been the traditional practice at Hol Chan.

In terms of management objectives, Hol Chan management was awarded the highest number of points for protection and elimination and prevention of exploitation of Hol Chan's conservation values.[111] Management of visitor use and monitoring of biodiversity were considered adequate but in need of some improvement. In terms of design elements, Hol Chan's weakest area is planning. Development of an updated management plan, complete with management and implementation programs, performance standards and methods of evaluation is a priority if it wishes to maintain successful management. Resource inventory and resource management is assessed as good although this is because the site has been the beneficiary of many independently funded studies and not because of an in-house biodiversity assessment/monitoring programme.

In terms of its systems and processes, Hol Chan management may want to take a look at programs to build capacity through a structured process for performance evaluation to identify deficiencies, and a training program to address these deficiencies. In addition, although leadership is evident, planning must occur in a timely fashion to allow for proactive responses to changing realities for example as it relates to funding and financial sustainability and increased visitation through the cruise tourism explosion. Although quite a success story in terms of sustainable financing, sustainability is a moving target given the direct relationship between increased revenue and increased costs, and the management may want to award more attention

[109] Management Plan, Hol Chan Marine Reserve, pg. 3
[110] www.holchanbelize.org/dive.html
[111] although this had not been assessed since the update in 2000

to identifying its programs for sustainability, developing a structured financial plan and then business plans for each component. Complete scoring information for Hol Chan is contained in Annex IV

Table 8 Gap Analysis Summary – Hol Chan Marine Reserve

Overall Score - (65/77) or 84%	
Management is considered effective	
Institutional Gaps	**Technical Gaps**
Planning Involving Stakeholders in Planning Human Resource and Staff Development Financial Sustainability Technology Legal Expertise	Monitoring General Technical Knowledge

XUNANTUNICH – CATEGORY II

BACKGROUND

Xunantunich is an archaeological reserve of some 51.6[112] acres in the Cayo District. One of the main centers of the Mayan Civilization in Belize, it is home to 25 temples and palaces including the second tallest Mayan structure in Belize, the Pyramid El Castillo. Although the ruins are the main attraction at Xunantunich, according to Exotic Birding, there are several noteworthy species of birds that can be found at the site including the Ornate Hawk-Eagle (Spizaetus ornatus), the Amazon Kingfisher (Chloroceryle amazona) and the Pale-billed Woodpecker (Campephilus guatemalensis).

Figure 6- Picture of Xunantunich – Courtesy of Belize Tourism Board at www.travelbelize.org/xu.html

Management responsibility for Xunantunich falls under the National Institute for Culture and History (NICH) or more specifically the Department of Archaeology, a department within the Institute. The main thrust of management within the department is the "protection, promotion, research and the development of Belize's cultural heritage. Integral components of these efforts are the development and maintenance of archaeological and historical sites to make them accessible for tourism purposes"[113]

In 2001 a Tourism Development Project funded by the IADB and ICDF contributed significantly to infrastructure improvement (including improving road access, archaeological work, and building appropriate amenities- parking, visitor centres, toilets, picnic facilities, etc.) at Xunantunich. This helped to significantly increase the site's tourism capital, making it one of the most visited tourism attractions in Belize. The site's main revenue stream is from tourism visitor fees.

DESIGN

Efforts to secure a management plan or cultural assessment for Xunantunich were unsuccessful. Thus there was no information available to this evaluation on the significance of the park, threats, vulnerabilities, boundaries and zoning or specific management objectives. The returned survey offered no categorization in accordance with the IUCN guidelines. As a result the categorization established by the Meerman Report was used. For purposes of this exercise then, the site is classified as IUCN category II. No information on resource inventory was included in the survey. The survey did provide the following design information.

The survey lists a complement of six employees, but although asked, did not offer their positions. The following budget figures were provided:

[112] from returned survey form
[113] www.belize.gov.bz/cabinet/m_espat/welcome.html

Table 9 – Budget Figures provided by Department of Archaeology for Xunantunich

Category	2003	2004	2005 (Estimated)
Amount Actually Expended	90,000	100,000	110,000
Recurrent Expenses	90,000	100,000	110,000

Expenses were not classified as requested.

MANAGEMENT SYSTEMS

According to the survey, the PA management process includes all 13 options[114] from Natural Resource Management and protection of eco-systems, to visitor management, patrol and enforcement, education and advocacy, research and management of resource use by humans (tourism). The site visit was not able to ascertain this conclusively. In addition, the form is silent on the existence of a management plan but indicates that all stakeholders know and understand the objectives of the management of the site, that there are mission and vision statements, and that decisions and actions are guided by an articulated set of values. Repeated efforts to acquire a copy of these were also unsuccessful.

According to the survey, management programs and systems used in the management of the site include financial budgets and other management control systems, annual work programs, personnel management programs, training and development plan/programs, internal and external communications programs, PA management performance reviews, IT management/archiving and record keeping, communication plan/programs and a maintenance program. In addition, the survey indicates that there is open communication and trust between local people and PA managers and that programs to enhance local community welfare while conserving the values of the site are being implemented. Again none of these could be ascertained from the site visit.

The site visit did bear out the survey's claims that visitor facilities and services are excellent for current visitation and that there is excellent cooperation between PA management and tourism operators. While at the park the evaluators witnessed several tour operators on site providing services to tourists.

DELIVERY OF OBJECTIVES

Delivery of objectives is based on appropriateness of design elements and management systems, the details of which were not made available to this study despite repeated requests. Delivery of objectives could not be concluded from the information provided.

Conclusions

There was not enough information made available to this study to perform an evaluation on the effectiveness of management at Xunantunich.

[114] see Annex 1 (survey form) for complete representation

SARSTOON TEMASH – CATEGORY IV

BACKGROUND

The Sarstoon Temash National Park (STNP) was first proposed for protection as part of a larger bio-reserve incorporating the Sapodilla Cayes and The Colombia River Forest Reserve in addition to the Lower Temash Watershed Area. At the time of its designation in 1994 (SI 42/1994), the park consisted of 42, 000 acres, making it the second largest national park in the country. In 2000, 40 acres on the South shore of the Temash River was excised from the park under SI 22/2000. This land remains as private undeveloped land. The park is located at the extreme southeastern tip of Belize and borders the Sarstoon River and Guatemala to the South and the Caribbean Sea to the East. To the North and West the park is bordered by several indigenous communities. STNP is located between 89°08'51" and 88°52'17" West longitude and between 16°04'53" and 15°53'33" North latitude.

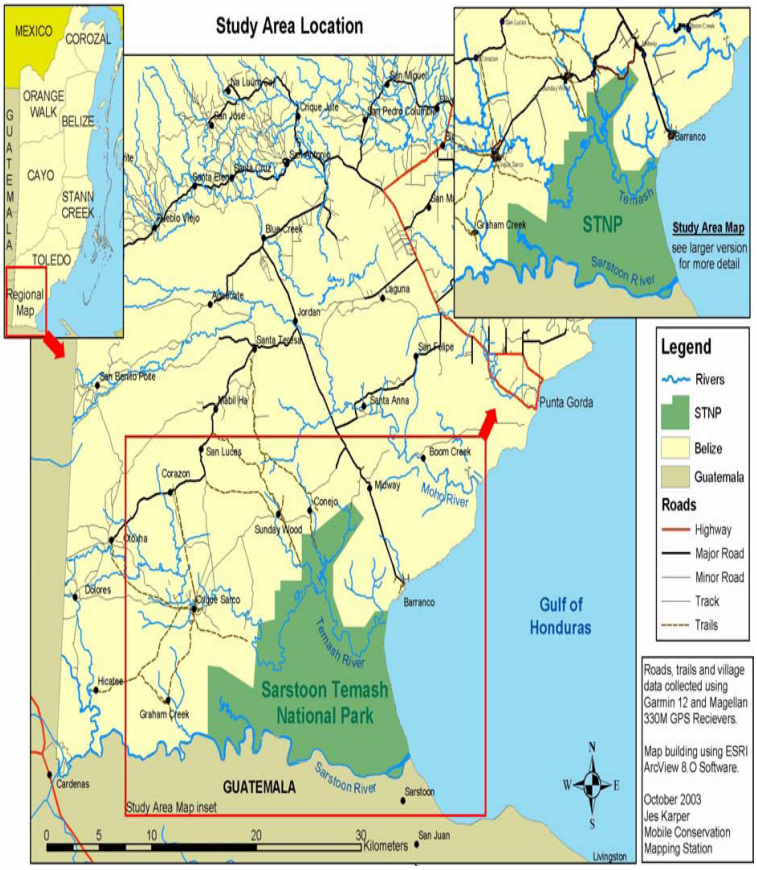


Figure 7 – Site Location Map STNP (Courtesy of SATIIM)

The Contribution of Indigenous Communities

Communities within the vicinity of the park are described as "indigenous" and include Barranco (founded in the 1850s), Crique Sarco (founded in 1908), Sunday Wood, Conejo and Midway. The total population of all buffer zone communities as reported in the 2000 population census, stood at 984 persons. About 51% of the working age population is unemployed and local lifestyle trends suggest that "most people depend on the natural resources of the area for food and shelter."[115] According to the STNP's management plan, buffer community demand for material within the park includes hunting (48%), Medicine (4%), Wrapping leaves (6%), Timber (14%) and Thatch (16%)[116]. Some activities such as extraction of bush sticks for building and medicinal herbs are sustainable at present rates. However uncontrolled hunting, if it hasn't already done so, will compromise park management objectives. The culture of farming and the increasing requirement for land to plant crops is also an issue for the SNTP. Milpa farming provides the residents of the area with staples such as corn, rice beans and ground provisions. However this system barely provides for the subsistence needs of the people and constantly

[115] ibid, pg 27
[116] ibid, pg. 26

requires movement to new plots of land as previously farmed plots lose their fertility. The villages around the park have been encouraged to diversify their agricultural pursuits to include activities less harmful to biodiversity values. As a result the planting of Cacao has gained popularity and farmers from Crique Sarco are investing in cattle production. Barranco is moving from land and water based resources altogether and investing in services related to eco-tourism.

Since the declaration occurred without any consultations on the part of Government with the buffer communities, initially these communities were opposed to the declaration and questioned the continued ability to carry on traditional activities in the area. For the community of Barranco, access to the park is important to collect the fronds of comfrey alms to build their traditional buildings of worship and the Maya communities would like continued access to collect leaves to carry out the religious ceremonies associated with Easter[117]. After a series of consultations with community leaders, and environmental and developmental NGOs, the communities were eventually convinced that the park could bring long term economic and social benefits to the communities. However the communities demanded a voice in the development of the park and a position within its management structure.

This evolved into the creation of the Sarstoon Temash Institute for Indigenous Management (SATIIM). SATIIM is a community based indigenous environmental NGO[118] formulated for the specific purpose of having a voice in the management of the land and natural resources in and around the STNP. SATIIM's board of directors is comprised of five elected community representatives, one from each of the buffer zone communities, along with representatives from the Q'eqchi Council of Belize, the Toledo Alcaldes Association, the Garifuna National Council and the Forest Department. The consortium serves for two years and decides on issues of strategy and policy. SATIIM's mission is

> "to protect the ecological integrity of the Sarstoon Temash region and employ its resources in an environmentally sound manner for the economic, social, cultural and spiritual well-being of the region's Garifuna and Q'eqchi Maya indigenous people."[119]

In this regard SATIIM's priority is to ensure that management of the STNP is underpinned by the quest for a balance between conservation and sustainable development initiatives that directly meet the needs of the indigenous communities. Its mission is directed by a set of guiding principles underpinned by: (a) a holistic approach to resource management, (b) gender equity and (c) a dynamic approach to project development and implementation. SATIIM's objectives are:

- To protect the ecological integrity and cultural values of the Sarstoon Temash Region;

- To develop and implement a park management strategy that recognizes the historical and ongoing relationship between the communities and the land and resources of the national park;

[117] ibid, pb. 29
[118] incorporated in 1999
[119] Satiim's Strategic Plan 2005-2009 pg. 20

- To develop and implement a regional resource (terrestrial and coastal) management programme

- To work with communities to foster development and engender their capacity to effectively organize and address issues of importance;

- To encourage sustainable agricultural systems and environmentally sound agricultural activities;

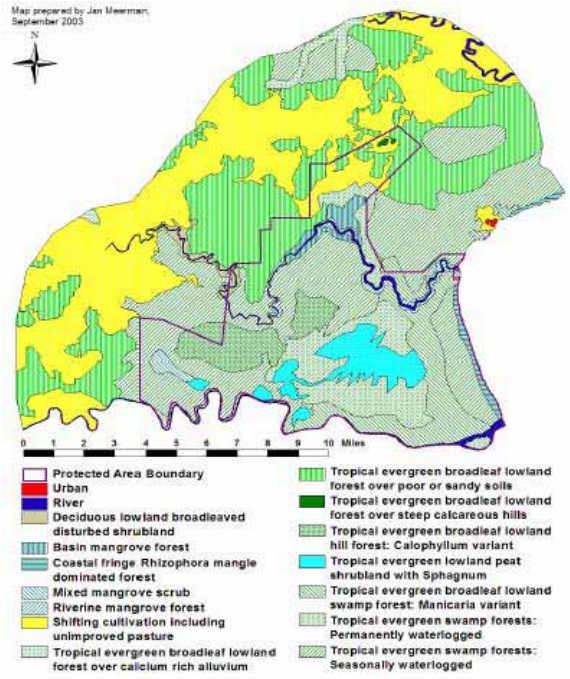
- To ensure the institution achieves its vision through securing long-term administrative and financial sustainability;[120]

SATIIM's strategic plan develops on each objective and has established measures and indicators of success for each objective. In addition there are quarterly work plans developed for all SATIIM staff, regular staff meetings, annual planning and evaluation sessions and a monitoring and review cycle to measure the effective implementation of SATIIM's programme initiatives and administration.

DESIGN

Significance and Key Conservation Features

Figure 8 Forest Ecosystems Map of the STNP (Courtesy of SATIIM)



According to a Rapid Ecological Assessment carried out in 2003,[121] the park incorporates a diversity of habitats and ecosystems. Several of these systems have been identified as either unique to Belize (a large swamp bog identified as a new eco-system for Belize), are poorly represented within the national protected areas network (tropical evergreen broadleaf lowland swamp forest – Manicaria variant), or are nationally or regionally threatened.[122] During the 2003 study a total of 386 plant species and 13 forest ecosystems were identified within the park and the buffer zone area. Biodiversity values varied with the tropical evergreen lowland peat shrubland and the tropical evergreen broadleaf lowland swamp forest; Maricaria variant showing low biodiversity values and the high

[120] ibid, pg. 21
[121] Meerman, et.al,
[122] Sarstoon Temash National Park Management Plan, SATIIM, June 2004, pg. 3

forest near Conejo (Tropical evergreen broadleaf lowland forest over poor or sandy soils has very high biodiversity levels.[123]

The 2003 assessment discovered "low mammal counts at every level and at all sampling points".[124] The authors of the management plan hypothesize that since the varied ecosystems found in the park would suggest a varied and productive wildlife population among the larger species, the disappointing result is likely the result of the reliance on game meat by the permanent communities around the park. "The indigenous communities in the area hunt heavily to supplement their diets and probably to earn extra income through the sale of game meat."[125] Nevertheless the rapid assessment found invertebrates including 46 species of Lepidoptera, 42 species of fish (found mostly in marine areas and including the Mojarra de Oro (Cichlasoma bocourti), known from a small area in Guatemala and Southern Belize and found, so far, only in Temash, Rio Grande and Moho rivers in that region). Mammals and amphibians and reptiles are present but the former is "conspicuously absent throughout much of the park (Howler monkey's being the most prevalent) and the latter requiring further study. Bird biodiversity was found to be "comparable to other relatively undisturbed sites in Central and Southern Belize".[126] The REA identified 226 species of birds inside the park including the Wood Stork, Muscovy Duck, and the Ornate Hawk Eagle, all species of conservation concern.

Geological history (including a discussion on the potential for petroleum deposits), climate and hydrology information have also been assessed for the site

Threats

The following were listed as threats to park management by the SATIIM management plan

- Encroachments by Guatemalans – Being so close to the Guatemalan frontier, Guatemalans readily cross the border to fish, hunt and collect forest material within the park boundaries;

- Temash Bar Settlement – Several families of Guatemalan origin live at the mouth of the Temash River. This area itself is not a part of the part and therefore the settlement itself is not within the park. The problem arises because the occupied area is completely surrounded by the park and not large enough to sustain them without encroachment on the park;

- Establishment of Matambres[127] - These are established inside the park and along the creeks and the Temash River. They result in deforestation, introduction of domestic plant species and fire. It is almost always accompanied by hunting and fishing and the removal of logs and leaves;

[123] ibid, pg.15
[124] ibid, pg. 20
[125] ibid, pg. 20
[126] ibid,pg. 21
[127] Matambre is a late summer/autumn farm harvested close to the dry season providing another food source. It is an agricultural practice of the Maya in the Region. (Source – SATIIM Management Plan,, pg. 40)

- Vulnerability of coastal areas to unsustainable activities – Management of the coastal zone to the east of the park is not the responsibility of SATIIM since this area is not included in the park; however there is a close relationship between the estuarine areas and the sea. The Rapid Ecological Assessment carried out in 2003 found that fully 59% of the fish species found in the park are marine species. This suggests that an impoverished coastal fishery will negatively impact the ichthyofauna populations within the park and all the other species that depend on them. It is also known that the removal of mangroves to make charcoal is depleting the mangrove stands along the river and coast and that this is contributing to erosion in these areas. People are also reported to be discarding garbage into the rivers and these eventually find themselves into coastal areas.

- Loss of biological connectivity – More and more the STNP is standing out as an isolated forested enclave surrounded by large expanses of deforested lands. Although some species may be able to withstand the isolation, others may have a broader habitat requirement or may need to wander over large areas to feed and reproduce. Geographical isolation may also impoverish the gene pool affecting the vigor of future populations. The park loses a lot of its conservation significance in such an isolated landscape.

- Lack of boundary markers – People who infiltrate the park often plead ignorance to its existence or were not aware that they had actually crossed the boundary, assuming it to be somewhere else. The delineation of park boundaries is a critical management issue that must be addressed urgently. The installation of boundary traces also gives SATIIM a firm legal hand when prosecuting perpetrators for more serious offences,

- Heavy hunting and fishing to the point of exhaustion of populations of certain game species – Hunting and fishing are selectively removing certain species from the park. Since there is a close interrelationship between species in the food chain, this can cause other species which depend on the selectively removed species to either migrate or their numbers to collapse,

- Unregulated harvesting of forest products – Logs, poles, leaves for thatch and certain plants used for crafts and medicines are being indiscriminately removed from the park. Of this group, logging appears to be the most serious because of its scale and the accompanying ecological degradation. Indications are that the forest is being perniciously creamed of a few select species, leaving a forest of diminished economic and ecological value. Loggers create roads, giving access to hunters and farmers who follow in their wake,

- Resentment of park on the part of some community members – Although SATIIM has made tremendous strides in enlisting the support of the communities; mistrust and disquiet persist in certain quarters as to the true intent of establishing the protected area. Many villagers still feel that they should have unlimited access into the park to exploit the resources as they see fit and in tune

with their traditional practices. There is the potential that disgruntled villagers may actively agitate to prevent the implementation of the objectives of the management plan or lobby the powers that be to change the designation of the site or have certain areas excised from the park altogether.

Planning

Management Context

In April of 2003, SATIIM and the GOB entered into a five year co-management agreement for the management of the Sarstoon Temash. The 19 point agreement lays down the framework for co-management, the duties and obligations of the parties and the management prerogative of the members in the event that either side should decide to disassociate themselves with the agreement. The key elements of the agreement are as follows:

- Requires the formulation and implementation of full management plans for the park, within a year of signing the agreement;
- SATIIM has responsibility for day to day management of the park;
- Forest Department has responsibility for providing security and enforcement of regulations;
- Awards SATIIM the following authorities;
    - Implement advocacy and education programs as well as physical structures and facilities
    - Collect fees for the use of the park but distribution must occur in accordance with a fee sharing formula which provides 10% to the Consolidation Revenue Fund (GOB), 20% to PACT and the remaining 70% to SATIIM for management and development.
- GOB must provide SATIIM with a transitional period if it wishes to reassume management of the park
- SATIIM can terminate the agreement after consultations with the Forest Department and notice of six months.

Meeting, its requirement, SATIIM produced its first management plan in June of 2004. The plan is a comprehensive document incorporating all the key elements for the design of management plan recommended by IUCN in its best practice series entitled “The Guidelines for Management Planning of Protected Areas”. It includes an evaluation of the protected area, analysis of issues and problems, vision and objectives, a Zoning Plan, Management Actions and a mechanism for monitoring and review. The key elements of the plan are highlighted below.

Management Goals and Objectives

Categorisation for the purposes of management is unclear for the STNP. Site management offered no option. Meerman offered an option under category IV. Given the park's zonation, the intent to facilitate extraction and traditional uses and the specific goals of the park, Category IV seems a comfortable fit. For purposes of this exercise, management objectives aligned with category IV are used along with the park's stated goals and objectives to measure effectiveness.

The management plan for the Sarstoon Temash national park identified five (5) goals that were used as the basis for the development of the management strategy for the park. Background information was identified for each, along with proposed policies, guidelines and actions. These were subsumed under specific conservation programs which clearly identified management priorities for the STNP. The conservation programs are thematic areas in which the management actions are grouped so that they can be efficiently addressed.

The main areas of management priority are grouped into the program areas below:

Table 10 Management Goals and Objectives – Sarstoon Temash

Program Area	Description
Site Protection Program	This program will target resource protection within the STNP, but it may also spill over into the buffer zone communities if the communities voluntarily enlist SATIIM's help in the sustainable management of the resources within the buffer zone region. The focus of this program is to control all types of unauthorized and unsustainable use of resources which do not conform with the management objectives of SATIIM,
Biological Connectivity Program	The focus of this program will be to: ▪ maintain existing corridor linkages between the STNP and other natural areas, ▪ promote initiatives to encourage corridor compatible uses of land within the region, ▪ Engage in reconstruction of corridors through collaboration with stakeholder groups, national environmental organizations and international conservation organizations.
Aquatic Systems Program	This program will focus on areas in which water is a predominant factor in the ecological makeup of the system. As such it will be concerned with swamps, wetlands, lagoons and rivers. The coastal region will be addressed under a separate management program,
Forest Recovery Program	Large areas within the STNP have been degraded by deforestation for cultivation, logging and fires. It is important that these areas be returned to a state where the natural forest structure and species composition are closer to the natural condition associated with the particular ecosystem. Actions to reconstitute natural forest will fall under this program,
Alternative Community	The management of the STNP must invest considerable resources and time in working to alleviate community

Program Area	Description
Livelihoods Program	pressure on the protected area. This program will seek to work with communities to develop economic alternatives to their traditional extraction practices within the STNP, while giving full recognition to their right to live and work in the area around the park,
Financial Sustainability Program	SATIIM's work towards sustainable management of the resources within the STNP can be seriously jeopardized if a suitable funding regime is not developed. This program area will look at developing funding mechanisms by which the organization will help to finance its management intervention work in the park and buffer zone.

INPUTS AND PROCESSES

Resource Inventory

SATIIM currently employs ten full time staff whose positions are as follows: (1) project coordinator (Gregorio Choc), Finance Officer (Aretha Mortis), a Technical Coordinator (Lynette Gomez)[128], a Park Manager (Mr. Saleem Chan), a GIS/Data Analyst, 4 rangers and a boat captain. In addition the park employs ten individuals on a part-time basis from the local communities who conduct biodiversity monitoring. From time to time the staff is complemented by a Botanist, Zoologist, Hydrologist, Public Use Planner and the like usually funded through consultancies. They have plans to add an Education Officer in the very near future. The office is well equipped with computers one of which provides in-house GIS capabilities[129], printers, a photocopy machine, laptops, a projector, CD/DVD player, scanner, binding machine as well as flashlights, sleeping bags, a camera, birds/fish/animal ID books, a boat, GPS equipment, a compass, three vehicles, outboard engines, 10 CB radios, 5 base stations, life vest and 4 bicycles all used in the conservation effort. The effort is completely donor funded and has been for the past three years.

The following is the aggregate income/expenses reported by SATIIM, between 2003 - 2005[130]

Table 11 Aggregated Income/Expense Figures, STNP (2003 – 2005)

Category	2003	2004	2005 (Estimated)
Income (Donor Funded)	634,537.90	775,842.44	585,838.41
Recurrent Expenses	532,177.32	550,899.30	463,364.78

[128] This position is currently held by Josh Lichtenstein, the Programme Officer for Belize provided through SATIIM's partnership with Ecologic
[129] Site visit revealed at least three, plus one laptop
[130] A breakdown can be obtained from the scoring sheet in Annex V

SATIIM's management plan references it's reliance on external funding sources and actions the development of a financial sustainability program for the site. However the management plan does not include a detailed financial plan. According to SATIIM's Josh Lichtenstein, the organization will be dependent on project funding for at least the next 8 – 10 years, although one objective of the financial sustainability program is to realize 50% of SATIIM's income from site receipts.[131]

Partners

SATIIM's relationship with the Sarstoon Temash National Park has involved several partnership relationships which merit mention. The most significant is of course the involvement of the people within the buffer zone communities. Given SATIIM's orientation, working with and for the benefit of the people in the buffer communities is clearly a priority. Also important are the partners in the external community who together have wholly funded the creation and existence of the organization and SATIIM's management efforts. SATIIM's partners in this area currently include the World Bank, Ecologics, National Oceanic Atmospheric Association, Conservation International, Fundaeco and Global Environment Facility.

Management Systems

SATIIM uses its resources to manage the natural and cultural resources of the park and its eco-systems, patrol and enforce its rules and regulations, visitor management, community liaison and development, planning, maintenance and facilities development, education and advocacy, training, research, monitoring and evaluation, reporting and management of resource use by humans. As indicated it does have a comprehensively designed management plan, which feeds directly in to the preparation of annual budgets and work programs and in turn quarterly work programs. SATIIM not only has a mission and guiding principles for its organization and for management of the park, but it was confirmed through interviews that these are clearly and commonly understood by the senior managers. In addition to financial budgets, annual work programs and a preventative maintenance program, SATIIM has a personnel management program and a training and development plan for its employees,[132] although it has not yet implemented a performance review process. According to SATIM's management the systems and processes are adequate to achieve the goals of the organization but the organization remains significantly understaffed, which results in recurrent delays.[133]

DELIVERY OF OBJECTIVES

SATIIM's involvement in the management of the Sarstoon Temash is relatively new, having signed the co-management agreement in 2003. Since then it produced a five year management plan in June of 2004, which was ratified a year later in June of 2005. Prior to ratification SATIIM had been operating in accordance with the key elements of its plan. However in evaluating the

[131] Josh Lichtenstein, Personal Correspondence, Friday, June 24th, Punta Gorda Town
[132] these were requirements for world bank funding
[133] survey form

outcomes, it had to be considered that the organization was no more than a year into its implementation phase.

Following are the activities that have been completed to date under the Program Areas.

Table 12 – Summary of Delivery of Objectives, STNP

Program	Total # of Objectives	Succeeded	Explanation / Description
Site Protection Program Establishment and Maintenance of a Site Protection Force	3	0	Active Patrol of the Park has been in place for 11 months. Four rangers hired in July, 2004 and are properly equipped. The target is for a complement of eight rangers. Ranger outposts have yet to be established.
Establishment and Marking of Boundary Traces and Access Routes			Demarcation is completed and signs have been posted throughout the reserve. To date the outreach, education and advocacy component has not been developed.
Co-management of Sarstoon River Watershed			A draft management plan for Watershed Management has been completed but there are implementation difficulties due to the lack of success by Guatemala to arrest encroachment by its citizenry. Activity requires more joint co-ordination with Guatemala counterparts.
Biological Connectivity Program Small holder Reforestation Support Strategies	2	0	Reforestation efforts started in 2005. Cedar, Mahogany and Zericote seedlings have been procured and will form the basis for the test program. There are nurseries in all villages and reforestation programs inside the park. The objective is that by the end of 2006, to have completely reforested identified areas.
Engagement with Large Land Owners and Protected Area Managers			No Activity
Aquatic System Program Assessment of the Aquatic Systems within the STNP and Tributaries outside the park	3	0	No activity
Upgrading Community Sanitary Conditions			No activity
Work with Farmers to avoid deforestation along waterways and pollution runoff into Aquatic Systems			No activity
Forest Recovery Program Rehabilitation of Abandoned and Existing Small-holder Plots	1	0	No activity
Alternative Comm. Livelihoods Program Promotion of Alternative Income Generation Projects	1	0	A market feasibility study entitled “Eco-tourism Potentials – Review of the Sarstoon Temash National Park and Buffering Communities was completed in February ’05.

Program	Total # of Objectives	Succeeded	Explanation / Description
Financial Sustainability Program Strategic Financial Outlook	3	0	SATIIM has developed an annual funding plan and when information becomes available after expense trends are established within the thematic areas, it intends to develop a financial plan.
Development of Education and Research Facilities			No activity
Eco-tourism Development			Market feasibility study (above). Development of a Tourism Development Plan and a Business Plan for the STNP have not been addressed.

GAP ANALYSIS

SATIIM was awarded a total of 49 out of a possible 60 points or a score of 82%. SATIIM started with a commitment and a definitive purpose for the management of the STNP and took the time and effort to educate itself and understand the elements that would ensure it applied the highest standards to achieving its purpose. As a newer agency, the organization realized it had the opportunity to learn from the mistakes and success of its predecessors (locally, regionally and internationally). It embraced that opportunity, contracting in the competencies it needed to design an effective management structure for the PA. Through the design of a very clear management purpose and an understanding of the threats to and attributes of the site, it was able to make an assessment of both the internal and external demands on management and deliver a well structured organization and appropriate management systems.

Unfortunately at the time of this evaluation, these had not been tested enough to establish their effectiveness to deliver the desired outputs and outcomes. SATIIM's plan was approved during the term of this evaluation and created one year before that. In the year between development and approval, SATIIM's priority was to realize the deliverables under the site protection program.[134] The site visit confirms SATIIM's accomplishments under this theme (see picture right). Thus the score reflects the quality of the design and process elements and management's progress to date.

Figure 9– Signage required under Site Protection Program (property of Launchpad)

In the final analysis, this assessment indicates that SATIIM has designed into its management of Sarstoon Temash the fundamentals for effective PA management. The real test of course will be its ability to do what it says and knows it has to do to effectively manage the STNP. Threats to effective implementation include its extreme dependence on external sources of funding, its dependence on external and

[134] Personal Communication, Josh Lichtenstein, June 24, 2005

temporary in house management capacity, and the will to continue with the very high standard for management once the external pressures[135] no longer prevail. Complete scoring information for STNP is contained in Annex V

Overall Score - (49/60) or 82%	
Management [design] is considered effective.	
Institutional Gaps	**Technical Gaps**
Delivery of a long term vision and strategy (untested and thus not assessed) Human Resource and Staff Development Financial Sustainability Legal Expertise	Monitoring Enforcement and Resource Protection General Technical Knowledge

[135] mostly from external funding agencies

RIO BRAVO CONSERVATION AND MANAGEMENT AREA – CATEGORY IV

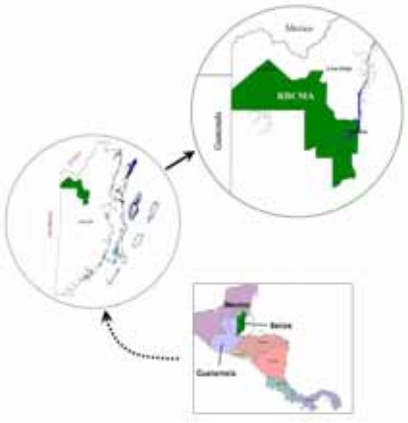


Figure 10 – Rio Bravo Area (Courtesy Programme for Belize)

BACKGROUND

At 260,000 acres or roughly 4% of the land area of Belize, the Rio Bravo Conservation and Management Area is the largest privately owned reserve in Belize. It was created in 1988 by a purchase agreement between Gallon Jug Agroindustries and Programme for Belize for 110,044 acres of land comprising the northern section of the Gallon Jug property. Subsequently, in 1990 it was enlarged by the donation of 42,007 acres by Coca-Cola Foods Inc. A further donation by Coca-Cola Foods Inc. of 52,015 acres in 1992, a purchase from New River Enterprises Ltd. of 14,011 in 1994 and the signing of a purchase agreement with New River Enterprises Ltd. for an additional 12,798 acres also in 1994, completed the land acquisitions.

The reserve is held in trust in perpetuity for the Belizean people by Programme for Belize, under the terms of a formal Memorandum of Agreement with the Government of Belize. Programme for Belize is a Belizean NGO, established in 1988 with an original mandate to "preserve the natural heritage and biological diversity of Belize, generate sufficient income through the proper management of the area for its continued perpetual care and to participate in the economic development of the wider RBCMA in further the national economic interest".[136]

The quest for financial sustainability provided the impetus for PfB's decision to attempt to balance sustainable use and production with conservation. As a result it has experimented with several economic programs that include ecotourism, sustainable timber extraction, agro foresty, and extraction of non-timber products such as chicle, thatch and palm. The organization's flagship enterprises are its ecotourism and sustainable timber extraction projects. Both of which have fully developed business plans to guide decisions and activities.

Its most widely marketed and recognized program is the ecotourism program. PfB has been involved in tourism services since 1992, the main objective of which is to develop the links between environmental education and non-destructive human/nature interaction. The program also aims to provide environmentally sound economic alternatives to the villages surrounding the RBCMA. Two field stations provide the facilities for visitation and research. The La Milpa Field Stations is the more up market of the two, promoting itself as the Birder's Paradise of Belize. It has amenities for up to fifty four (54) visitors. There is also a trail system with appropriately trained tour guides. The Hill Bank Station is not as developed and has traditionally catered more to research and educational pursuits. However, PfB has plans to develop the amenities at this site to accommodate its new positioning as the water based complement to the La Milpa site. Both sites will continue to be marketed to the nature oriented tourists.

[136] Executive Summary, Business Plan, Tourism Activities, Programme for Belize

Underpinning the sustainable timber project is the objective of creating a model of good forest management while ensuring a modest but reliable income stream[137]. The business model is based first on the production of certified timber for sale to the local market (furniture manufacturers) through the cultivation of long term supplier relationships, and second on the production and marketing of locally-manufactured certified timber products to enhance revenue and visibility. Although the specifics were unavailable for review, according to Wilbur Sabido, PfB's Technical Director, the program is performing in accordance with expectation. Current arrangements allow it to break-even and once into its fully operational phase, net returns should be realized[138].

Figure 11- Harvested Timber at Rio Bravo (Property of Launchpad Consulting)

Also worthy of mention is PfB's agreement, brokered by The Nature Conservancy, with U.S. energy companies to invest $5.6 million (in the first instance) to purchase endangered subtropical broadleaf forest land that was threatened by conversion to agricultural land and to implement a carbon sequestration project as part of its sustainable forest management program. The funding also provided opportunities to hire staff and implement a program to secure forest resources against theft, misuse and fire. The US partners increased their contribution after several years of successful project operation, which allowed the purchase of additional adjacent lands which more than doubled the acreage protected through the agreement.

DESIGN

Significance and Conservation Values[139]

The 260,000 acre reserve of hardwood forests, savanna and wetlands is home to a vast array of native plants, bird and mammal species. Broadleaf upland forests are the most extensive vegetation type. They range from dry to mesic variants according to local topography. All these forests have been logged repeatedly over a period of 150 years. Swamp forests are characterized by Bulletwood (Bucida buceras, provision tree (Pachira aquatica), logwood (Haemotoxylon campechianum) and royal palm (Roystonea oleracea). The Savannah areas consist of a mosaic of pine groves, thickets, hardwood forests patches and open grasslands. Characteristic woody species include Caribbean Pine, Live Oak, Palmettto, Crabboo and Yaha. Over 240 woody species have been recorded on the Rio Bravo, including Red-listed species such as White Milady (Aspidosperma megalocarpon), Mexican cedar (Cedrela odorata, the palm (Gaussia maya) and Honduras mahogany (Swietenia macrophylla). All these species are frequent to common in the Rio Bravo.

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137 The Integrated Forest Management Demonstration Project, A Business Plan for Sustainable Timber Extraction on the Rio Bravo Conservation and Management Area, Executive Summary, pg. 2, August 2004

138 Personal Communication, Wilbur Sabido, June 17, 2005

139 Excerpted from RBC&M Management Plan, December 2000, pg. 6-9. The plan provides the most recent and comprehensive analysis of the values of the park

"The most important feature of the Rio Bravo is that is appears to support complete and fully functioning faunal communities characteristic of the area"[140]. Insect fauna contain a number of new country records. There are at least 337 species of birds including nine (9) Yucatan endemics. Five are red-listed. There are over 70 species of mammal and over half are bats. Several species which are considered under pressure from hunting in the region, such as the four cat species, (apart from Jaguar that also occur) and both collared and white-lipped peccary are also present.

The area has an extraordinarily rich archaeological heritage. The Classic Mayan ceremonial centre of La Milpa is one of the largest in Belize and the main plaza is one of the largest in the Maya World. Over 60 substantial sites have been listed.

According to the management plan, "the principal conservation value of the Rio Bravo lies in the extent of natural habitat included within its boundaries, with a high level of ecological integrity at a landscape level. In addition, the relative conservation value of the site continues to increase as similar habitat is lost throughout the region. It therefore forms an important part of the protected area network of the country, incorporating critical habitats for species of conservation concern and a number of vegetation types that are otherwise poorly represented in the national system".[141]

The PA is also a part of a protected area complex covering 4 million acres and because it plays a crucial role in connecting this forest bloc to the rest of Belize, it is therefore critical to realizing the Meso-American Biological Corridor.

Threats

Current stresses on the natural systems of the Rio Bravo are considered low. Logging has altered structure and species composition throughout the forest but has now been halted over most of the area. The Savannahs are perhaps the most subject to disturbance, with altered fire regimes and relatively high hunting pressure, although the status of aquatic systems requires investigation. The greatest threat is the potential, through increased pressure for land through demographic growth and immigration. These are expected to isolate the site in due course and may lead to pressure for settlement within its boundaries. A summary of the stresses and sources to PfB's conservation values are attached to the management plan. This is inserted below for reference.

[140] Management Plan, pg. 8
[141] ibid, pg. 10

Table 13 Assessed Threats to Conservation Targets and Site – RBC&MA

Source of stress	Status	Upland Forest	Swamp Forest	Savannah	Seasonal Swamp Thicket	Riverine Systems	Herbaceous Swamp	Yellow-headed Parrot	-	Overall Threat Rank	Total Score
Agro-industrial expansion	Active	Medium	Medium	-	Low	-	-	-	-	Medium	0.43
Hunting	Active	-	Low	Medium	Medium	-	-	-	-	Medium	0.43
Past Logging	Historical	Low	Low	Medium	-	-	-	-	-	Low	0.26
Timber theft	Active	Low	Low	Medium	-	-	-	-	-	Low	0.26
lack of nest site's	Active	-	-	-	-	-	-	Medium	-	Low	0.20
removal of chicks	Active	-	-	-	-	-	-	Medium	-	Low	0.20
Small-holder incursion	Potential	Medium	-	-	-	-	-	-	-	Low	0.20
Altered fire regime	Active	-	-	Medium	-	-	-	-	-	Low	0.20
Exctic species (Tilapia)	Active	-	-	-	-	Medium	-	-	-	Low	0.20
Agricultural intensification	Active	-	-	-	-	-	Medium	-	-	Low	0.20
Exotic species (eg Imperata)	Active	-	-	Medium	-	-	-	-	-	Low	0.20
Savannah improvement	Active	-	-	Medium	-	-	-	-	-	Low	0.20
Promotion of pine growth	Active	-	-	Medium	-	-	-	-	-	Low	0.20
Planned road development	Potential	Low	Low	Low	Low	-	-	Low	-	Low	0.15
Agricultural run-off	Active	-	Low	-	Low	Low	-	-	-	Low	0.09
Potential oil production	Potential	Low	Low	-	Low	-	-	-	-	Low	0.09
Small-holder expansion	Active	Low	-	-	-	-	-	-	-	Low	0.03
Crocodile hunting	Historical	-	-	-	-	Low	-	-	-	Low	0.03
Hardwood forest fire	Active	Low								Low	-
Opportunistic species	Active		Low							Low	-
Non-timber resource extraction	Active				Low					Low	-
Blue Creek dam	Active					Low				Low	-
Industrial pollution	Active					Low				Low	-
Domestic effluent	Active					Low				Low	-
Fin-fish fishing	Active					Low				Low	-
Hiccatee fishing	Active					Low				Low	-
Threat Status for Targets and Site		Medium	Low	Medium	Low	Low	Low	Medium	-	Medium	

Planning

Management Context

Management of the RBCMA is currently guided by a management plan developed in 2000, funded by The Nature Conservancy. The plan sets out the strategic framework for the PA for the period 2001-2006 and provides a general overview of the condition of the site and its management regime. Worthy of note is that the approach to management which underpinned this plan focused PfB's management of the Rio Bravo[142] by defining a single overarching objective (biodiversity) and then defining the specific actions that yielded the results that were sought. The authors recognized that given the development trajectory for the country, long term viability and biodiversity conservation required engaging the environmental, social and economic issues operating *outside* the boundaries of the Rio Bravo at an unprecedented level. As a result both aggressive and passive protection strategies were developed, the latter intended to influence the economic and social environments of buffer communities, the former, in-situ biodiversity issues and its own financial sustainability. The key elements of the plan are highlighted below. According to PfB's Wilbur Sabido, PfB is preparing to embark on the development of a new management plan for the period 2007 – 2012.

[142] used interchangeably with RBCMA

Management Goals and Objectives

Although the management plan classifies the Rio Bravo as IUCN category II, Meerman and the site management consider it a category IV. For purposes of this exercise, Rio Bravo is classified as IUCN category IV.

Based on the assessment of the systems and stresses on the Rio Bravo, priorities were established and these were used to identify the strategic actions necessary to bring about the desired results for Rio Bravo management within a five year period. In sum seven conservation targets were identified and twenty six sources of stress were identified as affecting or with potential to affect the conservation targets. These were then grouped under seven conservation programmes. Each programme was then collapsed into activities designed to alleviate actual and potential stresses on the Rio Bravo. Intrinsic to each program is an education and monitoring component. These are as follows

Table 14 Management Objectives for the RBCMA, 2001-2006

Programme	Activities
The Site Protection Programme	▪ Rio Bravo Resource Protection ▪ Establishment or re-establishment f resource extraction projects in buffer zones
The Savannah Management Programme	▪ Development of a Savannah Management Plan
Aquatic Systems Program	▪ Assessment of the status of aquatic systems
Biological Connectivity Program	▪ Support for Community and small-holder initiatives maintaining biological connectivity ▪ Maintenance of regular contacts and dialogue managers of protected areas abutting the Rio Bravo ▪ Enhancement of biological connectivity in areas of intensive agricultural production ▪ Strategic Conservation Fund
Yellow-headed Parrot Recovery Program	▪ Protection of yellow-headed parrot nest sites through the breeding season ▪ Public awareness programme aimed at reducing demand for pet yellow-headed parrots ▪ Comprehensive yellow-headed parrot recovery plan
Contingency Planning Programme	▪ Scoping of road and oil development impacts
Forest Rehabilitation Program	▪ Maintenance of silvicultural research efforts

Existing management zonation was carried over into this plan and coupled with the activities to develop an illustrative work schedule for the PfB. The plan also included established

procedures for regular review and analysis and management support strategies including a recommended financial strategy.

INPUTS AND PROCESSES

Resource Inventory

PfB currently employs thirty four full time staff.[143] Of this nineteen work directly on the Rio Bravo. Positions include managers at both tourism related sites on the Rio Bravo, a complement of eight rangers, Head of Maintenance, Tour Guides and Cooks. All activities of the PfB are administered by a nine member board of directors.[144] PfB's organizational design includes a well defined reporting structure, clearly delineated roles and responsibilities and definition of minimum capacity requirements. A review of the qualifications and experience of the key management personnel suggests that PfB has invested in the necessary competencies to realize its objectives for the Rio Bravo and to continue to design proactive responses to the changing realities in its external environment. Among the core management team there are two Masters degrees, one in Natural Resources and Environmental Economics and in the other in Agroforestry Systems, three Bachelor degrees, in Economics, Business Administration and Wildlife Biology and several associate degrees coupled with related higher level designations and training. All currently employed members of the management team meet (and in some cases exceed) the minimum requirements for their jobs. In no case was any person considered unqualified for the position they held.[145] In addition, although there was not a specific human resource development plan, PfB's attention to recruitment and its commitment to exploiting training opportunities (both structured class and field work) as they arise, suggests attention to capacity building.

Besides the land and other capital assets (buildings and heavy equipment), the central and field offices are well equipped with computers and communication equipment. The central office uses a network system which provides for a management information system, GIS capabilities, internet and email access and records management.

The following is the aggregate income/expenses based on audited statements reported by PfB between 2003 – 2005.[146]

Category	2003	2004	2005 (Estimated)
Income % donor funded	1,944,624 41%	1,812,942 38%	2,384,238 49.7%
Recurrent Expenses	1,944,624	1,812,942	2,384,238

[143] See organizational chart, Annex VIII
[144] See PfB's resource inventory in Annex VI
[145] based on qualifications and experience. The other issues that influence capacity such as interpersonal and communication skills, motivation and management proficiency were not evaluated.
[146] note that PfB has asked that the specifics of its finances not be divulged and with due respect to that request we provide no further financial information for PfB in this report

As is good practice PfB prepares its budget based on the estimated costs necessary to undertake its annual work plan. However the spread between the budgeted amounts and the amount actually expended reflect the fact that each year the plans and the budgets have to be revised downward to reflect the agency's fiscal realities.

As indicated earlier, broad financial strategies are a part of the management plan. The core strategies defined in the financial plan are:

- Regular review of how "free funds"[147] are spent
- Maintenance of fund-raising capacity and effort
- Enhancement of self-generated income, especially tourism

To their credit, PfB has developed business plans for the two major self-generated income programs. It has also managed to secure and maintain a consistent level of program funding by developing partnerships with nature based funding agencies. According to PfB's management they are assured of some measure of funding for at least the next seven years.[148]

Partners

Major PfB partners include, the people of the buffer communities, Institute for Tropical Forest Conservation, The Nature Conservancy, The Massachusettes Audubon Society, world Land Trust, Conservation International, Rainforest Alliance, Save the Rainforest and individuals who participate in the agency's fund raising initiatives.

Management Systems

PfB's management is underpinned by several organizational management systems. These include financial budgets and monitoring, annual work programs, relevant job descriptions for each position, internal and external communication programs, IT management (management information system), archiving and record keeping, a maintenance program and a strategic planning process. Lacking is an institutionalized performance appraisal process and a training and development plan for PfB's employees. Both these systems are necessary to ensure accountability and that PfB develops and nurtures the in-house capacity it has acquired.

[147] i.e. not allocated to specific project activity under contractual arrangements with donors
[148] Personal Communication, E. Romero, Executive Director, PfB, June 13, 2005

DELIVERY OF OBJECTIVES [149]

Following is PfB's output for 2004/05.

Table 15 PfB's Delivery of Objectives, 2004/05

Programme	No of Objectives	No Achieved	Activities (2004)
The Site Protection Programme 1. Rio Bravo Resource Protection 2. Establishment or re-establishment of resource extraction projects in buffer zones	2	1	Patrolling of areas not visited during the past year Rangers overtime were given back to them. This will improve planning for the following quarter; All entry points for illegal logging were monitored; Close monitoring of two concessionaires logging adjacent to the southeastern leg of the RBCMA; Signs of increased poaching in the Lemonal and Duck Ridge Savanna areas. Indicates the need for more patrolling in this area; Illegal cultivation discovered in the "Wiral" portion of the Duck Ridge area. A joint aerial patrol was scheduled with the army for them to locate illegal cultivation and to take proper action; No unsustainable fishing was detected;
The Savannah Management Programme 1. Development of a Savannah Management Plan	1	1	A management plan has been drafted for the Rio Bravo pine savannas. The aim of the plan is to guide the management activities in the pine savannas in order to optimize its biodiversity conservation values and to increase carbon benefits for the carbon sequestration project. A fire management regime is an integral component of the management plan.
Aquatic Systems Program 1. Assessment of the	1	0	A Freshwater Coordinator has been hired to undertake the execution of activities related to this Programme.

[149] 2004 Activity report, Wilbur Sabido, Technical Director, PfB

Programme	No of Objectives	No Achieved	Activities (2004)
status of aquatic systems			A Workplan has been developed for the Freshwater Programme. Two initial fish studies have been conducted on the New River Lagoon. This has resulted in the observation of 31 species of fish in the lagoon and 2 unidentified species. Unfortunately, the last survey also resulted in the observation of one exotic and invasive species, the Tilapia. Training in fish studies were also provided to the Hill Bank staff involved in the fish biodiversity research. Three permanent staff also received training in freshwater monitoring from the Ohio EPA through our Ohio Linkage Partner.
<u>Biological Connectivity Program</u> 1. Support for Community and small-holder initiatives maintaining biological connectivity; 2. Maintenance of regular contacts and dialogue managers of protected areas abutting the Rio Bravo; 3. Enhancement of biological connectivity in areas of intensive agricultural production Strategic Conservation Fund	4	2	Development of a biological corridor monitoring protocol, training of community representatives and the implementation of a pilot monitoring project was completed. Formation of the Association of Northern Conservation Organizations (ASONCO) comprised of the community based organizations that participated in the NBBCP. Development of a strategic plan for ASONCO. Regular contacts were initiated with the large landholders adjacent to the RBCMA, namely the Gallon Jug Estate and Yalbac Ranch. This has resulted in an improved collaboration for protection of the natural resources. Due to lack of funding, no significant activity was carried for the enhancement of biological connectivity in areas of intensive agricultural production. Development of a study to determine

Programme	No of Objectives	No Achieved	Activities (2004)
			land tenure on the proposed corridors' route and implementation of a land management strategy for the northern Belize Biological Corridors Project.
Yellow-headed Parrot Recovery Program 1. Protection of yellow-headed parrot nest sites through the breeding season; 2. Public awareness program aimed at reducing demand for pet yellow-headed parrots; 3.Comprehensive yellow-headed parrot recovery plan	3	3	Direct protection of the pine savannas and of the Yellow Headed Parrots through the services of two additional temporary rangers. This proved successful in the Lemonal/Rancho Dolores Savanna but was not sufficient for the adequate protection of the Duck Ridge Savanna. The latter needs a similar protection effort to ensure the survival and recovery of the Yellow Headed Parrots. Nest Identification and monitoring of the Yellow Headed Parrots. This is an additional activity conducted by the additional rangers with the assistance of the Forestry staff. Nest were identified, georeferenced, protected and monitored from egg-laying to fledgling. Of the seventy nest identified and monitored, sixty three were successful, and seven nests (10 %) were unfortunately destroyed by fire. The fire occurred during the time that the rangers were out for their week-off. Thanks to the timely suppression of the fire by the fire team, PfB was able to avoid a greater destruction of parrot nests. An eight month aggressive public education campaign was carried in the communities adjacent to the Rio Bravo Conservation and Management Area and was aimed at creating greater awareness and reducing the demand for Yellow Headed Parrot pets. A post-education campaign survey indicated that there was an increased awareness in the youths and children of the adjacent communities. .
Contingency Planning Programme 1. Scoping of road and	1	1	Government has plans for the construction of a bridge that will join Blue Creek Village and La Union of Mexico, over the Rio Azul/Rio Hondo

Programme	No of Objectives	No Achieved	Activities (2004)
oil development impacts			River. They also have plans for the upgrading of the Blue Creek-Orange Walk Road. With the participation of Belize in the Plan Puebla Panama initiative.. Oil exploration is a reality as the Geology and Petroleum Department have already signed a contract for the exploration of oil in an area that includes a huge part of the RBCMA (strict preservation zone). The services of an expert will be contracted to assess the potential impacts of oil exploration/extraction in the RBCMA. Such a study will enable Programme for Belize to develop a strong argument against oil exploration in the RBCMA. In the worst case scenario, Programme for Belize will be able to ensure that strict mitigation measures are adopted and adhered to in order to ensure that damages to the natural resources in the area are minimized.
<u>Forest Rehabilitation Programme</u> 1. Maintenance of silvicultural research effort	1	1	Assessment of a partner community organization (RHECO) for the implementation of an agroforestry demonstration project. Strengths and weakness were identified. Developed a training plan for addressing weaknesses and training needs of RHECO as identified above. Development of a financial analysis, business plan and market study for the goods and services that RHECO will produce under the agroforestry demonstration project is well underway. A nursery and agroforestry plot is being maintained in Hill Bank for tourism and training purpose. Plants produced in the nursery are used for agroforestry, landscaping and environmental education and are also distributed to the communities. Planning for the integration of the

Programme	No of Objectives	No Achieved	Activities (2004)
			Belize River Valley communities into a network of community-based ecotourism has been concluded. This will incorporate PfB's Hill Bank Field Station as part of the ecotourism network. Programme for Belize has developed a Financial Analysis and Business Plan for the Sustainable Timber Extraction activities. Contract agreements have been signed with four local processors for the supply of certified timber sourced from the Rio Bravo; the agreements are over a three-year period. In addition a local contractor has been hired for three years to conduct timber harvesting operations for the Programme for Belize on the Rio Bravo. Carbon Monitoring has been completed and submitted to the Carbon Sequestration Board and to TNC. Forest rehabilitation research planned for 2005 include the following: • Mahogany genetic research by Edingburgh University, Stephen Cavers. • Management regeneration research by CIFOR, Laura Snook. • Mycology study to collect and identify fungi in the RBCMA by Dr. Tim Baroni and Dr. Jean Lodge.

GAP ANALYSIS

Rio Bravo management was awarded 54 out of a total of 60 points or 90%. In terms of management objectives, it scored highest on its ability to secure and maintain the habitat conditions necessary to protect significant species and in education and public awareness. More work is needed on the elimination of encroachment and exploitation, however these stresses have been identified and efforts are underway to address or eliminate, including those collateral stresses such as country infrastructure development and economic pursuits. In terms of design elements, PfB was awarded the highest possible points in issue areas such as planning, resource

inventory and management, and economic benefits to the wider communities. Development areas identified in terms of system elements include, training and law enforcement capacity.

PfB's attention to effective organizational management and its conservation focus has realized handsome returns in terms of effective PA management. PfB's performance suggests that the organization has embraced the new model of conservation management by looking beyond the park's borders to its place in the wider landscape and repositioning its focus to include the broader themes of sustainable development and biodiversity. There is no time for celebration or complacency however as the challenges that await demand even higher levels of performance to maintain conservation objectives. One potential area of concern for the PfB is the current practice of subsuming monitoring and education under externally funded programmatic themes. If it achieves its aim of financial sustainability, meaning less reliance on external partners for funding, it will have to ensure that it continues to provide for biodiversity monitoring and education, either under programmatic themes, if it continues to allocate its resources as such, or as a separate organizational activity area, perhaps a biodiversity and education unit.

Complete scoring information for the Rio Bravo can be found in Annex VI

Overall Score - (54/60) or 90%	
Management is considered effective. Park values are not exposed and minimal adjustments can mitigate potential risks	
Institutional Gaps	**Technical Gaps**
Personnel development Legal Expertise (accessed on an as-needed basis)	Monitoring (although they do have the most developed monitoring program there are still weaknesses) Enforcement and Resource Protection General Technical Knowledge

MOUNTAIN PINE RIDGE – CATEGORY VI

BACKGROUND[150]

Mountain Pine Ridge was designated in October 1944 as a protected forest covering 1504W acres (SR & 0 56). Fire control through fire breaks, was introduced the next year, but practically the whole area was burnt in 1949. In 1952 the area was re-classified a production forest and in 1955 the first long term (10 year) license to fell was issued. The first management plan for the area was prepared one year later. During the 1950s there were a number of revisions made to the reserve area. In May 1959 the reserve boundary was completely redefined in accordance with recommendations, when the reserve was adjusted to better match geographic and administrative boundaries. At this time, its area became 132,534 (the lost area becoming part of the Sibun Forest Reserve). An excision of 1,409 acres was made in 1965 to provide a camp for the Belize Defense Force and plots for tourist developments (SI 49, 1977) and the reserve area was further reduced to 127,203 acres. Subsequently 840 acres were leased to farmers from San Antonio in 1990. This latter boundary change has not been formalized by statute. 650 acres of this land (presumably) is now being used by the San Antonio Grain Growers Association. The current SI estimates the reserve to be 127, 203 acres.

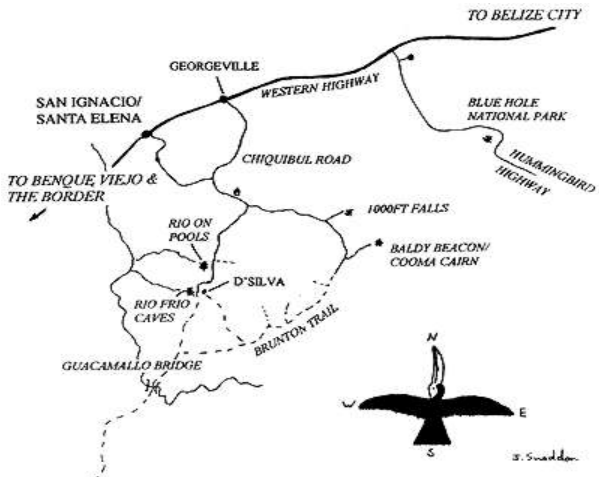


Figure 12 – Location Map courtesy of www.ambergriscaye.com/pages/town/parkmountainpineridge.html

DESIGN

Significance and Conservation Values

Originally, the reserve was declared to protect natural pine forests from fire, grazing and cultivation and to secure natural regeneration. Other considerations were the management and conservation of the forest and the conservation of soil and water resources. Designation also enabled controlled access to important recreation sites. [151] "The reserve consists of pine (58.5%), broadleaf forest (36.8%), open grassland (3.4%), wetland (0.6%) with the remainder being taken up by roads, rivers etc. There has been a decline in Morelet's Crocodile due to hunting pressure. The reserve falls within the range of the endemic frog Rana juliani, restricted to the Maya Mountains, and a second frog endemic Eleutherodactylus sandersoni is reported

[150] The majority of this information was compiled from Management Plan for Mountain Pine Ridge Forest Reserve, April 1, 1992 – March 31, 1997 and www.ambergriscaye.com/pages/town/parkmountainpineridge.html productded by the Casado Internet Group, 910 W. 16th, Eugene, Oregon 97402

[151] The dearth of information in this section is the result of the following. The management plan used to formulate the majority of information on MPR found in this section relied on a forest inventory conducted in 1990 and a study report on economics of Forest Department operation also 1990. Efforts were not made to secure these documents as the information is surely dated being fifteen years old. As far as we were able to ascertain there has been no recent, comprehensive study or ecological assessment of the area.

along with an endemic fish species Poecilia teresae (known from the upper reaches of Belize River, the Macal and Raspaculo)"[152] The Puma, Jaguar, Ocelot and quash sightings have been reported. The orange breasted falcon, the stygian owl, the white king vulture and the oscillated turkey, hummingbird, acorn woodpeckers, keel billed toucan, and red lored parrots are among the 200 species of exotic tropical birds that can be seen[153].

Threats

Encroachment, development (within the park through tourism and in buffer communities), insects (Southern Pine Bark Beetle) and fire appear to be the direct major threats to the forests in the MPR. Collateral threats include, soil erosion, loss of habitat for endemic wildlife, watershed silatation/contamination and desertification[154].

Planning

Management Context

Mountain Pine Ridge is managed by the Forest Department. The department has a long and proud history having been legally instituted in 1927. The department is managed by the Chief Forest Officer (CFO), who reports directly to the CEO in the Ministry of Natural Resources. The CFO is supported by 7 program managers overseeing the following programs: (1) Range Management, (2) Protected Areas Management, (3) Sustainable Forest Management, (4) Forest Health, (5) Exploitation and Revenue Control (6) Biodiversity, (7) Wildlife. There is also a complement of administrative staff including a Finance Officer and Administration Officer who oversee department finance and human resources. The Forest Department is also responsible for implementation of the Belize's obligations under various environmental international conventions, including CIITES, UNCBD, Ramsar and the CCAD. Currently the Forest Department manages 48 protected areas comprised of 17 forest reserves, 16 national parks, 4 nature reserves, 7 wildlife sanctuaries and 5 natural monuments.[155] Co-management agreements have been developed for 26 or 54% of the PAs under the management of the Forest Department. All PAs are managed by a team of four people who are (1) a Forest Guard (2) a Forester, (3) a Conservation Officer, (3) Supervisor/Forest Officer.[156] "All have been through recent training in protected areas management."[157]

Mountain Pine Ridge does not have a current Management Plan or Ecological Assessment of the sort provided for the other PAs under this study. The existing management plan expired in 1997 and there has been no effort[158] to update the plan. Thus as is discernable from the brevity of the previous section, there exists little current information on the significance of the park, threats, vulnerabilities, boundaries and zoning or specific management objectives. The

[152] www.ambergriscaye.com/pages/town/parkmountainpineridge.html

[153] Mountain Pine Ridge Carbon Sequestration Project, Belize, C.A., Silviculture Belize, Global Forest Nursery Development, Forest Securities, Inc, pg. 2

[154] note that this was not based on any specific authority, but was compiled from the most recent information available to the study.

[155] Strategic Plan, Forest Department, 2004, pg. 7

[156] Email correspondence, Osmany Salas, Chief Forest Officer, July 14, 2005

[157] ibid

[158] that we were made aware of

expired management plan and the site survey returned by the Forest Department provided the design information.

Management Objectives and Goals

Categorisation for the purposes of management is unclear for MPR. The Forest Department offers no option. Meerman offers an option under category VI. Having no further input, for purposes of this exercise the MPR is assessed here at a category VI site.

In the absence of a current publication of goals and objectives for the management of the MPR, the following objectives identified in the expired plan, informs this evaluation.

- To maximize financial returns to the GOB on their investment in management of their resources. This is to be achieved by:
    - Management to maximize sustainable supply of round wood for sale at appropriate royalty and stumpage rates
    - Export sales of pine seed
    - Research oriented towards maximizing sustainable yields through refinement of practices
- To ensure full protection of water catchments
- To maintain and enhance habitats for natural flora and fauna
- To maintain and enhance quality of the forest reserve for tourism and recreational usage, and where appropriate t offset costs by collection of fees.

INPUTS AND PROCESSES

Resource Inventory

Resource Inventory includes existing capital assets (buildings and houses), a GPS unit, 10 “heavy duty type equipment”, 7 vehicles, one laptop, GIS software (Arc GIS 9.0). These are used in planning, natural resource management, monitoring and evaluation, management of resources by humans and training to community groups and other stakeholders. MPR is completely government funded. Any revenue earned from the site is paid in the consolidated revenue fund for distribution among the entire public service. MPR financial information was only provided for 2004 and is as follows:

Table 16 MPR Income and Expenses, 2004

Category	2003	2004	2005 (Estimated)
Budget provided by GOB	Not Provided	654,816	Not provided
Recurrent Expenses Salaries Operations Maintenance	Not provided	 505,812 55,620 23,675	Not provided

Management Systems

Systems employed in the management of the MPR include annual work programs, financial management and budget systems and a maintenance program. According to the survey, there is no specific training and development or communication program and no IT/record keeping resources exist.

DELIVERY OF OBJECTIVES

A reconciliation of outputs to work plans and objectives is not an option in this case because there is not a recent assemblage of management objectives which drive management's actions as it relates to the MPR. Recounted below are some of the accomplishments and setbacks as it relates to the management of the MPR, provided through discussions with MPR staff. They appear in no particular order of priority or importance.

Table 17 Accomplishments and Setbacks – Mountain Pine Ridge Reserve PA Management

Setbacks[159]	Accomplishments
▪ Visitor facilities and services are inadequate and visitor use is damaging the resources, ▪ There is little or no contact between visitors and tourism operators using the PA. ▪ Management interventions are not known and are not implemented ▪ MPR is a moderate contributor to the local community (the tourism facilities not included), most of the benefit accrues from visitor spending in getting to the park	▪ Managed to defeat the Southern Pine Bark Beetle that threatened the pine forest ▪ Reforestation has started and a fire management plan is in place for the entire MPR. Prescribed burnings occur as scheduled[160]. ▪ Conclusions of an agreement with a major lumber company to manage a part of the MPR for sustainable production activities for a forty year duration[161]. ▪ Protection of watershed areas[162] ▪ Agreement with buffer communities (San Antonio Village) for harvesting of firewood in a sustainable manner[163]

[159] all issues identified here were comments provided on the survey submitted by the Forest Department
[160] Personal Communication Santigo Baeza and Domingo Ruiz, Site visit, June 16, 2005
[161] ibid
[162] ibid
[163] ibid

GAP ANALYSIS

Having no management plan to guide the process, the assessment of MPR Management was conducted on the basis of the management objectives defined for Category VI sites by the IUCN.[164] As a Category VI site, the objectives of management are to protect and maintain the biological diversity and other natural values, to protect the natural resource base from being alienated for other land-use purposes than would be detrimental to the area's biological diversity, to promote sound management practices for sustainable production purposes and to contribute to regional and national development. These objectives suggest that proper management of MPR is (should be) inextricably linked with the nation's national development objectives

In terms of management objectives, the MPR was rated highest on its ability to protect the natural resource base, because efforts are underway to address and eliminate unsanctioned use, and its effort to promote sound management practices for sustainable production. The lack of a more recent biodiversity study and the failure to place a priority on establishing its contribution to the local and national economy, were the basis for the award of lesser ratings for these two objectives. In terms of design elements the MPR was awarded low ratings for planning (or lack thereof), resource inventory and management and failure to incorporate initiatives to develop programs to generate economic benefits to the buffer communities.[165] The management systems used in the administration of the MPR, especially the planning and control mechanisms, financing and capacity are key improvement areas. Attention to sustainable production activities as it relates to tourism is also an issue.

MPR was awarded an overall score of 33 out of a possible 68 points or 49%. The score indicates that management is considered ineffective in key areas, exposing park values to risk. The complete scoring information including specific criteria used to measure each element of effectiveness and relevant explanations is contained in Annex VIII. While the scoring and gap analysis indicates significant, perhaps even alarming deficiencies in the management of the MPR when assessed against the standard of effectiveness espoused in this exercise, addressing the problems associated with effective management of the MPR requires consideration of the context of the management agency and the impact on the management of the MPR. Like the other agencies in the sample, management performance of the MPR is an indication of weaknesses at the agency level. However unlike the other agencies, in this case there are mitigating factors at the agency level which extend beyond the agency and which must be considered and addressed before any meaningful change can occur at the site level. Some of these issues are discussed further below under Agency Implications. In this case the results are inconclusive on the issue of management capacity at the agency level since there are issues beyond the control of the agency, which directly affect the management of the MPR.

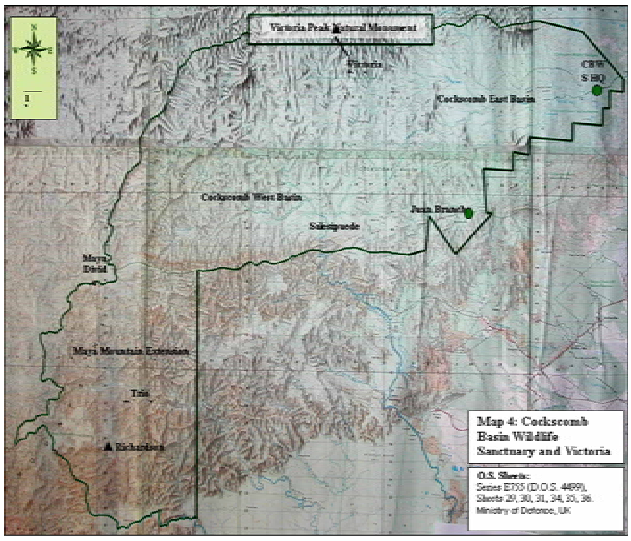
[164] these are available in Annex IV

[165] this would be possible of course only with a clear management focus for the MPR which was not found to be the case

Overall Score - (33/68) or 49%	
Management is considered ineffective in key areas, exposing park values to risk	
Institutional Gaps	**Technical Gaps**
Delivery outputs and outcomes Planning Stakeholder involvement in Planning Leadership Organizational Management Human Resource and Staff Development Fundraising and Marketing Financial Management Application of Technology Legal Expertise Sustainable livelihood opportunities	Biodiversity Research (no baseline established) Prioritising of Conservation Values Monitoring Enforcement and Resource Protection General technical capacity (exists but is unfocused)

COCKSCOMB BASIN WILDLIFE SANCTUARY – NOT CATEGORISED

Figure 13 – CBWS Location (Courtesy Belize Audubon)



At the time this study was conducted, the site and its management agency the Belize Audubon Society, had just revisited their management plan. The new management plan is a highly detailed and comprehensive set of documents, spanning three volumes which are a Rapid Ecological Assessment (Volume 1), Management and Development (Volume 2) and Conservation Manual – Conservation Planning (Volume 3). The thrust of the plan was to "dramatically improve biodiversity protection as the CBWS in a highly-cost effective manner."[166] The plan establishes clear management priorities based on tested evaluation criteria and provides detailed strategies to address each priority. Conservation priorities are used to develop six programme areas, each with their own overall objective, but collectively subsumed under the PA's broad management strategy. In turn each program area is deconstructed into sub-programs, again each with their own objectives and specific activity agendas. For example, the Natural Resource Management Program (1 of 6), is divided into seven (7) sub programmes and each of these seven are divided into specific activity sets. Each activity is then assigned a time period and an assessment of people, requirements and limitations which potentially influence the activity are identified. Administration issues are treated as a programme area and clearly identifies the activities and adjustments that will have to occur at the site and agency levels to carryout the ambitious plan. In addition, the plan provides a procedure for review and evaluation. The plan does not provide a detailed financial component but does comment that the plan has been emphasized to enhance park management using the existing manpower and infrastructure, rather than "being reliant upon additional project budgets.

At the time of this evaluation, (May-July 2005), the document had not been formally sanctioned by the BAS or approved by the GOB. Since no meaningful plan related activity had occurred, an evaluation based on the updated plan was not an option. Fortunately for the evaluators[167], the updated plan also included an evaluation of management's performance as it related to the objectives provided by the previous plan developed in 1998. The evaluation was based on a rating system developed by the consultants[168] because the 1998 plan provided no means of measuring success. Since this evaluation was used to identify weaknesses in implementation, which were subsequently addressed in the updated plan, this information is

[166] CBWS Management Plan, Volume 2, pg. 146
[167] In this exercise
[168] undertaking to write the new management plan

represented here as a gauge of BAS's past management of the CBWS. However it must be digested with the caveat that the organization has taken the necessary steps to address its implementation issues by investing in a comprehensive, focused, practicable plan that will guide its activities from now to 2010.

In sum, BAS was not subjected to the assessment process under this study, since its past actions have already been adequately evaluated and its issues well documented and addressed. A more interesting study will be BAS's performance in five years, given its extremely focused and ambitious trajectory for CBWS. Nevertheless, there are valuable lessons and insights provided by BAS's management of the CBWS and so the relevant background information[169] along with the evaluation results provided in their management plan is provided below.

BACKGROUND

At 128,000 acres Cockscomb Basin Wildlife Sanctuary (CBWS) is the largest of the Belize Audubon Society's managed protected areas. Management of Cockscomb Basin started in 1984 with its first designation as a Forest Reserve at the suggestion of the BAS under Section 3 of the Forest Ordinance, Chapter 115 Laws of Belize (revised 1958) by Statutory Instrument No. 93 of 1984 on 24 November 1984 (gazettted on 8 December 1984). This area was simultaneously designated a 'closed area for hunting' under Section 11 of the Wildlife Protection Act (No. 4 1981) by Statutory Instrument No. 94 of 1984 on 24 November 1984 (gazetted on 8 December 1984). In 1985, BAS proposed that the core area of Cockscomb Basin be re-designated as a Wildlife Sanctuary under the National Park system Act (no. 5 of 1981) justified by the high density of jaguars that it supported. In 1986 Cockscomb Basin was re-designated as a Wildlife Sanctuary under Statutory Instrument No. 32 of 1986 on 26th February 1986 (gazetted on 15 March 1986. The core area was extended in 1990 to include the Cockscomb Basin Forest Reserve and again in 1997 to include a portion of the Maya Mountain Forest Reserve. The reason for its expansion was to provide connectivity to the Bladen Nature Reserve. CBWS is bordered by the Chiquibul Forest Reserve to the West, the Bladen Nature Reserve to the South, The Cockscomb Ridge to the North (including Victoria Peak Natural Monument) and is buffered by one Garifuna community and several Mayan communities.

Figure 14 – Courtesy www.belizaudubon.org

CBWS is internationally renowned as the world's first jaguar reserve. It also protects the headwaters of two major river systems and supports an abundance of hardwood vegetation types and a diverse faunal assemblage. Wildlife abounds and besides all five species of wild cats, river otters, Kinkajou, Baird's Tapir, as well as numerous snakes and reptiles can be found there. Over 323 species of birds have been recorded there, from the Scarlet Macaw and the majestic

[169] the updated information provided by the new plan is used to a large extent

King Vulture to many tiny hummingbirds. The park offers over 20 miles of maintained trails, two of which are specifically designed for education, an educational Visitor's Center with interactive displays and wildlife specimens, a conference room, three designated camping areas, and a wide range of accommodations - from the communal dormitory to the totally independent White House.

DESIGN

Significance and Conservation Values

The following are identified as the nested[170] conservation values of the sanctuary by the 2005-2010 Management Plan[171].

Table 18 Conservation Targets and Viability Ratings - CBWS

Conservation Target	Specific Species/Ecosystem		Overall Viability Rating[172]
Broad leaf Forest	Lowland Broadleaf Forest	Encompasses 11 ecosystems including the Tropical evergreen broadleaf lowland hill forest – *Vochysia Terminalia variant*	Good
	Upland Broadleaf Forest	Encompasses 3 ecosystems including the tropical evergreen seasonal broadleaf submontane forest – *Virola - Terminalia*	Good
	Elfin Woodland	Encompasses 2 ecosystems including the Tropical evergreen seasonal broadleaf lower montane elfin shrubland	Good
Needle Leaf Forest and Fern Thicket	▪ Tropical evergreen seasonal needle-leaf lowland hill forest; ▪ Fire Induced lowland fern thicket		Fair
Riparian and Aquatic Habitat	▪ Deciduous broadleaf lowland riparian shrubland in hills; ▪ Rooted underwater communities of freshwater lakes/water bodies;		Good Very Good
Game Species	▪ Game Mammals – White-lipped and Collared Peccary, Red Brocket Deer, Paca, Nine-banded Armadillo, Agouti ▪ Game Birds – Great Curassow, Crested Guan, Great Tinamou		Good
Aquatic Vertebrates	▪ 'Food' Fish – Mountain Mullet, Machaca, Large Cichlids ▪ Hunted Freshwater Turtles – Trachemys scripta		Good

[170] the scale of the targets vary, ranging from single key species to groups ecosystems e.g. the broadleaf forest, that encompasses 16 eco-systems. CBWS Management Plan, pg. 14.
[171] Pg. 14
[172] Viability criteria includes size, condition and landscape text. Rating should be interpreted as follows:
Very good – functioning at an ecologically desirable status and requires little human intervention, Good – functioning within the range of acceptable variation, may require some human intervention, Fair – Lies outside its range of acceptable variation and requires human intervention. If unchecked the target will be seriously degraded.

Conservation Target	Specific Species / Ecosystem	Overall Viability Rating[172]
	▪ Amphibians of upland areas	
Key Species	▪ Jaguar ▪ Scarlet Macaw	Good Fair
Archaeological Sites	▪ Pearce Ruins, Huntul Mo, Xa'ayilha	Fair

Threats

The following threats to the conservation targets along with the scope and severity of each threat, on each target was identified for the CBWS. The following is excerpted from page 19 of the 2005-2010 CBWS Management Plan.

Table 19 – Threat CBWS

Threat	Scope	Severity	Threat over next 5 Years	Description	Impacted Target Area(s)
Hurricanes	Low – Very High	Low – Very High	Ongoing	Natural stochastic events. Impossible to predict when, where or how severe an impact	Entire Protected Area
Ancient Maya Settlements	Low - High	Very High	N/A	Long term, historical human impact	Broadleaf Forest
Contemporary Maya Settlement	Low	High	N/A	Intensive, focalised activity during 6 year settlement period in Quam Bank.	Broadleaf Forest
Hunting and Fishing	High (Historical) High (Current)	High (Historical) High (Current)	High	Ongoing hunting and fishing pressure within Sanctuary	Game Species and Aquatic Vertebrates
Looting of Archaeological Sites	Low	Medium	High	Signs of recent looting have been reported from archaeological sites within CBWS during patrols	Archaeological Sites
Logging	High (Historical) Unknown (Current)	Very High (Historical) Unknown (Current)	Low	Historical impact of commercial logging up to 1984 has had a major effect in the shaping of present day vegetation structure. Some reports of illegal logging incursions occurring from some buffer community areas	Broadleaf Forest
Fire	Low	Very High	High	Natural and man-made fires, affecting peaks and Cabbage Haul Ridge	Needle-leaf Forest and Fern thicket, Broadleaf Forest, Elfin Woodland
Killing of Jaguars	Low	Low	High	Jaguars in adjacent areas are killing domestic animals, and are therefore themselves being killed by farmers	Key species - Jaguar
Killing of Scarlet Macaws	Low	High	Low to Medium	Scarlet Macaws are being shot for meat and feathers by members of some of the buffer communities	Key Species – Scarlet Macaw
Tourism	Low	Low	Low to Medium	Necessary for sustainability, but brings with it a number of stresses on the environment	Broadleaf Forest, Elfin Woodland
Illegal Plantations	Low	Low	Low	Reports of small, illegal marijuana plantations within CBWS	Broadleaf Forest
Pesticide Drift	Unknown	Unknown	Unknown	Potential threat from aerial spraying of agricultural pesticides and subsequent drifting (and orographic precipitation) with prevailing winds to ridge tops	Broadleaf Forest (upland), Elfin Woodland, Aquatic Vertebrates
Development in Adjacent Areas	Medium	Medium	Unknown	Particularly of major concern in the Cabbage Haul Ridge area	Entire Protected Area - connectivity
Mining	Low	High	Low	Present legislation allows mining concession to be given within the protected area	Entire Protected Area
Dereservation	Very Low	Very High	Very Low	Present legislation allows for dereservation of protected areas by Minister	Entire Protected Area

PLANNING

Management Context

The Belize Audubon Society (BAS) is a non-governmental membership organization "dedicated to the sustainable management of Belize's natural resources through leadership and strategic partnerships with stakeholders in order to create a balance between people and the environment."[173] The Society was formed in 1969 as a foreign chapter of the Florida Audubon Society and has been affiliated with the National Audubon Society of the United States from the beginning. In 1973, it became a completely independent organization.

Currently BAS works in collaboration with the Forest Department to manage nine of Belize's protected areas. These are: St. Herman's Blue Hole National Park, Cockscomb Basin Wildlife Sanctuary, Crooked Tree Wildlife Sanctuary (Ramsar Site), Guanacaste National park, Halfmoon Caye Natural Monument (World Heritage Site), Tapir Mountain Nature Reserve, Actun Tunichil Muknal Natural Monument, Blue Hole Natural Monument (World Heritage Site), Victoria Peak Natural Monument. The co-management agreement essential states that the two organizations will together formulate and implement detailed management plans and that the Forest Department (GOB) will provide the infrastructure and security for the protected areas, while BAS is responsible for the daily management, implementation, maintenance and public awareness of the protected areas. The co-management agreement for the CBWS is for a ten year duration.

The co-management agreement between the GOB and BAS does not involve the buffer communities and as a result of increasing interest in involving local communities in protected area management, BAS initiated a co-management project in April 2000 in conjunction with PACT. The project was "designed to involve relevant stakeholders in ecosystems' management, to promote biological diversity and ecological integrity through sustainable development activities." The project, titled "The development of Cockscomb Basin Wildlife Sanctuary and Crooked Tree Wildlife Sanctuary as Centers for Co-Management of Protected Areas" was originally scheduled to end in 2003. An 18 month extension was granted due to the natural disasters of Hurricane Keith in 2000 and Iris in 2001, making the ending date September 2004. The project was funded by the Commission of the European Union who provided 80% of the total budget. As a result, community involvement is now an entrenched part of the management structure at the BAS[174]

Funds permitting, a revision of the management plan is carried out every five years. Annual work plans and budgets are based on the management plan and these drive the organization's activities each year.

[173] www.belizeaudubon.org
[174] Personal Communication, Nellie Catzim, June 23, 2005

INPUTS AND PROCESSES

Resource Inventory

BAS currently employs 43 full time employees but only eleven of these are exclusively related to management of CBWS. These are as follows: (1) P.A. Manager (who works out of the Belize City Office and is also responsible for management of the Crooked Tree Wildlife Sanctuary (CTWS), (2) A Community Liaison Officer (who works with both CBWS and CTWS) (3) Park Director, (4) A Deputy Park Director (4) A Head Warden, (5) Six Park Wardens. Financial and administrative support is provided by the wider BAS infrastructure. The site office is equipped with standard office and maintenance equipment. Between 2003 – 2005 site finances were reported as follows:

Table 20 Aggregated Income/Expense Figures CBWS (2003-2005)

Category	2003	2004	2005 (Estimated)
Income (Total) % raised at site	354,477 41%	483,583 530	406,370 62%
Recurrent Expenses Salaries, Operations, Maintenance	270,052	283,038	406,370

According to the CBWS PA manager, all revenue receipts from the site go into BAS's general funds. As a consequence to date there has been no attention to developing a financial plan specific to the CBWS.[175] However, financial sustainability is considered from the broader agency perspective under the development of an agency "Funding Plan".[176]

In fiscal year 2004, the majority of the organization's revenue was received from grants, roughly $1.17M or 69%. Entrance Fees from its protected areas accounted for 19% or $316,209. Although BAS membership exceeds 1,700 (409 foreign and 1,326 Belizean), membership contributions accounted for 1% of total revenue or $24.3k[177]. Management of CBWS and Half Moon Caye and Blue Hole accounted for BAS's largest expenditures in 2004 at $483,583 and $485,349 respectively. The CTWS and BAS's advocacy and education programs at 13% and 10% of total expenses respectively were the next largest.

DELIVERY OF OBJECTIVES

Following is a summary of the performance of the BAS in relation to the management of the CBWS from 1998 – 2003 (the duration of the expired management plan)[178].

[175] Personal Communication, Nellie Catzim, PA Manager, BAS, June 23, 2005
[176] ibid
[177] BAS Annual Report, 2004, pg. 35-36
[178] CBWS Management Plan – 2005-2010, pg. 11

Table 21 – Program Rating Table for 1998 Management Plan

Program	Total # of Objectives	Succeeded	Improved	No. Change	Worse
Resource Management and Protection	6	0	3	2	1
Research and Monitoring	4	0	2	2	0
Human Use	11	3	6	2	0
Development	10	6	3	1	0
General Management and Infrastructure	4	0	4	0	0

As the current plan acknowledges, funding has been a distinct challenge for the BAS and lack there of has constrained management's ability to achieve its objectives in the past, as it relates to CBWS. The new plan is designed to rely less on additional project budgets.

Overall Score - not rated	
Institutional Gaps	**Technical Gaps**
Human Resource and Staff Development Financial Management Technology and use of IS systems Legal Expertise (provided on a pro-bono basis by BAS's suitably qualified members)	Monitoring Enforcement and Resource Protection

A summary of the results of the site assessments are provided below. Performance comparisons are instructive only when they occur among sites within the same management category. In this sample, Hol Chan and Rio Bravo are clearly the better managed sites in their respective categories. However this is tempered by the fact that Xunantunich and CBWS, two seemingly well managed sites either could or were not evaluated, using this method of evaluation.

Table 22 Summary of Sample Gaps and Ratings

Protected Area **IUCN Management Category** **Overall Score**	**FBL** **II** **21/77**	**HCMR** **II** **65/77**	**Xunan.** **II**	**STNP** **IV** **49/60**	**RBCMA** **IV** **54/60**	**MPR** **VI** **33/68**	**CBWS** **Non assigned**
Management Agency	**FFBL and FD**	**Fisheries Dept. Statutory Board**	**Dept. of Arc**	**SATIIM & FD**	**PfB**	**FD**	**BAS & FD**
Institutional Gaps							
Delivery of Output and Results	✓		**NOT ENOUGH INFO**	✓		✓	
Planning	✓	✓				✓	
Stakeholder involvement in planning	✓	✓				✓	✓
Leadership						✓	
Organizational Management (structure, job design, accountability and communication)	✓	Not enough info				Not enough info	
Human Resource and Staff Development	✓	✓		✓	✓	✓	✓
Fundraising and Marketing	✓					✓	
Financial Management/Sustainability	✓	✓		✓		✓	✓
Application of Technology in Management Processes	✓	✓				Not enough info	✓
Access to legal expertise	✓	✓		✓	✓	✓	✓
Promote sustainable livelihood opportunities	✓					✓	
Technical Gaps							
Biodiversity Research (Baseline)	✓		**SAME**			✓	
Prioritising of Cons. Values	✓					✓	
Monitoring	✓	✓		✓	✓	✓	✓
Enforcement and Resource Protection	✓			✓	✓	✓	✓
General Technical Capacity (Scientific knowledge)	✓	✓		✓	✓	✓	✓

The governance structures represented in the sample are as follows:

Governance Structure / Key Players	Protected Area	Result
Single Management Agency		
Government of Belize:	Mountain Pine Ridge Xunantunich	Management ineffective Unable to evaluate
Private Management under Programme for Belize:	Rio Bravo Conservation and Management Area	Management effective
Co-Management		
GOB and Statutory Body	Hol Chan	Management effective
GOB and Community Based Org.	Five Blues Lake Sarstoon Temash	Management ineffective Management effective
GOB and Non Governmental Org.	Cockscomb Basin Wildlife Sanctuary	Not scored

With the exception of the Forest Department and the Belize Audubon Society[179], the agencies managed or co-managed only one site in the sample. Even though the Fisheries department has responsibility for eight sites, the structure of management it has created (statutory body with a legislated mandate) for the management of Hol Chan allows a singular focus. Accordingly then, management performances at the site level is a valid indicator of those at the agency level. In fact the two are inextricably linked as in all cases where information was available, policy, direction and management were the responsibility of employees within the agency framework. Site managers were typically directed from the agency as it relates to site organization, systems and work programs.

Using this premise then, the overarching inference from the results is that the level of active management varies among governance structure and agencies, and is dependent on available resources, and the capacity and commitment to manage.

Although only a sample of eight, the conclusions suggested that private agencies and NGO's who are focused and have access to external funding have a higher management effectiveness rating than their counterparts within the GOB system who may be disadvantaged by a wider scope of authority, increasing priorities and shrinking resources. Hol Chan is an interesting example of a creative method of management that involves the government systems but

[179] which was not evaluated under this exercise

provides alternatives where it matter most like focus and financing. In terms of governance structures, the results suggest that a co-management structure does not necessarily guarantee better results, evidenced by the spectacularly divergent results of FBL and Sarstoon Temash, but is instead dependent on the commitment, will and creativity of the engaged NGO or CBO.

INSTITUTIONAL GAPS

As it relates to institutional issues the most recurrent gaps occurred in the areas of financial management, staff development and legal expertise.

Six out of the seven reviewed were found to have no financial or business plans. Although due recognition is awarded to the fact that PA management in Belize has developed using an almost altruistic rather than a business approach to conservation, effective PA management in the current context, demands the exploration of alternative sources of funding. A review of the general domestic economic and monetary context (see Conservation Context on pg. 32) indicates that GOB is increasingly challenged by fiscal constraints and as a result may be increasingly limited in its ability to meet the costs of PA management. Add to that the narrowing focus of some funding agencies and the investment assurances required by international development and lending agencies, who insist that financial sustainability be a routine condition of loans and grants for protected areas, and the importance of adopting a business approach to PA management becomes apparent. Biodiversity conservation and the management of protected areas are now dependent on a deliberate plan of fiscal sustainability through mechanisms employed by the area's management, whether revenue generating or behavior changing. In turn, the success of any plan for financial sustainability relies exclusively on the strategic objectives for the PA and an organized, systematic approach to the practice of PA management.

Seven out of seven sites had no formal capacity building systems (training plans and development trajectory for staff). This however does not imply that the system is without capacity building efforts, only that it is sporadic and reactive, occurring only when and if the opportunities arise, rather than the result of a deliberate strategy to build sustained capacity for the site/agency.

In no case was there resident legal counsel or an established process to acquire access to legal counsel, and no established mechanism to access this competency at the system level. However two of the seven reviewed either paid for (PfB) or acquired these services on a pro-bono basis from their membership (BAS), when it was deemed necessary. Given the increasing complexity of the legal context associated with sustainable development and PA management, and the challenges associated with effective enforcement at the site level (discussed further below), access to legal counsel for all sites is an increasingly important consideration for the system.

In terms of the evaluation of existing capacity, the failure to receive employee qualification and experience information from all except two agencies impaired this effort to a great extent. Nevertheless the information that was received suggests that *there is capacity* in the system. Developing a critical mass and minimum standards of qualification as well as priority areas for capacity development is an issue for the system.

All agencies understood the value of strategic planning and have engaged in a strategic planning process at some point in their evolution, the most recent being the Forest Department whose strategic plan was approved and accepted on July 13, 2005[180]. As a result all the agencies evaluated have vision, mission statements, guiding principles and a definition of specific objectives. However, institutionalizing the strategic planning process presented some difficulty at both the site and agency level. At the site level it was mostly due to the practice of sourcing funding from outside the agency to develop the plans, and at the agency level it depended on the level of commitment to sound management practices. In addition, expanding the process to include wide stakeholder input was an issue for all sites and expanding the perspective of the plan to promote sustainable livelihood opportunities and consider other issues beyond the boundaries of the site was the domain of only the most progressive of the agencies in the sample.

TECHNICAL GAPS

Detailed biodiversity monitoring and resource protection and enforcement were the most prevalent technical gaps among the PAs evaluated. A unit focused on biodiversity monitoring was not found to be among the core activities in the organizational design at the site or agency levels of any of the PA's reviewed. Rather they were part of thematic programmes as in the case of PfB, or conducted in a general fashion (sightings of wildlife), as in the case of SATIIM. Even when biodiversity monitoring was considered under a specific program, there were difficulties associated with capacity.[181] In most cases, biodiversity evaluation and monitoring programs depended on capacity or financial resources, or both that were not available internally, or from within the system. Developing a critical mass of natural resource scientists, technicians and specialists in the areas of importance to Belize's biodiversity should be regarded as a priority for the system.

A site protection program that involved activities to clearly delineate the boundaries of the PA and provide for security against activities inimical to the management objectives of the PA was a management priority for most of the sites examined. In most cases enforcement and resource protection by mutual agreement, is the responsibility of the Government of Belize. This appears in agreements with CBOs, NGOs and private protection agencies. In the case of the agreement between the GOB and Friends of Five Blues Lake, the clause reads . . . "the Association shall be responsible for the day to day management of the Five Blues Lake National Park, and the Government shall along with the Forest Department be responsible for providing security and enforcement for the National Park, and assist in providing infrastructure . . .".

Yet, in each case there had been some activity on the part of the management agency to address site protection. The majority of the sites had an in-house ranger unit to provide security and resource protection. Some were actively working with law enforcement authorities (Belize Defense Force) on formal partner agreements to increase the efficacy of the resident force.

Clearly there are deficiencies in the mechanism established for the provision of security and resource protection for protected areas. In its agreements with site management the GOB is

[180] Email Correspondence, Osmany Salas, Chief Forestry Officer, July 14th, 2005
[181] either in the amount of available capacity or in the calibre

obligated to provide these services to the PA. Performance however is an issue, forcing most PAs to develop internal mechanisms to deal with activities that are, in some cases, a significant threat to PA values. However, in most cases[182], the members of the resident patrols do not have the necessary training or authority for legal arrest and enforcement. In addition, according to PfB's Ediberto Romero, the system is plagued with issues that make effective enforcement and thus site protection an increasingly challenging proposition. He asserts that enforcement and prosecution are carried out in an inefficient system plagued by delays and ineptitudes. Additionally, the penalties applied upon conviction are not significant enough to deter reoccurrences. While the deficiencies are manifested at the site level, this is an issue that requires a broad systems approach to address the inefficiencies associated with the current enforcement and legal procedural modalities as well as the review of the egregious issues in the legislative framework.

ACCOUNTABILITY

Management failures such as that which has occurred at FBL and the issues associated with agency non-performance in key areas indicate a general lack of accountability for effective management in the PA system. Co-management agreements are used widely throughout the system. According to the Forest Department's strategic plan, co-management has been in place since 1984 and allows the FD to "save on its resources." The terms of the collaboration are set out in an agreement that is legally binding and enforceable against the parties, and there are specific remedies for non-performance. The first requirement of all co-management agreements is for the development of a management plan. Yet key requirements of these agreements are not complied with, with virtual impunity, resulting in management failures and heightened site exposure to threats and stresses. FBL has neither a management plan nor a functioning management organization and this has been the case for the past five years.[183] To date the Forest Department has not exercised its option to terminate the agreement. The FBL scenario and the system wide security issue indicates that non-performance and a lack of accountability at the agency level does affect the caliber of management, across the system.

More of a focus on accountability and system failures would have by now highlighted the futility in the expectation of appropriate responses from the Forest Department (in the area of enforcement and security, and as general regulator for co-management agreements), given the demands on the agency and its resource inventory. In fact, a compelling argument can be made that the FD is doing the best it can with what it has.

The department is asked to perform in some capacity in the management of forty-eight (48) PA's, dispersed across the country. In the co-management scenario, its role is that of regulator, ensuring the other party complies with the terms of the agreement on the one part and that the rules and regulation for park security and protection are complied with on the other. In the case of the MPR for example, it is the exclusive management agency, responsible for all management activity from planning to results. It also provides training, research support and information for PAs throughout the system.

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[182] There are a few instances that we know of where rangers have been trained as special constables (CBWS for instance)
[183] The plan expired in 1999 and administrative failures followed shortly after

Overseeing all this activity are four people plus a complement of twenty eight (28) rangers who are not all dedicated to protected areas management. As established earlier, the Forest Department is structured by programs and the National Parks Management Program, with its complement of four (4), is in charge of all protected areas. The four who operate in a supervisory capacity are according to the Chief Forest Officer, all trained in protected areas management.[184] According to the FD's strategic plan, the staff from the ranges who lend support to the core four "have very little training in protected areas management"[185] When the number of roles and responsibilities of the Forest Department are juxtaposed against the human resource inventory, there is clearly a significant capacity issue. Add to this the other deficiencies which the strategic plan attests to, such as financial and budgetary constraints,[186]and political interference and the issue gains some perspective. FD's failures are themselves an indication of wider system failure to plan for and practically accommodate the demands of a broader, more effective, transparent and accountable, approach to PA management.

In sum, when evaluated against established effectiveness criteria, the study established that there are pockets of effective site management in the national system. However, the overarching inference from the results is that the level of active management varies among agencies, and is completely dependent on available resources, and the capacity and commitment to manage.

[184] Email Correspondence, Osmany Salas, July 14, 2005
[185] pg. 8
[186] exacerbated recently by GOB's austerity measures

SYSTEM RECOMMENDATIONS

In terms of system implications, the evaluation clearly demonstrated that there is not system-wide consistency in application of management objectives and based on the diversity of responses provided to the question of categorization, there is not consensus on how sites contribute to the protected areas system. In addition the gaps at site and agency levels cannot be considered without considering the failure at the systems level to provide guidance on the broader framework for PA management.

The challenge for the system is to increase and improve the level of active management among agencies by providing them with the direction and support they need to provide effective management at the site level. For Belize, this involves looking at issues that provide direction on what effective management is within the broader framework of biodiversity and sustainable development. Then providing the guidance and structures to support the elements of effective PA management but specifically as it relates to biodiversity monitoring, capacity building (both management and technical), stakeholder involvement in planning at the system, agency and site levels and promoting sustainable livelihood opportunities.

Achieving the goals associated with sustainable development, through effective PA management will require deep structural system changes and new ways of working and interacting in all areas of economic, social and political life. For example at the national and local levels, it requires cross-sectoral and participatory institutions and integrating mechanisms which can engage governments, civil society, private sector and indigenous communities in developing shared visions, planning and decision-making. All involved agencies (including Government) need to be more open and accountable for their actions. In addition the system must engage in and attempt to influence the broad issues that impact effective PA management. For example the legal environment as it relates to enforcement and prosecution needs to be reformed, economic growth patterns that positively impact the poorer communities (many of which are buffer communities along PA's) should be favoured and embraced by the system. Fiscal policies that negatively affect these communities or promote unsound environmental practices should be addressed and reform lobbied for by the system.

PROVIDING DIRECTION FOR EFFECTIVE MANAGEMENT

Understanding the core elements of effective PA management dictates an understanding of the regional and international context of sustainable development and protected areas management and how Belize contributes (in terms of its biological systems, cultural landscapes and landforms to the regional and international attempts at biodiversity conservation. As a result an inventory of biodiversity (genetic, species and eco-system), landform types and cultural landscapes of the country is a good place to start. This will provide the information necessary to prioritize and identify those areas

that provide "the minimum foundation for the long term persistence of biodiversity." [187] "Preferred sites are those that provide the greatest benefits for biodiversity and generate sustainable economic and social services and/or imply the lowest opportunity to local stakeholders."[188]

Re-establishing the criteria for PA protection as biodiversity conservation and sustainable resource use and extraction, is key for Belize. According to Meerman, currently the majority of the areas under protection in Belize are for the management of resource use and extraction[189]. Awarding a classification of "management" rather than "conservation" is more realistic, he opines. Thus the protected areas system will need to reconcile this reality with the demands of biodiversity conservation. However once areas of importance are identified, it provides the platform for transparency in site selection, also currently lacking in the current system. In addition, a framework for management can be developed that allows system-wide consensus on how the PA contributes to the wider system and its management objectives, as well as provides measurable key performance indicators based on PA type. The importance of this framework to effective PA management cannot be overstated, and attention to developing the appropriate framework should be a priority for the policymakers in the system.

Once a basic framework for site prioritization and management has been devised and made a part of the legal framework for protected areas, then it becomes necessary to provide the administrative framework to promote system wide consistency in the application of management and clarity of roles and functions at the agency and site levels. The weaknesses in the current administrative framework have been identified and discussed at length by Dr. Homer and Jan Meerman and thus there is no need to reiterate them here.

What is necessary here is consideration of an adjusted structure that allows an integrated approach to PA management, providing opportunity for input to as many stakeholder groups as possible, and which actively participates in the national policy making machinery. Its functional aims should be to close the existing gaps through effective, sustained management effort. Some of the Council's core activities would include:

- Improve the scientific knowledge base and strengthen the institutional framework for biodiversity management;
- Enhance skills and capabilities in PA management;
- Encourage private sector participation;
- Enhance institutional and public awareness;

[187] Eken, G, Bennun, L, Boyd, C. ,Protected Areas Design and Systems Planning: Key Requirements for Successful planning, site selection and establishment of protected areas, Key Biodiversity isses for protected areas, Birdlife International; Conservation International, pg. 37
[188] ibid, pg. 43
[189] Meerman, 2005, pg. 51

- Promote the exchange of information;
- Establish funding mechanisms;

To achieve this, the system needs to develop a high level policy formulation, coordination and advisory body (National Integrated Protected Areas System Advisory Council (NIPASAC)[190], involving representatives from all key stakeholder groups. The main function of this entity would be to carry out the program of work for protected areas devised under the CBD.

The overarching purpose of the program of work is "to support the establishment and maintenance by 2010 for terrestrial and by 2012 for marine areas of comprehensive, effectively managed, and ecologically representative national and regional systems of protected areas that collectively, inter-alia, through a global network contribute to achieving the three objectives of the convention and the 2010 targets . . ."[191]

The programme of work itself is arranged into four main elements as follows:

- Direct actions for planning, selecting, establishing, strengthening and managing protected areas systems and sites:
  - Establish and strengthen national and regional systems of protected areas;
  - Integrate protected areas into the larger landscape and seascape and into various sectors of planning
  - Strengthening collaboration between countries for trans-boundary protection area conservation
  - Improving site-based planning and management, and preventing negative impacts of key threats to protected areas
- Governance participation, equity and benefit sharing
  - Promoting equity and benefit sharing through increasing the benefits of protected areas for indigenous and local communities and enhancing the involvement of indigenous and local communities and relevant stakeholders
- Enabling activities
  - Providing enabling policies and institutional mechanisms

[190] for want of a more creative acronyn
[191] Programme of Work on Protected Areas, Secretariat of the Convention on Biological Diversity, pg.3.

- Building capacity for the planning, establishment and management of protected areas
- Applying appropriate technologies
- Ensuring financial sustainability
- Strengthening communication, education and public awareness

- Standards, assessment and monitoring
  - Developing ad adopting minimum standards and best practices
  - Evaluating and improving the effectiveness of protected areas management
  - Assessing and monitoring protected area status and trends
  - Ensuring that scientific knowledge contributes to protected area establishment and effectiveness

Admittedly the aims are lofty and the tasks daunting given the existing community fragmentation built on power imbalances and a less than transparent system. Nevertheless, allowing the CBD work programme to guide national PA system activities ensures activities and aims consistent with the wider national biodiversity framework at the national, regional and international levels. In addition, by requiring interaction at the regional and international level, it provides policymakers with the opportunity to exploit regional and international synergies in regards to funding, biodiversity monitoring and PA management, for the benefit of the national system. Representation in this group would likely mirror the current task force composition.

A secretariat should be established to assist the advisory council, the main function of which is to:

- Assess and monitor protected area status and trends and provide position papers for Council consideration;
- Develop the framework for and act as a clearing house mechanism for the exchange of information within the system;
- Provide legal expertise to the council and act as a common resource for legal expertise for the sites;
- Develop training and capacity development trajectory for the system and oversee its implementation;
  - (reinforce and establish biological diversity programmes and facilities in existing institutions)

- Provide recommendations to Council on reservation/dereservation issues;
- Oversee standards, assessment and monitoring;
- Strengthen communication, education and public awareness;
- Establish and oversee funding mechanisms;
    - Seek new and additional incentives, funding sources and mechanisms at the national and international levels
    - Administrate trust fund
- Encourage the formation of appropriate joint venture projects with multinational and other corporations to encourage technology transfer.

One consideration is to expand the mission of the Protected Areas Conservation Trust (PACT), to accommodate the additional roles and functions envisaged for the secretariat. PACT (it would likely have to undergo a name change), is already legislated as a statutory body and is structured to fund activities on the protected areas, raise funds and receive gifts and donations and maintain the institutional arrangements, for effective and efficient management. This would require legislative adjustments and expanding the administrative resources and capacity to include specialists for the more technical elements of the secretariat's responsibilities. However, it would provide a ready-made funding mechanism for system initiatives that would directly and indirectly impact agency and site administration. In addition, given the integrated systems approach, it would allow for targeted investments in areas where it would provide the most significant benefit to the system.

The secretariat and by extension the advisory council would have to consider how best to address horizontal issues such as enforcement and security, and issues that may arise from possible overlaps with the current governance structures. It would also have to consider its funding options but some considerations include;

- % of the receipts from site activities (which could be earmarked for capacity building and or a legal fund,
- Continued receipts from the conservation fee
- Regional and International donor agencies for specific capacity building projects, technical assistance and technology transfer initiatives

There should also be a mandated % of receipts returned to the sites in the form of capacity building initiatives in PA management and/or biodiversity conservation (through scholarships), legal council, effective clearing house information facility and the like.

In addition, NIPASAC should advocate for and contribute to the establishment of a National Centre for Biodiversity, whose main responsibility will be;

- To undertake and intensify biological resource inventories and systematic studies to document species diversity;
- Undertake and intensify research on the functional aspects of ecosystems and their ecological processes;
- Develop and manage a database of biological diversity and an effective information dissemination information;
- Monitor the status of the components of biodiversity;
- Survey and document threats and stresses;
- Study the impact of national and state policies and priorities on conservation and sustainable use of biological diversity;

This organization would carryout its work in accordance with Article 7 of the CBD and resolution V/7, paragraph 1 (6), which defines the commitments of signatories in relation to biodiversity monitoring, and provide guidelines on elaborating indicators at the ecosystem, special and genetic levels, using the principles of the ecosystem approach.

CONCLUSIONS

In the final analysis, the study did not reveal anything that was not already alleged. The application of management is inconsistent throughout the system and dependent of commitment and will to manage effectively. Although only a sample of eight, the conclusions suggested that private agencies and NGO's who are focused and have access to external funding have a higher management effectiveness rating than their counterparts within the GOB system who may be disadvantaged by a wider scope of authority and shrinking resources. Hol Chan is an interesting example of a creative method of management that involves the government systems but provides alternatives where it matter most like focus and financing. In terms of governance structures, the co-management structure widely employed throughout the system, is in practice[192] without effective regulation and enforcement, and the conclusions of the study suggest that success under this system is dependent on the commitment, will and creativity of the engaged NGO or CBO.

Recommendations to address the deficiencies at the site and agency level had to consider the broader framework and those issues in the system that influenced effective management at the site level. Providing the facilities that would allow sites to understand their value and where they "fit" into the wider PA system and providing a system-wide standard for management, would bring more transparency, accountability and consistency to the system. In addition there needs

[192] As opposed to by design

to be a trajectory for the PA system that must be carefully managed to maintain management effectiveness at the site and agency levels, while meeting the requirements of the wider demands associated with biodiversity and sustainable development.

In the short term, the system may want to look at trying to address the issues associated with enforcement and security and providing access to training in both scientific knowledge and management of PAs, to start building a critical mass of trained individuals. This alone however will not be enough to address the issues associated with management effectiveness. Consideration will have to be given to a fundamental restructuring of the system to provide for focus, the exchange of ideas and opinions and for better allocation of the system's indigenous resources.

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Site Specific Information

Site	***Data Available to the Study***
Five Blues Lake	1. Site Survey - Forest Department (David Perera), 2. Report on the Five Blues Expedition to Belize, Southampton University, January to March 1996, 3. Site visit and interview with Mario Perez, President of the FFBL Association, Lilly Galdamez, board member and Claribel Geiten, community representative, conducted on June 10th, 2005. 4. Five Blues Lake National Park Advertising Leaflet 5. Co-Management Agreement between GOB and FFBLA Web Sites www.travelbelize.org/spanish/guide/pa/pa09.html www.Ambergriscaye.com/pages/town/park five blues lake.html
Hol Chan	1. Site Survey – Miguel Alamilla (Site Manager) 2. Hol Chan Management Plan Web Sites www.holchanbelize.org.
Xunantunich	1. Site survey – Dept of Archaeology (Brian Woodye – Site Manager) 2. Site visit on Sunday, June 19th. Unable to arrange interview with site management. Web Sites www.travelbelize.org/xu.html www.exiticbirding.com/belize/places/xunantunuch.html

Site	***Data Available to the Study***
Rio Bravo	1. Management Plan, 2001-2006. (study on biodiversity and Maps and Zoning) 2. Site Survey completed by Ediberto Romero, Exec. Dir, Programme for Belize, 3. Meeting with PfB Management to discuss information collected from survey, June 13, 2005 4. Site Visit, Friday, June 17, 2005 hosted by PfB's Wilbur Sabido 5. Organizational practices, charts, employee/personnel manuals
Sarstoon Temash	1. Management Plan, June 2004 2. Rapid Ecological Assessment, J.C. Meerman, P. Herrera, A. Howe, December 2003 3. Impact Hot Spot Mapping of The Temash River in Southern Belize, Jes Karper and Ed Bolas, March – May 2004 4. Garifuna Traditional Knowledge and Natural Resource Management in Sarstoon Temash Region, Richard Stepp, May 2005 5. Management Plan for the Marine Buffer Zone of the Sarstoon Temash National Park, Leandra Cho-Richelto, PHD. 6. Eco-tourism potentials Review of the Sarstoon Temash National park and Buffering Communities, Landl Consultants Ltd., February 2005 7. Site Survey completed by Josh Lichtenstein, Programme Officer for Belize, Institutional Strengthening Coastal Marine Management , Ecologic 8. Site visit hosted by Josh Lichtenstein and the staff of SATIIM, Friday, June 24th, 2005 9. SNTP Management Maps Financial Statement Oct 1, 2003 – May 31, 2005 Organizational practices, charts, employee/personnel manuals

Site	*Data Available to the Study*
Mountain Pine Ridge	1. MPR Management Plan, expired 1997 2. Site visit on Friday, June 10th, Santiago Baeza and Domingo Ruiz. 3. Strategy Plan, Forest Department, 2004 Web Sites www.ambergriscaye.com/pages/town/parkmountainpineridge
Cockscomb Basin	1. CBWS Management Plan, 2005-2010 2. Office visit to BAS, June 22, 2005, with Nellie Catzim, PA Manager, CBWS. 3. Returned Survey, Web Sites www.belize audubon .org

Personal Communication

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Isias Majil, Fisheries

Nellie Catzim, Protected Areas Manager, Cockscomb Basin Wildlife Sanctuary

Maria Perez, President of the Board, FFBLA
Lilly Galdamez – Member of the Board, FFBLA