Belize Protected Areas Policy and System Plan:
RESULT 2:
Protected Area System Assessment & Analysis

Synthesis Report

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Report to the Protected Areas Systems Plan Office (PASPO)

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Acronyms.

BAPPA = Belize Association for Private Protected Areas
BAS = Belize Audubon Society
BERDS = Biodiversity and Environmental Resource Data System for Belize
BTFS = Belize Tropical Forest Studies
CBWS = Cockscomb Basin Wildlife Sanctuary
CSO = Central Statistical Office
CZMAI = Coastal Zone Management Institute
DEM = Digital Elevation Model
Dept. = Department
FD = Forest Department
FR = Forest Reserve
ft = foot / feet
GIS = Global Information System
GOB = Government of Belize
Ha = hectare
IUCN = World Conservation Union
km = kilometer
km² = square kilometer
LIC = Land Information Center
m = meter
MET = Meteorology Department
NAD = North American Datum
NICH = National Institute of Culture and History
NGO = Non-Governmental Organization
NPAPSP = National Protected Areas Policy and Systems Plan
PA = Protected Area
PASPO = Protected Areas Systems Plan Office
PfB = Programme for Belize
RBCMA = Rio Bravo Conservation and Management Area
shp = shapefile
SPAG = Spawning Aggregation
sq. = square
TF = Task force
TNC = The Nature Conservancy
US = United States
UTM = Universal Transverse Mercator
WCS = Wildlife Conservation Society
WRI = World Resource Institute
WWF = World Wildlife Fund

National Protected Area Systems Analysis
Synthesis Report

1. INTRODUCTION

1.1. Background

Belize has a high proportion of its land and sea resources protected under a variety of management structures. This system of Protected Areas has evolved over several decades, reflecting changing conservation attitudes, as has the scope and direction of the various agencies responsible for its administration. However, Belize now finds itself at a crossroads: the system represents a wealth of valuable resources, yet, in the face of calls for additional reserves, how should it be developed, and how should it be integrated more effectively with the national economy?

In October 2003, the Deputy Prime Minister and Minister of Natural Resources and the Environment, in collaboration with the Minister of Agriculture and Fisheries and the Minister of Tourism, established a Task Force – with representation from the relevant administrative agencies – charged with ensuring that a comprehensive National Protected Areas Policy and Systems Plan was prepared.

In 2004 a "Work Plan" has been prepared (Meerman et al, 2004) for the specific purpose of guiding the formulation of the National Protected Areas Policy and System Plan. The fundamental requirements of an inclusive and viable Policy and Systems Plan are set out as five 'Results' – these are the intended goals of the planning process.

Reflecting the current thrust in national development, the Work Plan is founded on the need to ensure that biodiversity conservation becomes an important and integral part of national social and economic development. The adopted guiding principle being that the potential contribution of the Protected Areas System to national development and poverty alleviation is maximized, thereby putting the system on a sound and rational footing.

The five 'Results' build on each other, and each are to be achieved through a series of 'Actions' in a step-by-step approach. Attention has been taken to ensure an efficient flow of activity so that the Work Plan can be completed efficiently, culminating in the National Protected Areas Policy and System Plan.

Of these 5 results, this report deals with **Result Two** – Protected Areas System Assessment & Analysis which was defined as:

> *"A comprehensive system of protected areas, linked to their surrounding land- and seascapes, is proposed based on the Ecosystem Approach"* – focuses on the analysis of the current status of the Protected Areas System, and on opportunities for its optimization.

Within result two, the attributes of Belize's natural resources and the Protected Areas system were to be assessed, including all ecotypes, cultural monuments, critical habitats, watersheds, land suitability, use and ownership, and areas vulnerable to natural or climate-related change. This is assessed in the light of proposals for new and/or consolidated protected areas, and for

biological corridors, with regard to identified threats to the system. Moreover, the national list of critical terrestrial/marine species is updated.

Through this process, gaps in the system are identified and a relative scoring system developed to guide proposals for the rationalization of the system.

1.2. Process

To facilitate the Protected Areas System Assessment and Analysis (Result 2), the Project Coordinator implemented a "consortium" of NGO's and Government Departments active in Conservation Management in Belize. In addition, a lead consultant was hired. The function of the lead consultant was to be:

To assist and liaise with the Project Coordinator closely to ensure the successful completion of Result 2: Protected Areas System Assessment and Analysis.

- Facilitate and promote the participation, and work with the members of the Consortium to develop the Result 2.
- To maintain a constant communication with the Consortium members.
- To fill the information gaps to develop properly the actions within Result 2.
- To attend the Consortium technical meetings called by the Project Coordinator, related to issues and decisions to be made on the Result 2.
- To support with personal own data and information the development of the actions.
- To visit, interview and request information from GOB, NGO's and other sources to complete and update the information needed.
- To develop a first draft of a comprehensive Protected Areas System, and present it for discussion to the Project Coordinator and later to the Consortium.
- To present to the Project Coordinator a final draft, reviewed by the Consortium, of comprehensive Protected Areas System document.

The main purpose of the Consortium was to establish a group of experts needed to support the completion of the sub-actions defined in Result 2: Protected Areas System Assessment and Analysis as one component in the development of the National Protected Areas Policy and Systems Plan for protected areas in Belize.

Consortium members for this project included:

- World Wildlife Fund (WWF) a U.S non-profit organization, represented in this statement by Melanie McField in her position as Senior Program Officer/Mesoamerican Reef;
- Programme for Belize (PfB) a Belizean non-profit organization with its head office in the City of Belize, Belize, represented in this statement by Wilber Sabido in his position as Technical Coordinator;
- Wildlife Conservation Society (WCS) a U.S. organization with its head office in New York, United States of America represented in this statement by Janet Gibson, in her position as Associate Conservation Scientist Marine Program – Belize and Bruce Miller, Associate Conservation Zoologist;
- The Nature Conservancy (TNC) a U.S. organization with its head office in Washington D.C., United States of America represented in this statement by Carolyn Goldman in her position as Program Manager, Belize Country Program;
- The Coastal Zone Management Authority Institute (CZMAI) a Belizean organization with its headquarters in Belize City, Belize. Represented by Emil Cherrington in his position as data manager.
- The National Protected Areas Policy and Systems Plan Project (NPAPSP) a Belizean organization with its headquarters in Belmopan, Belize and represented in this statement by Roger Morales and Yvette Alonso in their position as (acting) Project Coordinators.
- Belize Audubon Society (BAS) a Belizean non-profit organization with its headquarters in Belize City, Belize and represented in this statement by Diane Moore in her position as Advocacy and Policy Program Manager.
- The Fisheries Department of the Ministry of Natural Resources.
- The Forest Department of the Ministry of Natural Resources.

Throughout the process, all consortium members shared information and experiences based on previous or on going programs, projects and actions that were relevant to the development of Result 2. Each member provided the information required for the development of the sub-actions in the most analyzed format based on their capabilities. Members pursued the coordination and harmonization of the development of information contributed aimed at fulfilling specific actions and sub-actions in Result 2 with the lead consultant and the NPAPSP project.

Previous to the NPAPSP Result 2 analyses, a tri-national Ecoregional Planning effort for "Las Selvas Maya. Zoque and Olmeca" was started. The effort is being implemented as a joint project by Pronatura-Península de Yucatán (Mexico), Ecosur (Mexico), Defensores de la Naturaleza (Guatemala), TNC (Mexico, Guatemala, Belize), WCS (Mexico, Guatemala, Belize) and Programme for Belize.

The Ecoregional Plan proposes a network or portfolio of strategic sites which will permit the conservation of natural communities, ecological processes and species that best represent and guarantee the biodiversity of the Selva Maya ecoregion. The sites are selected through a rigorous analysis of existing information on biodiversity within the ecoregion. The Plan also develops strategies for the conservation of the sites identified. The strategies are based on the socio-economic situation and culture of the ecoregion, existing opportunities and threats and institutional capacity.

The Ecoregional Planning effort is nearing its completion and results can be expected mid-2005 (http://www.selvamaya.org).[1]

The process followed by this Ecoregional Planning Process, had so many overlaps with the NPAPSP Result 2 efforts that efforts were coordinated from the very beginning of the study. Both sides gathered and shared data. The principal difference between the two processes being the scale on which each worked. Because of the large size of the Ecoregional Planning Unit, data input was on a relatively coarse scale. The Belize effort could work on a finer scale and thus could access additional data for fine-tuning of the process. Also note that the Ecoregional Planning Process did not address marine conservation efforts. Similar efforts for the Marine component were carried out by both the World Resource Institute - WRI and TNC which have complementing marine data for the entire Caribbean region.

Altogether, this initiative sought to provide an inclusive participation from all those working towards the same goals of protected areas conservation and sustainable management. A flow chart outlining the process followed is represented in Figure 1.

During a final meeting on Monday April 11th, 2005, the consortium approved the lead consultants draft report and analysis based on their combined input. Following that, public consultations were held throughout Belize[2] [3].

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[1] A separate report incorporating draft results of the Ecoregional Planning effort is included as a support document on the resource CD.

[2] See separate report on the public consultations is presented as a resource document on the resource CD.

[3] A time line report of all activities is presented as a support document on the resource CD.
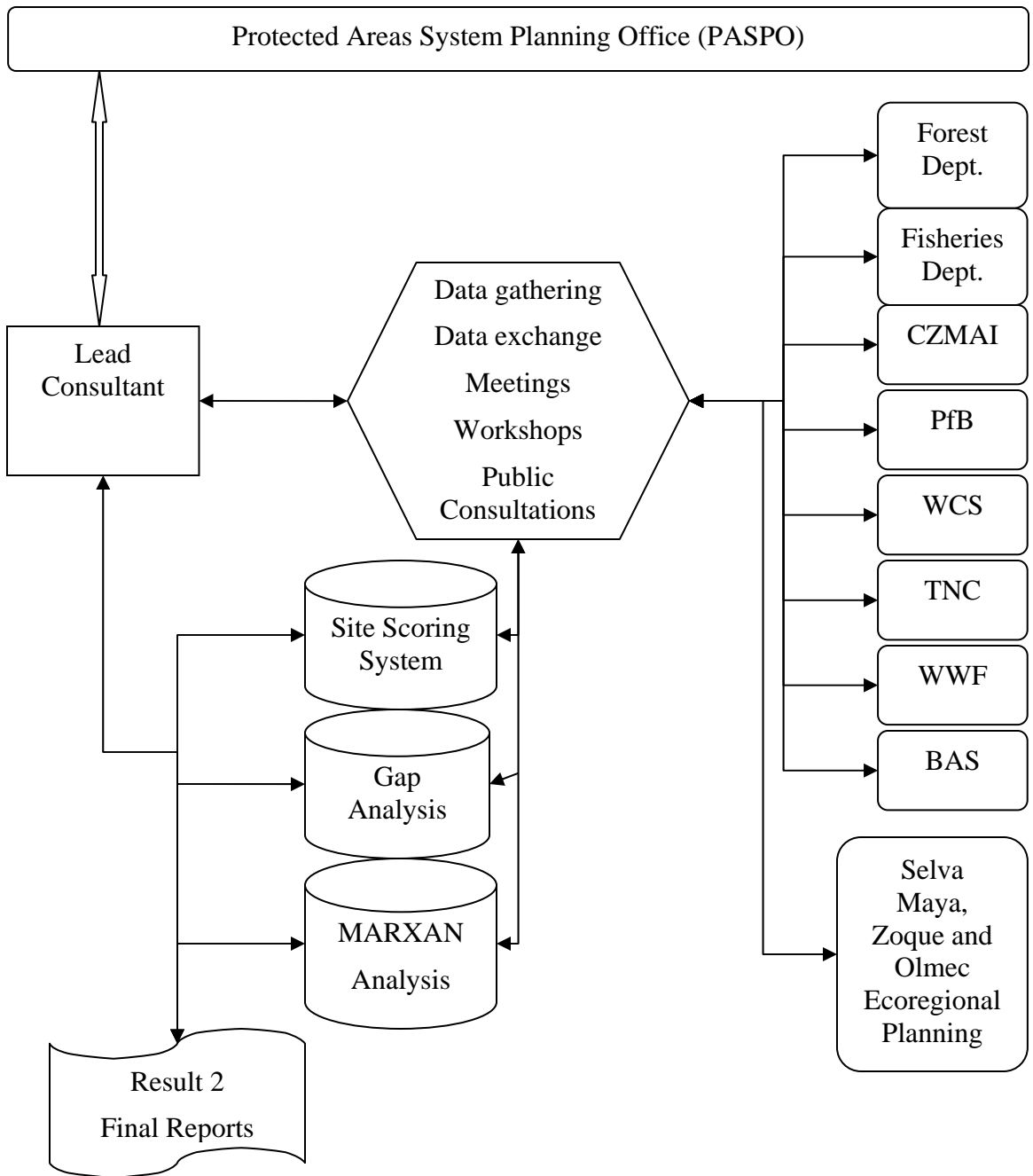
Figure 1. Flowchart showing the process followed during the NPAPSP Result 2 analyses.

1.3. Acknowledgements.

The lead consultants acknowledges the continues and input of time, materials, data, comments, reviews and general support from the NPAPSP result 2 consortium:

- Belize Audubon Society (BAS)
- Coastal Zone Management Authority Institute (CZMAI)
- Fisheries Department of the Ministry of Natural Resources.
- Forest Department of the Ministry of Natural Resources.
- Programme for Belize (PfB)
- The Nature Conservancy (TNC): Belize
- Wildlife Conservation Society (WCS): Belize
- World Wildlife Fund (WWF): Belize

Lead consultant and consortium were supported by the National Protected Areas Policy and Systems Plan Project (NPAPSP) withRoger Morales and Yvette Alonso in their position as (acting) Project Coordinators.

Additional departments and agencies otherwise contributing to
- Belize Tropical Forest Studies (BTFS)
- Biodiversity and Environmental Resource Data System of Belize (BERDS)
- Central Statistics Office (CSO)
- Department of Geology and Petroleum
- Land Information Center
- Meteorology Department
- National Institute for Culture and History
- Plan Ecoregional de la Selva Maya, Zoque y Olmeca
- Pronatura (Merida: Quintana Roo)
- Protected Areas Conservation Trust
- UNDP/GEF

Furthermore, the various stakeholders need to be acknowledged that attended the various public meetings and especially those that took the time to present us with their oral and/or written comments.

Last not but least I owe gratitude to my spouse and partner Tineke Boomsma for her criticisms and continued support during this lengthy and under-funded study.

2. Results

The magnitude of the assessment and analysis led to a large amount of output. The nature of the results produced was often very dissimilar making it very difficult to incorporate them into one report. In many cases the results present stand alone products. During the public consultations it became clear that most stakeholders had difficulty in seeing the relation between the various components of the total output.

For these reasons it was decided not to present the result 2 output as a single report but rather as a number of stand alone principal reports. These reports were produced as electronic documents only (mostly pdf files) and combined on a single resource CD[4]:
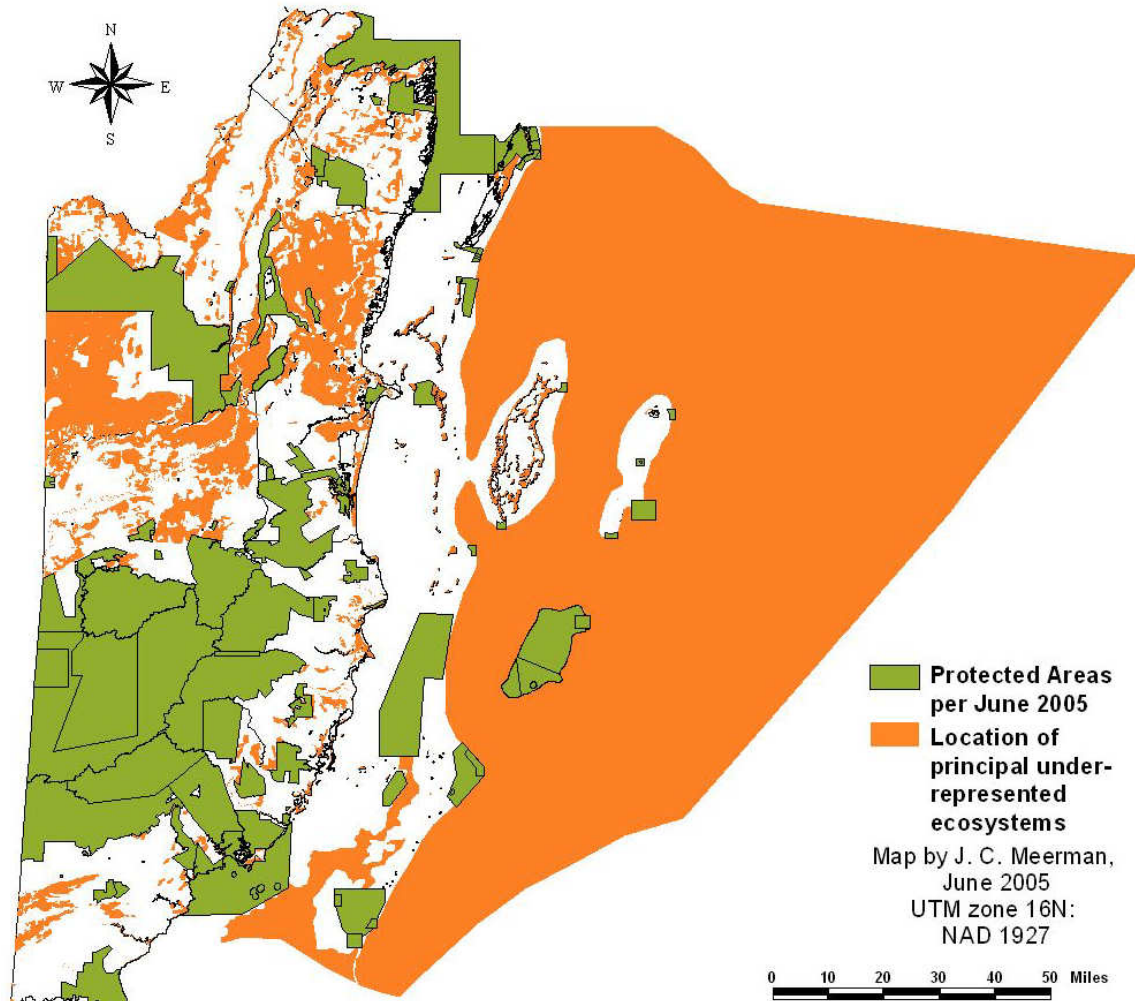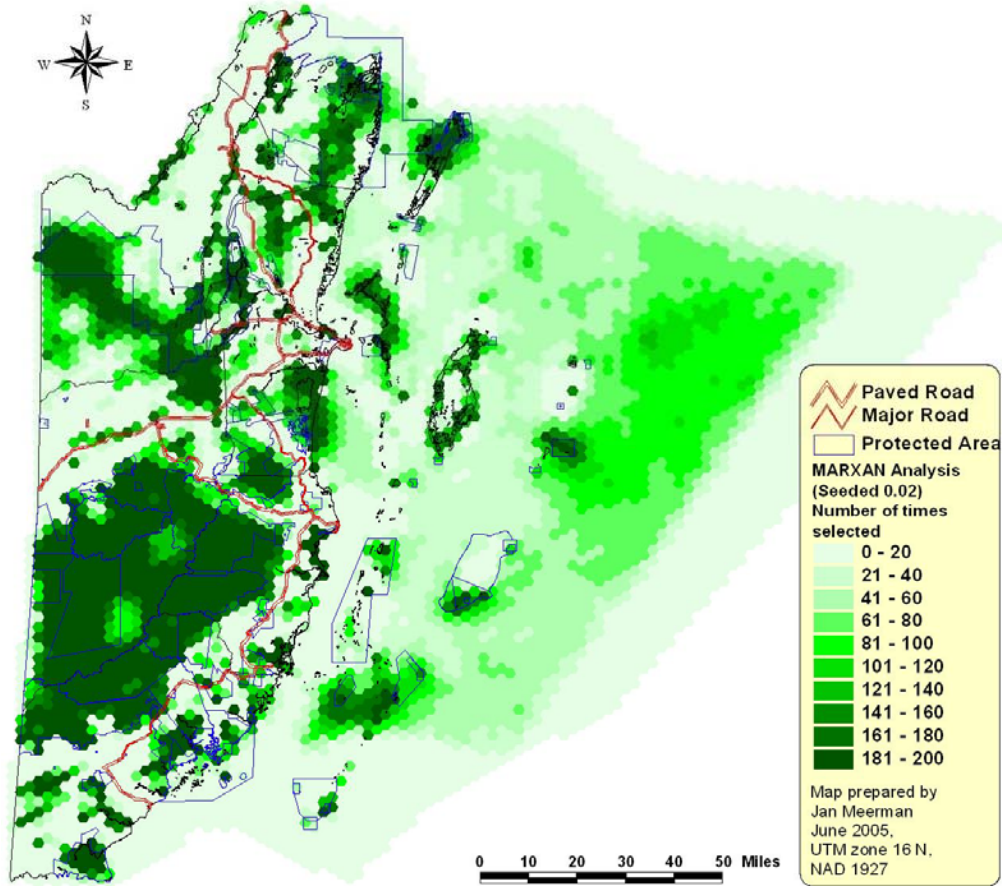

Figure 2. Location of the principal under-represented ecosystems within the current Protected Areas System. Note that this map does not indicate areas to be preserved!

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[4] This CD also contains all of the raw data (Excel spreadsheets and ArcView Shapefiles.

Principal Reports:

1: Protected Areas Analysis

2: Gap Analysis

3: Site Scoring System

4: MARXAN analysis

Figure 3. MARXAN Analysis "seeded" version. See separate MARXAN report for details. Also compare with gap analysis map in figure 2.

These principal reports make use of a number of definitions and peripheral documents most of which had to be produced specifically for this purpose. Since these peripheral documents do not constitute final deliverables, these documents are included as "support documents"

Support Documents:

1: Timeline

2: Belize-definition (size of Belize)

3. Human Footprint

4: Report on Ecoregional Planning Initiative

5: Report on Ecoregional Planning Workshop

6: National List of Critical Species

The total of all these documents being a varied amount of information, all to be used as TOOLS during the implementation phase of the NPAPSP. Although all of the documents are stand-alone products, none of them should be used in isolation during the implementation phase.

In order to show potential ways in which to use these separate outputs, a number of "case studies" was prepared. These case studies include one study for a particular protected area and surroundings, three species case studies and two non-biodiversity related case studies. It is hoped that these case studies will be helpful during the implementation phase.

Case Studies:

1: Case study Gragra Lagoon National Park

2: Case study: Jaguar

3: Case study: Jabiru Stork

4: Case study: Manatee

5: Case study: Forestry

6: Case study: Mineral exploration and mining

3. Conclusions

The goal of this assessment and analysis was to identify gaps in the protected areas system of Belize and to develop a tool that will guide the rationalization of the Protected Areas System. As such, gaps were identified in the various stand alone reports. While the current assessment and analysis was not intended to provide a design for such a rationalization. The combined results of the various reports lead to a number of conclusions (in no particular order):

- While Belize considers itself as having an extensive Protected Areas System, the reality is that most of that is for the management of resource use and extraction. With the current needs and expectations of the nation of Belize, such a classification of "Management" rather than "Conservation" per se, is probably a more realistic one. A revised "Protected Areas System" should focus on management of its territory for the use that it is best suited for.

- Using the results of the current analysis, it will be possible to re-designate areas for improved management. This management can be for Extractive uses, areas important for economic species, Tourism, Watershed, Soil, Historical Sites, Special Features etc. etc.

- Re-designing the Protected Areas System should lead to a merging of current protected areas reducing the current number of 115 "management units". In many cases they could be lumped. Examples are Marine Reserves where Spawning Aggregations overlap with other Marine Reserve categories, or the Maya Mountain Block which should be made into one Protected Area with different management zonations based on actual attributes rather than on ancient boundaries.

- The current 115 management units are managed by three departments with a totally different outlook but also with considerably overlap and gray areas. This inefficiency would best be resolved by creating one single agency responsible for all areas of natural resource management.

- The Protected Area Scoring system that was developed has shown to be a very useful tool in ranking existing protected areas according to importance based on a number of criteria. The prioritization of the Protected Areas system in this way provides a credible way to prioritize resource allocation, both human and financial. It also pinpoints shortcomings in management activities. In this system some obviously important protected areas come out very low due to the (virtual) absence of formalized management. Good examples of these are the bird sanctuaries. Improving the management should improve this situation. As such this scoring system can be a very important tool in re-evaluation performance of protected areas. In other words it would be a useful monitoring tool.

- The analysis shows many gaps outside currently existing protected areas. It will not be possible or even desirable to transfer all these lands into some protected area category. Many of the identified gaps have current uses and most of them will be on private land. Creating management regimes, in conjunction with private landowners

where needed, may in many cases be sufficient. The Belize Association of Private Protected Areas could potentially fill an important role in relieving GOB of some of the conservation "burden". In addition the Environmental Impact Assessment regulations as imposed by the Department of the Environment should be seen as an important tool in the zoning and sustainable use of private lands.

- Not all of the conservation features that were analyzed are currently covered by the national protected areas system. There are gaps containing whole ecosystems and there are gaps containing critical species (see Jabiru case study). These gaps can not necessarily be filled by traditional protected area initiatives but rather will need involvement of private landowners.

- The combination of the tools produced during this consultancy is useful in evaluating current protected areas, while giving indications for ecological optimization of these protected areas. Particularly the MARXAN analysis is helpful in defining the issues but further analysis is required for decisions on a site-specific level.

- Currently some of the top protected areas are Privately Managed Reserves. This illustrates the important role of Private Protected Areas Management. This role can be expanded in order to fill the gaps identified during this analysis.

- There appears to exist a need for community managed conservation areas (Community Baboon Sanctuary, Spanish Creek Wildlife Sanctuary, Mayflower National Park, Rio Blanco National Park etc.). The main desire of these communities is to have an area of "their own" which they can exploit for tourism and recreation or even resource extraction. Principal concern seems to be that many communities feel the need to save certain areas from the ravages of development. In essence, many of the existing or prospective private protected areas come forth out the same perceived need. Aguacate Lagoon near Spanish Lookout is a good example in this aspect. Many of these current and future initiatives may not be within areas currently identified priority areas. Nevertheless, such initiatives still need encouragement and support, but some new management category may need to be created to accommodate such initiatives.

- Biological Corridors can be identified in the MARXAN analysis. Many are also very weak as shown in the analysis. Largely these potential biological corridors traverse private land. Incentives for landowners to maintain these corridors are needed. Again, the Belize Association of Private Protected Areas could potentially assist GOB in this important endeavor.

- Some areas that were identified as a true or relative priority warrant investigation. Most likely, exact data for such area are lacking. Simple Rapid Ecological Assessments could determine the real importance of such areas. When combined with a social assessment, a best management regime could be identified as well in case the area did warrant some form of conservation management.

- The deep water ecosystems of Belize have never received any attention, consequently, little is known about them and the software could not map real areas of high importance. More data is clearly needed here. Potential sources of data include whale shark research and deep water sports fishermen. Otherwise there is considerable freedom here to position needed management areas.

- In general there is still a lack of data that would help conservation planning and management. There is an urgent need for a spatially enabled species database.

- Lack of (geo-referenced) data was an issue throughout the consultancy. While true over the board, it is particularly an issue in the marine sector. The amount of quality information that was made available for analysis was very unsatisfactory. Efforts should be undertaken to remedy this situation.

- Monitoring of biodiversity is still in its infancy, yet it will be important for the future management of conservation management areas. Sometimes monitoring is complex but sometimes it can be very simple. The apparent absence of monitoring data for bird nesting colonies was noted. Yet, this would be a relatively easy task. There exist good monitoring mechanisms for the marine realm but there is a need for a centralized monitoring database in the terrestrial realm.

- The "forestry case study" shows that currently Forest Reserves are not necessarily where the timber resources appear to be located. This first analysis indicates that possibly, some sections of National Parks, Wildlife Sanctuaries and Nature Reserve, may need to be re-zoned for the benefit of extractive use. Meanwhile, some sections of current Forest Reserves might be in need for a re-designation towards a management area with a stricter conservation mandate.

- Belize has two large, unified, blocks of intact habitat (Western Orange Walk and Chiquibul-Maya Mountains) which are likely to be the last strongholds for species that need large, undisturbed areas for their long term survival (see Jaguar Case Study), but even these areas may not be totally sufficient if biological corridors can not be maintained.

- The management of the Manatee, a very important species for Belizean conservation efforts, is better served by the current situation (as reflected in the "locked" MARXAN analysis and assuming proper management of all the protected areas involved) than by the solution suggested by the seeded MARXAN analysis. This example shows the need for an individual approach of conservation features rather than a "one size fits all" solution.

- Conservation targets for most marine conservation features were set very low, even below accepted international standards. It is advisable to review these targets and potentially revisit the analysis using such modified targets.