UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY

NATIONAL CAPACITY SELF-ASSESSMENT

Stock-Take

OF

BELIZE

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Acronyms

AFFBL	Association of Friends of Five Blues Lake
BAPPA	Belize Association of Private Protected Areas
BAHA	Belize Agriculture Health Authority
BAS	Belize Audubon Society
BCES	Belize Center for Environmental Studies
BECONGO	Belize Alliance of Conservation Non-Government Agencies
BELPO	Belize Institute of Environmental Law and Policy
BEMAMCCOR	Belize-Mexico Alliance for the Management of the Common Coastal Resources
BEST	Belize Enterprise for Sustainable Technology
BHA	Belize Hotel Association
BPOA	Barbados Plan of Action
BTB	Belize Tourist Board
BTFS	Belize Tropical Forest Studies
BWB	Birds Without Borders
CARICOM	Caribbean Community
Cartagena Convention	Protocol to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region
CBD	Convention on Biodiversity
CBO	Community Based Organization
CCA	Caribbean Conservation Association
CCAD	Central American Commission on Environment and Development
CEDARENA	Asociacion Centro de Derecho Ambiental y de los Recursos Naturales
CEDS	Conservation and Environmental Data System
CGCED	Caribbean Group for Cooperation in Economic Development
CHM	Clearing House Mechanism
CITES	Convention on International Trade of Endangered Species
CREI	Citrus Research and Education Institute
CREP	Caribbean Regional Environmental Programme
CZM	Coastal Zone Management
CZMAI	Coastal Zone Management Authority and Institute
DOE	Department of the Environment
EIA	Environmental Impact Assessment
FB	Fundacion Biosfera
FCD	Friends of Conservation and Development
FCG	Fundacion para la Conservacion de los Recursos Naturales y Ambiente en Guatemala

FMCN	Fondo Mexicano para la Conservacion de la Naturaleza
FON	Friends of Nature
FWC	Foundation for Wildlife Conservation
GIS	Geographical Information System
GOB	Government of Belize
IABIN	Inter-American Biodiversity Information Network
INBio	National Institute of Biodiversity (Costa Rica)
IUCN	International Union for the Conservation of Nature
KCB	Ke'Kechi' Council of Belize
LIC	Land Information Centre
MARFund	Mesoamerican Reef Fund
MARPOL	International Convention for the Prevention of Pollution from Ships
MBRS	Meso-American Barrier Reef System
MBC	Meso-American Biological Corridor
NMS	National Meteorological Service
MNRE	Ministry of Natural Resources and the Environment
MOA	Ministry of Agriculture and Fisheries
MPA	Marine Protected Area
NARMAP	Natural Resource Management Project of USAID
NCSA	National Capacity Self-Assessment
NEAC	National Environmental Appraisal Committee of the DOE
NEAP	National Environmental Action Plan
NEMO	National Emergency Management Organization
NGO	Non-government Organization
NICH	National Institute of Culture and History
NPAPSP	National Protected Areas Policy and System Plan
OIRSA	Organismo Internacional Regional de Sanidad Agropecuaria
OSPESCA	Organizacion del Sector Pesquero y Acuicola del Istmo Centroamericano
PA	Protected Area
PACT	Protected Areas Conservation Trust
PfB	Programme for Belize
PPS	Physical Planning Sector of the Lands and Survey Department
PREPAC	Plan Regional de Pesca y Aquicultura Continental
PROCICARIBE	Caribbean Agricultural Science and Technology Information Networking System
RA	Rainforest Alliance
RAMSAR	International Convention on Wetlands and Waterfowl
RARE	Rare Center for Tropical Conservation

RBCMA	Rio Bravo Conservation and Management Area
RedLAC	Network of Latin American and Caribbean Funds
SATIIM	Sarstoon Temash Institute for Indigenous Management
SDA	Special Development Area
SIAM	Sistema de Informacion Ambiental Mesoamericano
SIDS	Small Island Developing States
SINAC	National System of Conservation Areas (Costa Rica)
SPAW	Specially Protected Areas and Wildlife (Cartagena Convention)
SPECTE	Society for the Promotion of Environmental Conservation, Tourism and Education
SPEAR	Society for the Promotion of Education and Research
TAA	Toledo Alcaldes Association
TIDE	Toledo Institute for Development and Environment
TNC	The Nature Conservancy
TMCC	Toledo Maya Culture Council
TMWC	Toledo Maya Women's Council
TRIGOH	Tri-National Alliance for the Gulf of Honduras
UB	University of Belize
UB IMS	University of Belize Institute of Marine Studies
UB NRMP	University of Belize Natural Resource Management Program
UNCBD	United Nations Convention on Biological Diversity
UNCCC	United Nations Convention on Climate Change
UNCCD	United Nations Convention to Combat Desertification (Land Degradation)
UNCED	United Nations Conference on Environment and Development
UNDP GEF	United Nations Global Environmental
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund
YCT	Yax-che Conservation Trust

UNITED NATIONS CONVENTION ON BIOLOGICAL DIVERSITY

NATIONAL CAPACITY SELF-ASSESSMENT

STOCK-TAKE OF BELIZE

EXECUTIVE SUMMARY

This stock-take exercise was undertaken to identify the many contributions being made by Government agencies, non-government organizations (NGOs), community-based organizations (CBOs), institutions and industries to the preservation of biodiversity and conservation of ecosystems within Belize. Based on the results of this undertaking, Belize as a nation has made great strides toward achieving many of the key requirements set forth in the United Nations Convention on Biological Diversity (UNCBD) through the collective efforts of many dedicated people. However, there are many issues concerning the lack of an overall mechanism or network through which these many and varied efforts can be coordinated. There is a critical need to access and exchange information that will be addressed through the Clearing House Mechanism initiative. This stock-take is the beginning of a process to identify areas where great strides have been made and areas that have been neglected, understand capacity needs and better target funding in order to comply with commitments made under the UNCBD.

Belize is rich in biodiversity and blessed with many hectares of functional ecosystems, due in large part to our small population. However, we are now in a phase of our history when rapid development in several sectors of the economy, including agriculture, aquaculture and tourism, threaten our critical natural resources. As a nation, we are challenged by the effects of the expanding global economy, an excessive national debt, loss of public resources and the potential devaluation of our dollar. We lack many of the capacities available to more populated nations, such as a large tax base and greater pool of human resources. Despite these challenges and regarding the shortcomings in many areas, we have made significant progress.

Forty-one (41) pieces of legislation have been identified by this study that relate to biodiversity and ecosystem issues and that empower select GOB ministries and agencies to address these issues as necessary. Another thirty-two (32) pieces of legislation indirectly address these issues.

Fourteen (14) different GOB agencies have responsibilities directly related to the management of our biodiversity and ecosystem resources, and are charged with the responsibilities legislatively mandated. Belize has signed on in support of at least twenty-five (26) regional and international conventions and agreements relevant to biodiversity and ecosystem issues, such as the fifty-nine (59) requirements under sixteen (16) articles of the UNCBD. GOB agencies are challenged by excessive responsibilities, insufficient number of staff for tasks at hand, lack of appropriate equipment and transportation and operational budgets that are being cut rather than expanded. At least thirty-eight (38) local NGOs and CBOs and sixteen (16) international organizations are partners in working toward common goals and responsibilities.

Great opportunities exist in Belize whereby all stakeholders can become engaged in coordinated efforts to address our collective responsibilities to protect and promote sustainable use of our natural resources. These efforts must be youth focused to be sustainable and involve all segments of society in order that environmentally responsible behaviors become a part of our culture.

1. INTRODUCTION

The total national territory of Belize is 5,683,940 hectares (14,039,332 acres), including a land mass of 2,212,760 hectares (5465,517 acres of 38.93% of total) and territorial waters amounting to 1,865,300 hectares (4,607,291 acres or 32.82%), excluding the exclusive economic zone (EEZ). The landmass includes 1,061 small islands (cayes). Just over half of the land mass is covered with intact forests. A total of 1,053,016 hectares (2,600,950 acres), representing 25.8% of the landmass and the territorial sea has been placed under protected status (some private protected areas not recognized) (Meerman, 2005, in draft).

Most of this protected area, about 86%, is established within terrestrial areas. Wright, et al. (1959) identified 34 major vegetation types. Six life zones are identified using the Holdridge Life Zone System (Hartshorn et al 1984). These systems were combined by Brokaw and Iremonger (1994) to establish a vegetation classification system based on structure, water table, soil type and species composition, describing 49 ecological communities, including lands no longer dominated by natural vegetation. The Central American Ecosystems Mapping Project identified 87 distinct types of terrestrial and marine ecosystems in Belize, with the highest diversity occurring in the southern portion of the country that receives the most rainfall. Open and closed forest types of Belize, representing 36 types as identified by Brokaw and Iremonger (1994) make up about 67.4% of our terrestrial ecosystems (Program for Belize, 1995). Based on GIS assessments conducted between 1989 and 2004, Belize has about 232,750 hectares (574,893 acres) classified as “Broadleaf Forests”, 7,460 hectares (18,426 acres) of “Pine Forest” and 3,090 hectares (7,632 acres) of “Savannah”. A breakdown of the general land cover types from Meerman and Sabido (2001) giving total square kilometers of land surface and percentage of total land cover of Belize, and the percentage of the total forest area of Belize (15,865 km^2) is given in below in Table 1.

Table 1. Breakdown of General Land Cover in Belize (Meerman and Sabido, 2001)

GENERAL LAND COVER CATEGORY	$Km^2 \pm$	% $\pm$
Broadleaf Forest and Scrubland	11,803	51.4
Agriculture	3,835	16.7
Montane and Sub-montane Broadleaf Forest	2,296	10.0
Lowland Savanna and Pine Savanna	2,021	8.8
Mangrove and Littoral Forest	964	4.2
Dense Sub-montane Pine Forest	482	2.1
Water (not including streams and rivers)	482	2.1
Wetlands	436	1.9
Dense Lowland Pine Forests	321	1.4
Coastal Savanna and Salt Marsh	253	1.1
Urban	115	0.5

Thirty perennial river basins, ranging in size from small coastal creeks to large transnational watersheds such as Rio Hondo and Belize River, drain the landscape of Belize. Most of these originate in Maya Mountains, a geographical feature unique to the region and separate from the Guatemala highlands. All of the lower reaches of Belizean rivers experience tidal influences, with many forming salt-wedge estuaries during the dry season. Belize also has about forty-four inland and coastal lagoons, a few freshwater lakes formed by collapsed caverns and isolated old river meanders. Very little is known about groundwater resources.

The marine ecosystems if very rich, with ecosystem types include mangroves, sea grass beds and coral reefs. Belize marine ecosystems are characterized by high productivity and high biodiversity compared to the greater Caribbean area. The Mesoamerican Barrier Reef System (MBRS), the second longest in the world (217 km), was designated a World Heritage Site in 1996. Seventy-nine (79%) percent of the MBRS occurs in Belizean waters, but only sections of the reef actually occur in marine protected areas. This is a highly diverse system, with 594 genera representing 1,040 species of organisms reported from coastal Belize (based on a compilation of reports). However this figure does not include some of the extensive taxonomic work being conducted at the Smithsonian field station on Carrie Bow Caye.

The Belizean economy is strongly linked to the natural resource base, particularly in agriculture, fisheries and tourism industries that contribute to the bulk our earning potential. Rapid expansion in all of these sectors has occurred since the mid 1980s. A period of citrus expansion was followed by shrimp farm development in the coastal areas. Eco-tourism was a growing industry during the past twenty-five years, representing an estimated collective investment of US$350,000,000.00 country-wide (personal communication, Executive Director, BTIA). However, eco-tourism is threatened today by the rapid and poorly integrated cruise ship tourism and adventure tourism, both of which, if un-scaled to fit into environmental use restraints, may lead to the further demise of our highly threatened ecosystems and the accompanying rich biodiversity.

The GOB 2002 Poverty Assessment Report states that 33.5% of the total population was below the national poverty line in that year. Rural populations (52% of the total) were the most economically depressed. Poverty stressed populations place further stress on natural resources as the poor are forced to utilize marginally productive lands, including steep slopes and wetlands. Increased slash and burn agriculture, heavy dependency on local natural resources and lack of sustainable harvesting strategies results in the overexploitation of forests and fisheries. Unemployment, under employment, a heavy dependence on imported goods, small internal markets and dependence on a few cash crops (citrus, sugar, bananas, papaya, pond- raised shrimp) targeting unstable foreign markets present serious challenges to creating a sustainable economy.

The 2000 Cotonou Agreement that Belize has signed with the European Union (EU) through the Regional Economic Partnership Agreement provides access to preferential markets in the EU until 2007. Prior to expiration of the Agreement, a new agreement will be designed. Bananas and sugar may not retain access to preferential markets, but citrus, shrimp and papaya may still enjoy those markets. The EU will likely require some concessions from Belize, including reduced import duties (personal communication with the Senior Trade Economist, Ministry of Finance). Lower earnings from major cash crops and competition of local goods with lower priced EU imports may further depress the economy.

The national debt has risen from a few hundred million in 1998 to around BZ 2.2 billion dollars today in a country of an estimated seventy-five thousand taxpayers (personal communication, Commissioner of Income Tax). Not being able to make debt payments, the Government has liquidated public assets, reducing money-earning capacities for the public sector. The International Monetary Fund is threatening to devalue the dollar by 2006. Under these conditions of vulnerability there is pressure to further exploit the nation's biodiversity and ecosystem resources.

In 1987, the Governing Council of the United Nations Environmental Programme (UNEP) called for the formation of a group of experts to harmonize the growing number of conventions addressing issues related to biological diversity. This ultimately led to the creation of the UN Convention on Biological Diversity (UNCBD) adopted at Rio de Janeiro, 1992. This convention is based on the premise that biological diversity should be maintained in a sustainable manner and that failure to do so may result in local erosion of biodiversity, compromising ecosystem functions. Countries that signed their support for the Convention have committed to achieving three objectives, those being (1) conservation and protection of biological diversity, (2) identifying and inventorying the countries biodiversity resources and (3) sustainable use and fair and equitable sharing of benefits derived from the use of those resources. In compliance with its commitments, Belize submitted the Belize Biodiversity Strategy and the Belize Biodiversity Action Plan 1998-2003" in 1998 (Jacobs and Castaneda 1998, eds.).

Belize has signed on to many international conventions that pertain to regional and global environmental concerns (Table 2). The long list indicates the importance of environmental protection measures that reach beyond national borders. Goals, objectives and strategies of many of these regional and international conventions complement the requirements of the UNCBD. National focal points and nominees are listed in Table 3.

This stock-taking exercise is undertaken to identify the current on-going activities in Belize that support the requirements of the UNCBD and to identify what has or has not been done to achieve those requirements. It further seeks to support development of the National Capacity Self-Assessment Report on the UNCBD that will explore possible linkages and common goals and objectives among the UNCBD, the UN Framework Convention on Climate Change (UNFCCC)

and the UN Convention to Combat Desertification/Drought (Land Degradation) (UNCCD). Results of this effort will be to identify those areas were potential funding may best be invested to generate the kind of results needed to effectively address requirements of these conventions.

2. SUMMARY STAKEHOLDER ANALYSIS

2.1 **Government Agencies and Legislative Capacities**

A compendium of the environmental legislation of Belize by McCalla (1995) and the Environmental Law Manual (CEDARENA) by Alegria (2003) identifies the specific Acts and Regulations of interest to environmental issues. The legislation represents a wide range of legally addressed subject areas and assigns environmental responsibilities to many different ministries and institutions. This primary environmental legislation (Acts and Regulations), listed in Table 4 specifically refers to biodiversity and ecosystem conservation, resource use guidelines, pollution control and other issues significant to responsibilities listed in the CBD. Those pieces of legislation not listed include statutory instruments that established specific protected areas or that establish specific management criteria for a protected area.

Many pieces of legislation indirectly address biodiversity preservation and ecosystem conservation. These acts and regulations focus on pollution control, public health, land use, housing, public utilities and related areas. Table 5 lists many of these acts and regulations.

Table 2. International Conventions, Agreements and Conventions to which Belize is a Party.

United Nations Convention on Biological Diversity (ratified Dec. 30, 1993)
Convention for the Conservation of Biodiversity and Protection of Priority Areas in Central America (ratified June 5, 1992)
The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (The Cartagena Convention) and the **Protocol Concerning the Cooperation in Combating Oil Spills in the Wider Caribbean Region** (ratified Dec. 11, 1997)
Convention on the Conservation of Migratory Species of Wild Animals, Bonn (The Migratory Species Convention)
Convention on Nature Protection and Wildlife Preservation in Western Hemisphere (The Western Hemisphere Convention)
Convention Concerning the Protection of the World Cultural and Natural Heritage (The World Heritage Convention) (ratified Nov. 6, 1990)
The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR Convention) (acceded Feb. 26, 1998)
The United Nations Educational Scientific and Cultural Organization's UNESCO's Man and the Biosphere (MAB) Programme 1971 Biosphere Reserves
The Convention International Trade of Endangered Species of Wild Flora and Fauna (CITES) (ratified Aug. 19, 1986)
Inter American Convention for the Protection and Conservation of Sea Turtles
United Nations Convention to Combat Desertification (ratified July 14, 1998)
Convention on the Inter-Regional Organization for Plant and Animal Health (OIRSA)
International Plant Protection Convention (acceded May 14, 1987)
United Nations Framework Convention of Climate Change (ratified Oct. 31, 1994)
Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Ozone Depleting Substances (acceded Sept. 7, 1997)
Central American Commission on Environment and Development (CCAD) and the Central American Alliance for Sustainable Development (ALIDES) of 1994 (ratified Dec. 12, 2000)
Belize/ Mexico Bilateral Agreement (signed September 1991)
UN Convention of the Laws of the Sea (ratified Aug. 13, 1983)
1992 Protocol to the International Convention on Civil Liability for Oil Pollution Damage (1972) and 1992 Protocol to the Convention Establishing the Fund for Compensation for Oil Pollution (acceded July 1, 1991)
International Convention for the Prevention of Pollution from Ships and the 1978 Protocol MARPOL (ratified Aug. 26, 1995)
Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal (BASEL) (acceded Apr. 21, 1997)
Convention on Persistent Organic Pollutants (POPs) (signed 2002)
Convention on the Prohibition of Development and Stockpiling of Biological and Toxic Weapons, and on their Destruction (acceded Dec. 11, 1997)
Convention Concerning the Protection of Workers from Ionizing Radiations (ratified Dec. 15, 1983)

Table 3. National Focal Points for International Conventions.

CONVENTION	FOCAL POINT
Convention on Biological Diversity (CBD)	Focal Point – Osmany Salas (Chief Forest Officer) Alternate – Ivis Chan (Forest Officer-Biodiversity)
Biodiversity Clearing House Mechanism (CBD)	Focal Point – Ivis Chan (Forest Officer-Biodiver.)
Cartagena Protocol on Biosafety (CBD)	Focal Point – Dr. Michael DeShield (BAHA)
Biosafety Clearing House (CBD)	Focal Point – Dr. Michael DeShield (BAHA)
Inter-American Biodiversity Information Network (IABIN)	Focal Point – Osmany Salas (Chief Forest Officer) Alternate – Ivis Chan (Forest Officer-Biodiversity)
Global Taxonomy Initiative (CBD)	Focal Point – Lizandro Quiroz (Forest Officer-Wildlife)
Global Strategy for Plant Conservation	Focal Point – Gumercindo Baeza (Forest Officer-Forest Management)
United Nations Convention to Combat Desertification (UNCCD)	Focal Point – Ramon Frutos (Meteorology Department)
Convention on Wetlands of International Importance (RAMSAR Convention)	Focal Point – Natalie Rosado (Forest Officer-Protected Areas)
Convention on the International Trade in Endangered Species (CITES)	Focal Point – Lizandro Quiroz (Forest Officer-Wildlife)
Convention for the Protection and Conservation of Sea Turtles	Focal Point- Isaias Majil (Fisheries Department) Turtle Scientist- James Azueta (Fisheries Department)

Table 4. Primary Acts and Regulations Relevant to Biodiversity Issues

NAME/DESCRIPTION	NO. OF ACT/INSTRUMENT	EMPOWERED AGENCY
Environmental Protection Act	Cap. 328, revised 2003	Department of the Environment
Environmental Tax Act	Cap. 64, revised 2003	Minister of Investment and Trade
Land Utilization Act	Cap. 188, revised 2003	Lands and Surveys Department
Belize Land Development Authority Act	Cap. 181, revised 2000	Lands and Surveys Department
National Lands Act,	Cap. 191, revised 2003	Lands and Surveys Department
Forest Act	Cap. 213, revised 2003	Forest Department
Private Forest (Conservation) Act	Cap. 217, revised 2000	Forest Department
Forest Fire Protection Act	Cap. 212, revised 2000	Forest Department
Wildlife Protection Act	Cap. 220, revised 2003	Forest Department
National Parks System Act	Cap. 220, revised 2003	Forest Department
Fisheries Act	Cap. 210, revised 2003	Fisheries Department
National Institute of Culture and History Act	Cap. 331, revised 2000	Nat.Institute of Culture and History
Ancient Monuments and Antiquities Act	Cap. 330, revised 2000	Nat.Institute of Culture and History

Agricultural Fires Act	Cap. 204, revised 2000	Agriculture Depart.
Pesticide Control Act	Cap. 216, revised 2003	Agriculture Depart.
Belize Agricultural Health Authority Act	Cap. 211, revised 2003	BAHA
Quarantine Act	Cap. 41, revised 2003	BAHA
Protection of New Plant Varieties Act	Cap. 255, revised 2003	BAHA
Maritime Areas Act	Cap. 11, revised 2003	Minister of Foreign Affairs
Protected Areas Conservation Trust Act	Cap. 218, revised 2003	PACT
Mines and Minerals Act	Cap. 226, revised 2003	Geology and Petrol Department
Petroleum Act	Cap. 225, revised 2003	Geology and Petrol Department
Public Health Act	Cap. 40, revised 2003	Ministry of Health
Solid Waste Management Authority Act	Cap. 224, revised 2003	Solid Waste Mgt. Authority
Belize National Tourism Council Act	Cap. 276, revised 2003	Belize National Tourism Council
Non-Government Organizations Act	Cap. 315, revised 2003	Registrar of NGOs
Macal River Hydroelectric Development Act	Cap. 285, revised 2003	Public Utilities Com./MNRE
Water Industry Act	Cap. 222, revised 2003	*Water and Sewage Authority

*organization no longer in existence

Table 5. Primary Acts and Regulations Relevant to Biodiversity Issues.

Public Health Act (Ch. 13, Revised Laws BZ, 1980-90)	Land Acquisition (Public Purposes) (Amendment) Act **(Act No. 16 of 1992)**
Public Health Act Amendment (Act No. 7 of 1983)	**Aliens Landholding Act** (Act No. 31 of 1973)
Water and Sewerage Act (Act No. 16 of 1970)	**Aliens Landholding (Designated Area) (Offshore Islands)** Order (SI No. 111 of 1992)
Water and Sewerage (Amendment) Act (Act No. 12 of 1991)	**Housing and Town Planning Act** (Ch. 148)
Nuisance Act (Act No. 20 of 1917)	**Town and Country Planning Regulations** (SI No. 46 of 1949)
Solid Waste Management Authority Act (Act No. 13 of 1991)	**Crown Lands Rules** (Chap 147)
Belize Port Authority Act (Act No. 2 of 1976)	**Belize Land Development Authority Ordinance** (Act 29 of 1980)
Maritime Areas Act (Act No. 1 of 1992)	**Registered Land (Amendment) Act** (Act No. 30 of 1988)
Port Authority Regulations (SI No. 32 of 1980)	**Lands Reserves (Other than Indian and Carib Reservations) Regulations (**SI NO. 81 of 1962)
Oil Mining Regulations (SI No. 114 of 1989)	**Land Utilization (Cayo District Special Development Area) Regulations (**SI No. 90 of 1992)
Petroleum Regulations (SI No. 112 of 1992)	**Land Utilization (Manatee West Special Development Area) Regulations** (SI No. 142 of 1992)
Pollution Regulations (SI No. 56 of 1996)	**Land Utilization (Monkey River Special Development Area) Regulations** (SI No. 152 of 1991)

Pesticides Control Order (SI No 100 of 1995)	**Land Utilization (Burrell Boom/Hattieville/Ladyville Special Devel. Area) Regulations** (SI No. 164 of 1991)
Registered and Restricted Pesticides (Registration) Regulations (SI No. 77 of 1995)	**Land Utilization (Corozal District East Special Development Area) Regulations** (SI No. 163 of 1991)
Registered and Restricted Pesticides (Manufacture, Import and Sale) Regulations (SI No. 8 of 1989)	**Land Utilization (Corozal District East Special Development Area) Regulations** (SI No. 3 of 1994)
Registered and Restricted Pesticides (Uses, Restrictions and Precautions) Regulations (SI No. 77 of 1995)	**Land Utilization (Belize District North East Special Development Area) Regulations** (SI No. 1 of 1994)
Registered and Restricted Pesticides (Mfg., Import and Sale) (Amendment) Regulations (SI No. 30 of 1996)	**Land Utilization (Orange Walk District East Special Development Area) Regulations** (SI No. 2 of 1994)
Agriculture Fires Act (Act No. 15 of 1958)	**Land Utilization (Mango Creek Special Development Area) Regulations** (SI No. 4 of 1994)

Many different ministries, agencies and other government institutions have responsibilities over and make decisions involving (directly and indirectly) biodiversity and ecosystem conservation and the sustainable use of critical natural resources (land, trees, soil, wildlife and water). Several long-established key Government agencies (i.e. Forest Department, Fisheries Department, Lands and Surveys Department) have evolved over time to address the increasing biodiversity and resource use issues associated with a rapidly developing country. Newer agencies have emerged to address more specific issues and tasks, examples including Lands Information Centre (LIC), Department of the Environment (DOE), Land Utilization Authority (LUA) and Protected Areas Conservation Trust (PACT). Collectively these agencies permit and regulate extraction, resource use activities and discharge allowance, require assessment and monitoring efforts and manage protected areas. Table 6 gives a list of those Government agencies that have direct and indirect involvement in biodiversity and ecosystem conservation issues.

Table 6. Government of Belize Agencies with Primary (direct) or Secondary (indirect) Involvement in Biodiversity and Ecosystem Conservation and Management.

PRIMARY AGENCIES	
Ministry of Natural Resources and the Environment	
Forest Department	Manage forest resources and terrestrial and marine island PAs
Meteorology Department	Monitor climatic and weather patterns, assist in disaster response
Geology and Petroleum Department	Oversee extraction of mineral and petroleum resources
Lands and Surveys Department	Maintain land survey information of the Nation
Land Utilization Authority	Presides over subdivision development

Lands Information Center	Maintains GIS and mapping data for the country
Department of the Environment	Presides over the EIA process, addresses environmental issues
Ministry of Agriculture and Fisheries	
Fisheries Department	Oversees management of fisheries resources and eight MPAs
Coastal Zone Management Authority and Institute	Oversees costal planning, monitoring and research
Agriculture Department	Oversees agricultural sector of Belize and extension services
Ministry of Tourism	Oversees developing tourist sector in Belize
QUASI-GOVERNMENT ORGANIZATIONS	
Protected Areas Conservation Trust	Manages environmental funds generated from tourist fees
Belize Agriculture Health Authority	Addresses plant and animal health issues and biosafety concerns
National Institute of Culture and History	Oversees national museum, culture and historical preservation
Institute of Archaeology	Manages eleven archaeological reserves and research in Belize
Belize Tourist Board	Promotes tourism development and offers training courses
National Emergency Management Organization	Manages emergency situations during disasters
SECONDARY AGENCIES	
Ministry of Education, Youth, Sports and Culture	Oversees public education system and youth issues
Ministry of Economic Development	Promotes development activities within the country
Ministry of Health	Involved in public and environmental health issues, outreach
Ministry of Public Service	Responsible for policy and human resource development
Ministry of Rural Development	Involved with water, sewage, other issues in rural communities
Ministry of Public Works	Oversees road construction and other public works projects

Often responsibilities overlap and areas of jurisdiction are sometimes not clear. Legislation does not always spell out exact responsibilities and also many agencies are moved from one ministry to another following political elections or Cabinet reshuffling. Many Government departments are currently undergoing reviews, upgrading policies and compiling strategic plans. Sometimes agency activities are restricted due to lack of resources, personnel and transportation. Political interference, poor co-management regimes and lack of public awareness programs were cited as a deterrent to agency effectiveness in the recent draft of the Forest Department Strategic Plan 2005-2010 (Forest Department, MNRE, 2005).

The major agencies involved in the management of natural resources and biodiversity are described below. Three agencies, including the Forest Department, the Fisheries Department and the Institute of Archaeology, are involved in the management of protected areas. The Forest Department, the Fisheries Department and the Department of the Environment are charged with

enforcing legislation that protects the biodiversity and ecosystems of Belize. Details of the structure and capacities of these key agencies are provided.

2.1.1. Ministry of Natural Resources and the Environment

2.1.1.1 Forest Department

Structure and Responsibilities

The Forest Department, within the Ministry of Natural Resources and the Environment (MNRE), once dealt only with timber management and extraction. Today, however, its responsibilities include wildlife, biodiversity, watershed management, protected areas management, non-timber forest products, sustainable forest management, law enforcement, forest fire management, forest health and international partnerships.

The Forest Department currently manages forty-nine PAs, representing a total of 600,386 hectares (1,482,945 acres). These include seventeen forest reserves, sixteen national parks, four nature reserves, seven wildlife sanctuaries and five natural monuments. The Department is also responsible for implementing convention agreements under UNCBD, the Convention of Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR) and Central American Commission on Environment and Development (CCAD). The Forest Department also shares responsibility with the Fisheries Department for Convention on International Trade in Endangered Species (CITES). It is a key agency involved in biodiversity protection and ecosystem conservation and management.

The Chief Forest Officer is the UNCBD National Focal Point (UNCBD-NFP). The Biodiversity Sub-programme is responsible for the day-to-day management of the commitments of the convention. Other trans-boundary and international agreements and conventions in which the Forest Department is involved include the Mesoamerican Biological Corridor Project (MBC), the Cartagena Protocol, Sistema Informacion Ambiental Mesoamericano (SIAM), Caribbean Regional Environmental Programme (CREP) and the Inter-American Biodiversity Information Network (IABIN).

The Forest Department was structured into Divisions up until 2002. A Forest Officer presided over each Division and controlled an independent budget. The Conservation Division was created by NARMAP in the late 1990s and was presided over by a Conservation Officer. A Principal Forest Officer was over the Forest Officer and the Chief Forest Officer was the head of the Department. In 2002 the Department was restructured into a programmatic system and the Principal Forest Officer position was removed. Programmatic areas include Sustainable Forest Management, Protected Areas Management, Forest Revenue, Wildlife, Biodiversity and Law Enforcement. Currently there is 38 forestry staff, including administrators, who run eight stations around the country (Table 7). The table also lists the job positions within the Forest Department and education and experience qualifications.

Table 7. Information on the Staffing of Forest Department.

FOREST STATIONS	STAFF*
Orange Walk	1
Belize City	1
Belmopan (main office)	8
San Ignacio	3
Douglas D'Silva	2
Melinda	2
Savannah	2
Machaca	3

* Not including central administrators

POSITIONS	QUALIFICATIONS
Chief Forest Officer	Masters degree with experience
Forest Officer	Bachelor degree
Forester	Associate degree
Conservation Officer	Associate degree
Forest Ranger	High school diploma, experience
Forest Guard	High school diploma
Support Staff**	

** mechanic, driver, clerk

Recent and On-going Activities

The Strategic Plan is being finalized in June 2005 that blends together the two management structures. The new structure, if approved, may include Forest Resource Management, Forest Health, Protected Areas, Biodiversity, Forest Revenue, Law Enforcement and National and International Partnerships.

The Forest Department has been involved in educational outreach and awareness projects throughout the years. Efforts have not been consistent over the past few years, but there is interest in promoting this important aspect of conservation. The Department recently helped

sponsor “Natural Resources and the Environmental Week” and Earth Day celebrations in Belize City and at Guanacaste National Park.

Illegal logging, hunting, orchid and xate palm harvesting by Guatemalans and mangrove clearing are major problems in Belize. Laws are in place but are not effectively enforced. Most stations have very small staff that must cover extensive areas and are challenged with many different responsibilities (patrol, enforcement, operating check points, prosecution). Often vehicles are not available for staff to maintain a presence in the field. It is difficult to catch people in the act and the Forest Department is heavily depended on reports by citizens, NGOs and CBOs. Prosecution is also a challenge, requiring time out of the field. Also, political interference often prevents successful prosecution of cases.

As land use patterns change from traditional timber extraction to the promotion of global needs, including preservation of biodiversity, conservation of ecosystem goods and services, and the demands of growing tourism, the Forest Department is restructuring itself to become an up-dated and efficient and economically sustainable agency capable of addressing ecological and economic needs within a changing world. This ambition is reflected in the Forest Department Strategic Plan Strategic Result No. 1: Forests sustainably managed to maintain and improve their ecological functions and to contribute significantly to the local and national economy. The Operational Work Plan contains strategic activities and tasks that address all of the principal requirements of the UNCBD.

The Forest Department is involved with many different agencies and partners. The Department works closely with the Fisheries Department issues involving coastal and marine protected areas and mangroves. The CHM will involve the Department with many different agencies interested in information sharing. The Toledo Healthy Forest Initiative involves several local NGOs, CBOs and village government groups. The Chiquibul Forest Management Initiative involves Friends for Conservation and Development (FCD) through their Critical Ecosystems Partnership Fund. The Forest Department has partnerships with PfB and the private sector (long term harvest permits). They have signed memorandums of understanding for the management of the Las Cuevas Field Station and with SAGE for forest monitoring in the Toledo District.

A recent study, funded by MBRS and PACT, has been compiled that describes legislative, institutional and management strategies for protected areas management in Belize in compliance with the NPAPSP (Homer, 2005). The document proposes two different governance options for

developing a more coordinated PA management system that ensures a collaborative effort among the three GOB agencies charged with managing PAs within Belize (Forest Department, Fisheries Department and Institute of Archaeology). A decision will be made within two months as to which plan will be accepted. It is anticipated that after an 18 to 24 month planning period, the GOB agencies will then convene and a five-year plan will be devised whereby these large-scale structural changes will be implemented in stages (personal communication, Chief Forest Officer).

Constraints and Challenges

The Forest Department budget is being cut back each year, further aggravating efforts to conduct the job as required where there is already inadequate equipment and vehicles. As technology advances, data collection and analysis is required to evaluate management plan effectiveness and co-management becomes more important in PA management, more trained specialists are needed.

Job positions that are needed include a GIS Specialists, Forest Management Specialist and Project Managers. The services of an Environmental Economist and Policy Analyst can be used on a project basis. The Department is compensating for reduced budgets by seeking project support. PACT is providing US$430,000 over a three-year period for institutional strengthening.

2.1.1.2. Department of the Environment

Structure and Responsibilities

The Department of the Environment (DOE) is a key regulatory agency that is responsible for protecting the environment from inappropriate development. It was founded in September 1989, became a functioning agency in 1991 and was legally established by the Environmental Protection Act in 1992. The agency is charged with "…fostering the prudent use and proper management of the natural resources of Belize, the preservation, protection and improvement of the environment and the control of pollution…" as identified in its mission statement.

Currently, DOE is focused on three areas, Environmental Compliance Monitoring, Public Awareness/Environmental Education, and Project Evaluation. The Department has ten staff members divided among five different job positions (Table 8). The DOE has sponsored three symposia on the State of the Belize Environment over the past fourteen years.

Table 8. Staff Positions and Qualifications for the Department of the Environment.

POSITIONS	QUALIFICATIONS	NO. STAFF
Chief Environmental Officer	Masters degree with experience	1
Senior Environmental Officer	Masters degree with experience	1
Environmental Officer	Bachelor degree	3
Environmental Technician	Associate degree	4
Data Manager	High school diploma, experience	1

Main responsibilities of DOE include:

- foster appreciation for the natural environment and the importance of a healthy environment for a healthy economy
- foster inter-ministerial cooperation in the wise use and effective management of natural resources, control of pollution and ecological restoration
- encourage Government and non-government agencies to include sustainable development as a mandate
- identify major environmental problems facing Belize and identify solutions

- work closely with Government agencies and developers to implement EIA requirements
- develop an effective compliance monitoring programme
- coordinating activities related to waste discharge
- control types, volumes, constituents and effects of wastes, emissions, discharges, deposits or other sources of dangerous substances entering the environment
- issue discharge licenses for activities likely to create pollution
- investigate the nature, cause and extent of pollution
- make recommendations to control pollution originating from an industry or other source
- conduct, promote and coordinate research relevant to pollution
- register all wastes, emissions, discharges and deposits that endanger the environment
- conduct investigations to ensure that the EPA is being followed
- continue developing strong intra/inter-ministerial and inter-sectoral cooperation
- work closely with local, regional and international organizations on environmental issues
- develop new regulations and standards for prevention and control of pollution
- ensure protection and rational use of natural resources
- determine when it is necessary to conduct an EIA
- advise Government on the formation of policies related to natural resource and environmental management
- highlight value of wetlands and promote appropriate management approaches
- assist Forest Department in promoting balanced forestry management programmes
- monitor use trends for natural resources and environmental impacts caused
- promote inclusion of ecological concerns in economic development processes
- provide public information and education concerning the importance of protecting and improving the environment

One of the primary functions and the first line of defense against inappropriate development schemes and the protection of environmentally sensitive areas from development pressures is the implementation of the environmental impact assessment (EIA) process. The National Environmental Appraisal Committee (NEAC) is charged with reviewing all EIAs, advising DOE of the approval, modification or denial of the EIA and advising the DOE where a public hearing is desirable or necessary. The NEAC is composed of the Chief Environmental Officer,

Commissioner of Lands, Chief Forest Officer, Fisheries Administrator, Chief Hydrologists, Director of Geology and Petroleum, Chief Meteorologist and an appropriate NGO representative. As with other regulatory processes, political interference often prevents the DOE from effectively applying the EIA process. DOE maintains an environmental library that contains all of the EIAs conducted in the country. All of the more recent documents are available electronically.

2.1.1.3 Protected Areas Conservation Trust

Responsibilities

Protected Areas Conservation Trust Act No. 15 of 1995 was passed and the Protected Areas Conservation Trust (PACT) was established in June of 1996. PACT is an environmental trust fund of US$2,500,000.00 and an endowment fund of US$1,000,000.00 designed to enable and empower conservation, preservation, enhancement and management of Belize's natural resources and protected areas while supporting national development goals. PACT efforts are supportive and essential to meeting the requirements of the UNCBD, either through direct conservation or indirectly through offering alternative livelihoods to stakeholders. Some of the objectives outlined in the Strategic Plan 2005 to 2010 Protected Areas Conservation Trust (Young et al., 2004) include:

- facilitate collaboration and coordination among stakeholders
- promote awareness and education
- build capacity for conservation
- support research and information sharing
- facilitate community and livelihood development

Recent and On-going Activities

PACT is funding the Forest Department to improve PA management through institutional strengthening of the Biodiversity Management Program. PACT has awarded over 50 grants totaling over BZ$2.5 million. The Fisheries Department is being funded to access Queen Conch populations in marine reserves. The MNREI was funded to develop a master user plan for the Mountain Pine Ridge Forest Reserve. Friends of Nature (FON), a Placencia-based NGO, is being supported to manage the Gladden Spit and Silk Cayes Marine Reserve. The UB Natural Resource Management Program (UB NRMP) is being funded to develop and equip a four year degree program and UB Institute of Marine Studies (UB IMS) is being funded to develop stronger research capacity at the Calabash Caye Marine Station by the Oak Foundation and PACT. PACT also supports many students working on degree programs both within UB and at universities abroad. PACT is a member of the Network of Latin American and Caribbean Funds (RedLAC) that provides opportunities regional coordination. For several years PACT has worked with Fondo Mexicano para la Conservacion de la Naturaleza (FMCN), Fundacion para la Conservacion de los Recursos Naturales y Ambiente en Guatemala (FCG) and Fundacion Biosfera (FB) of Honduras to incorporate the Mesoamerican Reef Fund (MARFund) as a regional initiative to provide for:

- long-term financial sustainability for natural resource management and conservations in the Mesoamerican Reef System
- strengthen alliance among participating funds guided by eco-regional conservation priorities
- promote coordination among donor and international organizations to target common goals and strategic objectives in the eco-region

2.1.1.4. Lands and Surveys Department

Structure and Responsibilities

The Lands and Surveys Department is an important agency in effectively implementing sustainable development that best utilizes available land resources. The mission statement contains the commitment to land issues to achieve "…its highest and best use for the socio-

economic benefit and sustainable development of Belize." Central to this process is effective land use planning and land information management. Listed among the Department's objectives are four areas that have direct impact on biodiversity protection and ecosystem conservation in this country. Those include:

- protecting and allocating national lands
- improving urban and rural planning
- producing accurate and current land information, products and services
- facilitating land reform to assist in poverty alleviation

The Land Utilization Authority is made up of a board that includes several GOB officers and NGO representatives. DOE is not represented. The main responsibility of the Authority is to monitor the subdivision of lands.

The Physical Planning Section (PPS) focuses on providing information for the best utilization of lands, with a statutory body set up to recommend and approve development projects. PPS also guides development through the Special Development Area (SDA) Program, whereby zoning plans for select SDAs are prepared that prescribe sustainable development and appropriate land use (agriculture, residential, tourism, commercial, wildlife reserve, environmental protection). The PPS assists the LUA in monitoring SDAs.

The Land Information Centre (LIC) was established in 1992 through the efforts of the Government of Belize and the British Overseas Development Administration. This agency has the hardware, software and technical capacity among its staff to maintain high standards of digital special data, conduct in-depth analysis of that data and to make that information available to stakeholders, both within Government and the public and private sectors. LIC serves as an environmental information repository housed in two information systems:

- the Geographical Information System (GIS)- all forms of geographically referenced information captured on electronic maps and
- the Conservation and Environmental Data Systems (CEDS) - set up as a data sharing network for all stakeholders involved in biodiversity assessment and protection, environmental assessment and ecosystem conservation.

The Land Management Project is a continuing initiative begun in 2003 and funded by the Inter-American Development Bank and the Government of Belize. The main objectives include:

- developing a National Land Policy Framework for private and public sector development based on enhanced land security
- developing a single land registry system
- building land use planning capacity at the local, national and regional levels
- supporting land policy reform

Recent and On-going Activities

One of the most critical needs is for a national land use policy that is based on appropriate and environmentally sensitive land use practices. This is a basic need that affects all areas of biodiversity preservation and ecosystem conservation. In 2003, the GOB appointed a National Lands Advisory Committee with the mandate to develop a comprehensive land policy, but no draft document is forthcoming. Although there is no national land use policy in effect, the National Planning Act has been drafted and is in the final stages of completion. Three regional public forms will be held in Belize in June and July, 2005. This draft Act contemplates the involvement of DOE and other environmental agencies taking the lead in ensuring that land use planning adhere to environmental guidelines (personal communication, Community Monitoring Liaison Officer, Land Management Program).

2.1.2. Ministry of Agriculture and Fisheries

2.1.2.1. Fisheries Department

Structure and Responsibilities

The Fisheries Department is charged with management of Belize's commercial and non-commercial marine resources, regulating extraction of those resources and overseeing the use of Belize's marine ecosystems. Based on the mission statement, the Fisheries Department strives to "provide the country and the people of Belize with the best possible management of aquatic and fisheries resources with a view to optimize the present and future benefits through efficient and

sustainable management." The Department also manages eight marine reserves, six of these having co-management agreements between the Fisheries Department and community-based organizations. It is also responsible for managing eleven fish spawning aggregate sites. For some of these marine protected areas, the Forest Department oversees terrestrial and mangrove components and the Fisheries Department oversees marine areas and marine species. It is also responsible for issuing research and bio-prospecting permits and licenses.

The Fisheries Department is unique in that it engages communities and other key stakeholders in a series of discussions on any site *prior* to its declaration as a marine reserve. Such consultations can last for up to three years and requires the development of a management plan that leads to the formal declaration of the marine reserve. Local advisory committees are also set up to assist in the management of the site.

The Fisheries Department has sixty-four staff and is divided into four sections, the Administrative Section and three technical sections. The Capture Fisheries Management Section is overseen by a Fisheries Officer and charged with monitoring of the fisheries, conduct research where needed, enforce fisheries legislation and provide extension services to fishers and the general public. The Ecosystem Management Section, also overseen by a Fisheries Officer, is responsible for ecological monitoring, reef monitoring, water quality assessment and the management of marine protected areas (MPAs). With the exception of Gladden Spit/Silk Cayes Marine Reserve, co-managed by FON, and Port Honduras Marine Reserve, where TIDE is involved, the Ecological Management Section staff conducts the day-to-day management of the protected areas. Six marine reserves have basic field stations with staff, including a marine reserve Manager and one or more Rangers, dedicated to each station. The Aquaculture and Inland Fisheries Section is staffed by an Inland Fisheries Technician, an Aquaculture Development Officer and an Aquaculture Technician. Table 9 lists the offices and stations and gives the staff positions for the Fisheries Department.

Table 9. Information on the Fisheries Department.

FISHERIES OFFICES
Belize City Office
Punta Negra Office
MPA FIELD STATIONS
Bacalar Chico MR
Hol Chan MR
Caye Caulker MR
Glover's Reef MR
Southwater Caye MR
Sapodilla Caye MR

POSITIONS	QUALIFICATIONS
Fisheries Administrator	M.Sc. degree
Senior Fisheries Officer	M.Sc. degree
Fisheries Officer	B.Sc. degree
Inland Fisheries Technician	B.Sc. degree
Aquaculture Devel. Technician	B.Sc. degree
Marine Biologist	B.Sc. degree
Assistant Fisheries Officer	Associate degree
Fisheries Inspector	Associate degree
Marine Reserve Manager	Associate degree
Ranger	High school diploma
Captain	Many years of experience
Assistant Captain	Experience

Recent and On-going Activities

Each section of the Fisheries Department is involved in environmental education and outreach activities. Capture Fisheries Management has the strongest program, reaching as much as 80% of the primary schools within Belize. Aquaculture training workshops are offered by the Aquaculture and Inland Fisheries Section. All of the staffed MPAs have on-going environmental education programs for visitors and adjacent communities.

The Fisheries Department is involved with many trans-boundary and regional initiatives, including MBRS, PREPAC, TRIGOH and BEMAMCCOR. The Department is responsible for commitments under the UNCBD, MARPOL and the Inter-American Convention for the Protection and Conservation of Sea Turtles. It is involved in the Plan Regional de Pesca y Aquicultura Continental (PREPAC) that is focused on promoting sustainable fisheries management and aquaculture in Central America (Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama), public awareness and ecological issues. The project is funded by the Central America-Republic of China Commission through the Organizacion del Sector Pesquero y Acuicola del Istmo Centroamericano (OSPESCA) and implemented by the Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA). The project seeks to enhance knowledge of the production potential of continental waters and formulate a regional

management plan that allows for rational and sustainable use of fisheries resources and supports the development and implementation of legislation and strategies targeting the regional management of these resources.

The Protocol for Specially Protected Areas and Wildlife (SPAW) and the Cartagena Convention calls for the establishment of protected areas. These protocols require that protected measures be put into place to address pollution, habitat destruction, harvesting of wildlife and regulation of tourism. Other requirements include development of management plans, establish buffer zones and encourage co-management agreements with select stakeholder groups. The Fisheries Department has been working to implement many of these requirements, with four out of eight MPAs having co-management agreements with local communities or NGOs. Management plans are developed for all MPAs and any new park proposal is now required to have a management plan prior to the area is legally registered as an MPA.

Major issues that confront the Fisheries Department are illegal fishing and pressure on marine reserves by uncontrolled tourist usage. Use of illegal fishing gear, fishing out of season, exceeding catch limits, harvesting protected species and illegal alien fishers from Mexico and Guatemala coming into Belizean waters are some of the problems encountered. There is insufficient staff to properly patrol MPAs, active fishing areas such as spawning aggregates, and enforce marine protection legislation. Furthermore, the upcoming budget will be cut by about 10%, meaning that about 85% of the budget will be used to cover salaries and the remaining 15% to cover operational costs.

2.1.2.2. Coastal Zone Management Authority and Institute

Structure and Responsibilities

The Coastal Zone Unit was established in 1990. In 1993 the GEF/UNDP support helped to establish the CZM as a permanent organization. The Coastal Zone Management Act was passed in April 1998, establishing the CZM Authority and the CZM Institute as the technical arm. The Act also provided for the creation of strategies for the fiscal support of the CZMAI and provided

for the preparation of a Coastal Zone Management Plan. The agency has been involved in helping to integrate biodiversity conservation into the CZM Policy Framework, establish a Belize Barrier Reef Marine Protected Area Network and promote the integration of island development plans with marine biodiversity conservation. CZMAI has also worked to develop sustainable financing of marine biodiversity conservation efforts, implement legislation and regulations to address bio-prospecting, provide training, raise public awareness and disseminate information. CZMAI has run into funding problems, has been forced to downsize its staff but is still an autonomous statutory body under the Ministry of Agriculture and Fisheries.

The Coastal Planning Programme is implemented through the CZMAI. This programme was implemented in response to increasing tourism development in the coastal zone of Belize, but is also focused on the impact of sea level rise due to climatic change. Nine coastal planning regions have been established and, to date, plans have been developed for Turneffe Islands (1995) and Belize City Cayes (1996). Presently a comprehensive planning exercise is being conducted on Caye Caulker. CZMAI maintains a library of relevant books, documents and electronic data (including photographs, satellite images, maps, etc.) and has the technological capacity to conduct GIS projects and analyze data. Major goals and objectives of the Coastal Planning Programme include:

- developing a sound and functional national and regional planning mechanism
- promoting integrated CZM and sustainable use of Belize's marine resources
- providing environmental education focused on CZM
- draft development and planning guidelines for each coastal planning region and establish local planning committee systems
- coordinate with all relevant agencies concerning issues of coastal zone development
- monitor and document coastal development and maintain a data base

Recent and On-going Activities

The Coastal Zone Management Technical Committee has drafted a Cayes Development Policy (1995) which has been under review for several years. This developing policy promotes better integration of environmental management protocols to reduce impact of development on the

coastal and marine natural resources of Belize. The main policy recommendations of this document include:

- establish planning committees for each of the nine planning regions
- coordinate with authorities and other stakeholders involved in planning, development and overseeing development
- encourage low-density subdivision and development schemes
- encourage development on high ground

The CZMAI periodically produces an edition of The State of the Coastal Zone Report, first published in 1995 and the most recent one published in 2002. These reports described the conditions of coastal and marine habitats, provide results of research and monitoring projects, and describe development activities that were/are causing significant negative impacts within this zone.

2.1.2.3. Agriculture Department

Structure and Responsibilities

Agriculture Department mission statement declares the major role being "to enhance the profitability by providing professional and technical services to farmer and producers through research, extension and training countrywide." The agricultural industry of Belize represents a primary and basic economic activity that has a significant impact on the natural resources of the country.

The Pesticide Control Board is the agency charged with monitoring and regulating use of pesticides within Belize and restricting or eliminating those chemicals that extract significant environmental and public health costs. They provide training for farmers and other pesticide users and keep limited records on pesticide usage in the country.

2.2. **Quasi-Government Organizations**

2.2.1. Protected Areas Conservation Trust

Responsibilities

Protected Areas Conservation Trust Act No. 15 of 1995 was passed and the Protected Areas Conservation Trust (PACT), a quasi-government organization, was established in June of 1996. PACT is an environmental trust fund of US$2,500,000.00 and an endowment fund of US$1,000,000.00 designed to enable and empower conservation, preservation, enhancement and management of Belize's natural resources and protected areas while supporting national development goals. PACT efforts are supportive and essential to meeting the requirements of the UNCBD, either through direct conservation or indirectly through offering alternative livelihoods to stakeholders. Some of the objectives outlined in the Strategic Plan 2005 to 2010 Protected Areas Conservation Trust (Young et al., 2004) include:

- facilitate collaboration and coordination among stakeholders
- promote awareness and education
- build capacity for conservation
- support research and information sharing
- facilitate community and livelihood development

Recent and On-going Activities

PACT is funding the Forest Department to improve PA management through institutional strengthening of the Biodiversity Management Program. PACT has awarded over 50 grants totaling over BZ$2.5 million. The Fisheries Department is being funded to access Queen Conch populations in marine reserves. The MNREI was funded to develop a master user plan for the Mountain Pine Ridge Forest Reserve. Friends of Nature (FON), a Placencia-based NGO, is being supported to manage the Gladden Spit and Silk Cayes Marine Reserve. The UB Natural Resource Management Program (UB-NRMP) is being funded to develop and equip a four-year degree program and UB Institute of Marine Studies (UB IMS) is being funded to develop stronger research capacity at the Calabash Caye Marine Station by the Oak Foundation and PACT. PACT also supports many students working on degree programs both within UB and at

universities abroad. PACT is a member of the Network of Latin American and Caribbean Funds (RedLAC) that provides opportunities regional coordination. For several years PACT has worked with Fondo Mexicano para la Conservacion de la Naturaleza (FMCN), Fundacion para la Conservacion de los Recursos Naturales y Ambiente en Guatemala (FCG) and Fundacion Biosfera (FB) of Honduras to incorporate the Mesoamerican Reef Fund (MARFund) as a regional initiative to provide for:

- long-term financial sustainability for natural resource management and conservations in the Mesoamerican Reef System
- strengthen alliance among participating funds guided by eco-regional conservation priorities
- promote coordination among donor and international organizations to target common goals and strategic objectives in the eco-region

2.2.2 Belize Agricultural Health Authority

The Belize Agricultural Health Authority (BAHA) was formed in April 2000 to comply with national obligations under the World Trade Organization as an organization to oversee and ensure the health of agricultural plants and animals. Responsibilities involve on-site inspection of pests and diseases, laboratory diagnosis of pests and diseases and prescribing control measures. The Central Investigation Laboratory focuses on testing for pesticide residues on fruits and vegetables. It conducts microbiological analysis of seafood for the EU market. Some environmental testing is done to ensure both agricultural and human health. BAHA is the agency that issues permits when required.

Recent and On-going Activities

As the agency in charge of quarantine activities, BAHA is currently involved in drafting policies to address handling of genetically modified organisms and bio-safety issues. The Secretariat of the CBD invited Belize to attend the meeting of negotiating session for the Bio-safety Protocol held in 1997. The Ministry of Agriculture appointed Mr. Hugh O'Brien, then the Principal of the Belize College of Agriculture (BCA), to represent Belize at this international meeting. Upon

returning from the meeting, Mr. O'Brien organized a workshop to update stakeholders and to discuss some of the issues related to biotechnology and bio-safety, particularly in relation to agriculture. This meeting was the first time technical officers from agriculture and the environment met together to discuss biotechnology and bio-safety issues with the view of harmonizing Belize's position. Participants at the workshop decided that Belize would put a moratorium on the use of any genetically modified organisms (GMOs), which is now in place, until a National Bio-safety Committee has been established to deal with issues surrounding the use and safe handling of GMOs in Belize.

A National Bio-safety Committee was formed in November 2002, chaired by the Ministry of Agriculture. Members were given the tasks to review the use of GMOs, draft a policy and legislation for bio-safety and GMO use and make recommendations to address present and future bio-safety issues in Belize. A National Project Coordinator was hired in January 2005 and the National Bio-safety Framework (NBF) is to be completed by December 2005. The principal objectives include:

- assess existing national capacity in the area of bio-safety involving conducting a systematic survey and analysis of science and technology capacity, biotechnology capacity, genetic resources, national and international legislation in bio-safety, national food safety, animal and plant quarantine (including marine and marine products) and regional capacities for harmonization in bio-safety.
- establish a baseline on the current status of bio-safety in Belize that will be used to promote public awareness and participation in the development of a National Bio-safety Framework.
- develop and provide recommendations to the National Bio-safety Committee based on the assessment conducted to create a comprehensive National Bio-safety Framework.

2.2.3. National Institute of Culture and History- Institute of Archaeology

Structure and Responsibilities

The National Institute of Culture and History (NICH) was created as a statutory body in 2003 and is now under the Ministry of Education and Culture. The Archaeology Department became

the Institute of Archaeology under this new structure. The Institute is charged with managing eleven archaeological reserves and many sites around the country. Besides maintaining sites for visitors, overseeing excavations, research, archaeological impact assessments, public education and security of the sites, park management also includes responsibilities for protecting biodiversity and ecosystems associated with the archaeological parks. This department is also involved in overseeing the permitted use of caves in Belize, as these systems are often sites of archaeological concern. Management facilities and job positions within the organization is given in Table 10. Specific objectives of biodiversity and ecosystem concern include:

- develop and implement strategies that ensure sustainable management policies for parks
- provide a management presence to protect against illegal looting, logging, harvesting and poaching of wildlife
- promote regional and international collaboration for park management, conservation and development
- promote sustainable management of archaeological parks by integrating a balance between tourism development, conservation and archaeological research

The Institute is made up of seventeen central office staff and about 50 people stationed at parks around the country. The Associate Director of Marketing, Planning and Policy is also involved in litigation. Besides the positions listed in Table 10, Construction Engineers and Conservation Engineers are employed by the Institute. Major constraints identified were transportation, the need for effective patrol and prevention of looting (especially within border-land sites) and addressing the volume of tourists from cruise ships. Currently there are about twenty on-going projects around the country.

Table 10. Information on the Institute of Archaeology.

STATIONS	POSITIONS	QUALIFICATIONS
Belmopan Office	Director	M.Sc. degree
Altun Ha	Associate Director of Parks Management	M.Sc. degree
Cahal Pech	Sub-Director of Parks Management	Associate degree, experience
Caracol	Park Manager	Associate degree
Cave Branch	Assistant Park Manager	Associate degree or High Sch
Cerro Maya	Park Ranger	Experience

El Pilar	Associate Director of Research and Educ.	M.Sc. degree
Barton Creek	Archaeologist	B.Sc. degree
Santa Rita	Education Officer	B. Sc. degree
Lamanai	Archaeologist Assistant	Associate degree, experience
Lubaantun	Research Assistant	Associate degree, experience
Nimli Punit	Associate Director of Marketing, Planning	M.Sc. degree
Santa Rita	Technical Assistant	Associate degree
Xunantunich		

2.3. Local and National NGOs and CBOs

Conservation of biodiversity in Belize predates the 1992 Convention in Rio de Janeiro. Our earliest wildlife and forest legislation dates back to the Forest Act of 1927. Since that time, many protected areas have been established through legislative action and many NGOs and CBOs have played a direct role in helping to manage those PAs, particularly during the past decade. Although this stock-take does not cover NGOs and CBOs in the detail spent on GOB agencies, this does not mean that the responsibilities of these organizations are not important. Conservation, PA management and environmental awareness and education goals would not be possible without the collective efforts and support of the NGO/CBO community, as some of these organizations play key management roles. All approved NGOs are registered are under the Ministry dealing with Human Development and their rights, privileges and responsibilities are described by the NGO Act (Cap. 315, 2000).

2.3.1. Belize Audubon Society

The Belize Audubon Society (BAS) is an NGO membership organization with a Board. It was founded in 1969 as a foreign chapter of the Florida Audubon Society, becoming independent in 1973. The organization is dedicated to the promotion of the sustainable use and preservation of Belize's natural resources in order to maintain a balance between people and the environment. With a staff of thirty-two, BAS works with local communities for the conservation and protection of ecosystem resources. It has been a leader in conservation efforts, from species to ecosystems, for three and a half decades and is charged with management of eight protected areas, through an agreement with the GOB, representing over 65,560 hectares. BAS works

closely with those communities within the buffer zones of the PAs it manages. This organization has also played a key role in advocacy training and environmental education that has positively impacted many Belizeans at all age levels. Details on the field stations and job positions are given in Table 11.

Table 11. Information on the Belize Audubon Society.

FIELD STATIONS
Blue Hole National Park
Guanacaste National Park
Tapir Mountain Nature Res.
Bird Cayes Nature Reserve
Cockscomb Basin Wildl. Sa
Crooked Tree Wildl. Sanct.
Blue Hole Natural Monum.
Half Moon Caye Nat. Mon.

POSITIONS	QUALIFICATIONS
Executive Director	B.Sc. degree, experience
Accounts and Office Manager	AA. degree, experience
MPR Manager	AA. degree, experience
Environmental Educator	AA. degree, experience
Advocacy Manager	AA. degree, experience
Public Relations Officer	AA. degree, experience
Co-management PA Manager	AA. degree, experience
Community Liaison Officer	AA. degree, experience
Park Director	High School diploma
Warden	experience

2.3.2. Toledo Institute for Development and the Environment

The Toledo Institute for Development and Environment (TIDE) was established 1997. It is focused on addressing the increasing environmental and development needs within Toledo District. Initially TIDE was a grassroots organization formed to address such issues as illegal fishing, illegal logging, manatee hunting, unsound farming practices and unsustainable development in general. TIDE was originally a volunteer organization, but now has twenty staff on pay roll. Its mission is to promote and participate in research and monitoring of local natural resources, to help manage protected areas and to promote responsible tourism and other sustainable economic alternatives through training programs and involvement with local people. TIDE has participated in trans-boundary and regional projects through the MBRS, CREP and TRIGOH. The organization is involved in co-management of Paynes Creek National Park and Port Honduras Marine Reserve.

2.3.3. Friends of Nature

Friends of Nature was initially a CBO. However, it has grown into an NGO that is actively involved in promoting conservation and environmental awareness in the Placencia area. It is also involved in co-management of protected areas with the Forest Department (Paynes Creek National Park) and Laughing Bird Caye and Gladden Spit/Silk Keys Marine Reserve with the Fisheries Department. FON is participating in a rapid ecological assessment of Placencia Lagoon with the idea of someday establishing a field station dedicated to research of the area.

2.3.4. Programme for Belize

Program for Belize (PfB) introduced a new private conservation ethic to Belize and has supported many research efforts aiming at developing a balance between conservation and use of our natural resources. This is a Belizean NGO established in 1988 for the promotion of conservation and wise use of the nation's natural resources. Two field stations are functioning on the facility, including La Milpa and Hill Bank. PfB has the primary responsibility to manage the Rio Bravo Conservation and Management Area, home to 200 species of trees, 400 species of birds, 70 mammal species and twelve endangered animal species. Research conducted at the facilities includes wildlife and botanical studies, forestry management and archaeology. PfB is also very involved in environmental education and outreach. It has a staff of about 32 people.

2.3.5. Other Local and National NGOs and CBOs

The Belize Center for Environmental Studies (BCES) operated on Eve Street, Belize City from the mid 1980s to the late 1990s. This NGO came into being with the compilation and publication of the Belize Country Profile in 1983, a document that continues to be a highly useful reference. The second edition of the Belize Environmental Profile, revised in 2004, is much more comprehensive than the original document. The DOE plans to print this document in 2005 after final revisions. BCES compiled the Critical Habitat Assessment in 1992, promoted environmental consultation efforts, contributed to environmental education, provided

scholarships, served as an information clearing-house and environmental library and helped to coordinate research efforts in the country.

Other foundation NGOs, such as Society for the Promotion of Education and Research (SPEAR), Belize Enterprise for Sustainable Technology (BEST) and Help for Progress have made many great strides that address social and economic issues within environmental contexts, and have promoted conservation and education directly and indirectly.

Today there are many NGOs and CBOs operating in the country focusing on environmental issues, biodiversity protection and ecosystem conservation. A growing number of these organizations are becoming involved in co-management of protected areas, working in conjunction with the Forest Department, Fisheries Department and BAS. These organizations are often locally based and are very instrumental in getting local people involved in conservation efforts. Many of these organizations are also involved in research, monitoring, sustainable development, education, youth, women and culture. Goals and objectives of most of these NGOs and CBOs are to promote and support the requirements and objectives of the UNCBD. Appendix 2 lists NGOs and CBOs in alphabetical order and comments on activities supported by each.

Community-based watershed organizations, such as the Sibun Watershed Association, have emerged to address issues related to the protection of local ecosystems by residential stakeholders. Friends of Gra Gra Lagoon, Friends of Freshwater Creek, Friends of Moho River and other similar groups are forming in many areas of Belize. These organizations give communities a collective voice to that can help promote local conservation of watershed resources, promote watershed awareness and encourage environmentally sensitive development efforts.

2.4. Protected Areas and Communities Involved in Co-management

2.4.1. Government Agencies

Public protected areas management in Belize falls under jurisdiction of the Ministry of Natural Resources and the Environment (Forest Department), Ministry of Agriculture and Fisheries (Fisheries Department) and the National Institute of Culture and History (NICH) (Institute of Archaeology). A total of 87 protected areas, representing 38% of the terrestrial territory and 7-11% of marine environments within the National territory, make up the protected areas system of Belize. A recent analysis of the NAPASA indicates that most protected areas of Belize are managed for extraction rather than conservation (Meerman, 2005). The report identifies weaknesses in the PA system, calls for the formation of a single management unit composed of all three involved agencies.

The Forest Department currently manages forty-nine (49) PAs, representing seventeen forest reserves, sixteen national parks, seven wildlife sanctuaries, four nature reserves and five natural monuments. For over 10 years, efforts have been underway to promote true participatory co-management partnerships for many protected areas around the country. The Forest Department has co-management agreements with either NGOs or CBOs for twenty-five (25) out of the forty-nine protected areas over which it has jurisdiction. Based on surface area, the Forest Department is responsible for managing 71.0% of the protected areas within Belize, the Fisheries Department manages 15.4%, the Institute of Archaeology manages 1.1% and recognized private protected areas represent 12.5%. Caution should be used in surface area comparisons, as challenges for marine management are very different from terrestrial management and agendas for archaeological management are very different from that of natural resource management. The co-management agreement usually requires that a management plan be prepared for each site within one year of the signing of the agreement. The NGOs/CBOs seek their own funding to manage respective PAs and have the lead responsibilities for the day-to-day management of those sites. Advisory committees made up of representatives of organized groups, including the Village Councils, and government agencies are set up to oversee management of the site. The Forest Department is also involved in advising on the management efforts of six private protected areas.

The Fisheries Department manages eight marine protected areas. Four of the eight marine reserves have co-management agreements between the Fisheries Department and community-based organizations.

2.4.2. NGOs and CBOs

BAS has been involved since 1984 in the management of several protected areas established by the National Parks System Act of 1981. BAS played a key role in helping identify financing for the development and operation of important areas such as Crooked Tree Wildlife Sanctuary, Cockscomb Basin Wildlife Sanctuary, four other protected areas and seven small mangrove cayes that are nesting rookeries for storks, egrets, herons, ibises and other birds. Several of these PAs are being managed through co-management agreements with community groups.

Other environmental NGOs involved in co-management of protected areas include FON, TIDE and PfB (private PA). Several CBOs are also involved in co-management agreements, including such associations formed specifically to assist in management of PAs as Friends of Freshwater Creek, Association of Friends of Five Blues Lake and Friends of Gra Gra Lagoon. Appendix 2 lists the PAs of Belize and the responsible management agencies involved.

Concerned community members have been driving forces behind establishment and management of such protected areas as Gra Gra Lagoon National Park and Spanish Creek Wildlife Sanctuary. Human resources, including students and faculty within institutions offering environmental management programs and local experts should be more fully integrated into research, assessment and monitoring projects and programs where feasible and where mutual benefits can be derived.

2.4.3. Challenges in Co-management

Many challenges confront co-management efforts, mistakes have been made, successes have been achieved and many valuable lessons have been learned. For example, community members

involved in management activities need to have applicable training that prepares them to manage funds and maintain accounts records. However, too much training for community participants can also be counter-productive, therefore requiring that training programmes be well planned and appropriate for the jobs at hand. Community participants need to have close personal guidance and consultation from the onset of such programs and projects that allow them to develop the management skills required. Local experts must be identified early in these efforts and incorporated into planning and implementation phases of projects. Hunters, fishers, guides and other local experts can make valuable contributions to such efforts, often being the ideal people for conducting on-the-ground management jobs. For example, local hunters have become park wardens at Five Blues Lake National Park. Fishermen and local youths are primary technicians involved in capturing, tagging and assessing the state of health of manatees and finding, protecting and taking data on hawksbill sea turtle nests in the Southern Lagoon Wildlife Sanctuary. Fishermen have been essential in research and development of management schemes for spawning aggregates at Gladden Spit and other sites.

2.5 Industries and Representative Associations

Many different industrial and business activities impose pressures and threats on biodiversity resources and ecosystem functions/services. Only relatively small manufacturing operations are in production in Belize, with most of these related to food and beverage industries. By far, most of the industrial activities relate to extraction industries such as forestry and artesian fisheries. Other industries utilize landscape resources and include agriculture and the growing aquaculture industry. Tourism has been a significant sector of the economy and is entering a new growth phase involving cruise ship tourism that can impose large environmental impacts.

2.5.1- Forest Industry

Status

Forestry is one of the oldest commercial activities in the country, beginning with the harvest of logwood (*Haematoxylum campechianum*) and later mahogany (*Swietenia macrophylla*) and the sap of sapodilla (*Manilkara zapota*). It has also had a significant impact on the biodiversity and

ecological integrity of the country. Today there are only a few patches of logwood left, the largest being around the Crooked Tree area. Mahogany has also been largely logged out in many areas, with loggers taking almost all of the larger seed producing trees. Sapodilla trees that were tapped for chicle are still around, bearing the scars from decades ago. Today some mahogany and a few secondary species are harvested. Pine has been extensively used for poles and pilings. Much of the harvested pine is now been milled into framing lumber, siding, flooring and other finished boards and is pressure treated with a copper/arsenic compound to prevent or at least reduce termite damage. During the past five years the southern pine bark beetle has greatly affected the pine forests (primarily *Pinus caribaea*), especially in the Mountain Pine Ridge.

Some veneers and plywood are being produced, along with finished furniture, are being manufactured in Belize from local trees as the industry diversifies. Much emphasis has been placed on the development of non-timber forest products, including ornamental and medicinal plants.

Challenges

Besides the loss of commercial species, some of the most important forestry issues faced by Belize include deforestation of steep slopes, riparian areas, shorelines of lagoons and coastal areas. The Forest Department is focusing on forest conservation and beginning to address reforestation potentials where possible. Many different replanting efforts are underway through select NGOs, CBOs and private individuals. PfB has been actively supporting forestry research focused on the effective and sustainable management of forest resources that generate money to fund conservation efforts. Janus Foundation in the Cayo District was also involved in forest research, as well as efforts to rehabilitate old pastures. Trees for Belize was promoting agro-forestry and re-planting projects in many areas of the country. However, Janus Foundation and Trees for Belize are no longer active.

2.5.2. Agriculture Industry

Status

The agriculture industry is based on imported biodiversity. The principal crops produced, including citrus, sugar cane, bananas, rice and cattle, have been imported into the region. Only two major crops, corn and beans, are local to the region. Cacao is also a regionally indigenous crop, but is not grown extensively in the country.

Agriculture is one of the oldest and most extensive land conversion activities in the country, responsible for a lot of the riparian and steep slope deforestation. Sugar cane was once the leading economic crop, but is suffering as world sugar prices fall. The sugar refinery on the New River has long been suspected as being the primary cause of the reduced water quality, loss of fishes and general decline of biodiversity in the lower New River Lagoon. Bananas are grown extensively in some areas. This is a crop with a high pesticide requirement, with applications often being made by airplanes. Citrus, primarily oranges, has grown in acreage over the past few of decades, particularly in the 1990s, and became the leading agricultural cash crop. However, prices have not been stable and many small growers were bought out by larger companies during lean years. There are two processing plants in the country that handle most of the citrus produced. Efforts are now underway to extract citronella oil, wax and other products from the peel that is currently improperly disposed of and creating eutrophication and other problems in streams near processing facilities. Some mangos, papayas and other cash crops are also produced. Corn, rice and beans are grown largely for the local market; the Mennonite communities do export rice and beans to the Caribbean region. Cattle and milk are produced locally, especially in the Cayo District. Even with a relatively small population and a lot of agricultural activity, however, Belize still imports a lot of produce from Mexico and Guatemala.

Related Organizations and Recent and On-going Activities

Agricultural organizations include producer organizations such as the Belize Cane Farmers Association, the Banana Growers Association and the Citrus Growers Association. The citrus industry supports the Citrus Research Institute that is dedicated to studying issues related to the

production of citrus, including testing genetic strains, investigating pathogens and identifying pests.

The Caribbean Agricultural Research and Development Institute (CARDI), established in 1975, provides agricultural research and development needs for Caribbean Community (CARICOM) member states. CARDI programmes are implemented by collaborating with local, regional and international research and development organizations. Responsibilities include:

- providing technical services in integrated pest management, organic and crop production systems, livestock production systems and statistical analysis
- provide technical agribusiness and marketing assistance
- promote information management for agricultural and rural development
- coordinate regional research through the Caribbean Agricultural Science and Technology Information Networking System (PROCICARIBE)

Objectives of the Inter-American Institute for Cooperation on Agriculture (IICA) are to encourage and support the efforts of member states to implement agricultural development and rural well-being. IICA stated Mission is to "To support the Member States in their pursuit of progress and prosperity in the hemisphere through the modernization of the rural sector, the promotion of food security, and the development of an agricultural sector that is competitive, technologically prepared, environmentally managed, and socially equitable for the peoples of the Americas." Strategic areas include trade and agribusiness development, agricultural health and food safety, sustainable rural development, information and communication and education and training.

IICA is involved in the development of technologies and public policies, harmonized at the regional level and consistent with international trade requirements addressing development of biotechnology and the use, safe handling and trade of transgenic commodities. IICA has promoted a harmonized approach to biosafety through collaboration with Organismo Internacional Regional de Sanidad Agropecuaria (OIRSA) CATIE to develop a working draft of a legal proposal for the development of a regional regulatory framework on Living Modified Organisms for agricultural use in Central American countries.

The Citrus Research and Education Institute (CREI) is an industry-sponsored organization doing extension service, holding monthly meetings with growers and conducting on-going research in citrus root stock trials. Plans are to begin on-farm trials for weed control and fertilizer usage. CREI runs a virology laboratory to test for pathogenic viruses in nursery stock and certifies nurseries that are free of pathogens. It maintains a germ stock related to the virology lab activities. Many of the citrus pests, including the ground citrus aphid, the citrus leaf minor and the citrus black fly have been found in Belize, but do not cause problems seen in other countries. Several natural predators, such as parasitic wasps, maintain control of pests, reducing the amount of insecticide needed. However, extensive amounts of herbicides are used for weed control. WWF is interested in teaming up with CREI in a weed control project through the use of select ground cover vegetation in order to reduce the use of herbicides, thereby reducing the amount of herbicides reaching the marine habitats and coral reefs in particular (herbicides particularly affecting the zooxanthallae within coral tissue).

2.5.3. Capture Fisheries Industry

Status

Fishing has been the main staple for many people in Belize, particularly beginning in the 1960s with the economic development of the spiny lobster industry as a marketable product. Queen conchs have also supported smaller fishery. A scale fish market has been established, especially with such countries as Jamaica where fish stocks and mangroves have been depleted. Several fishing cooperatives emerged to protect the local fishers, ensuring that they get a fair price for their harvest.

Challenges

Lobster and conch fisheries have been over-harvested and can only be fished during controlled seasons. Nassau grouper are no longer harvested due to the extensive over-fishing of this species. However, most of the scale fisheries of Belize have been over fished and stocks are declining in size and numbers. Many spawning aggregates (about 15 out of 75 found throughout the Caribbean once occurring in Belize) have been fished out and the last three or four active

sites are diminishing, although efforts are under way to protect these critical areas. Efforts by TIDE and BAS have been under way to help fishers find alternative livelihoods, such as tour guiding and fly fishing, to offset the loss of jobs in the industry. Associations related to this industry include the Northern Fishermen Co-operative Society Ltd., the National Fishermen Producers Co-operative and Placencia Fishermen Co-operative.

2.5.4. Aquaculture Industry

Status

Aquaculture has been a rapidly growing industry in Belize, increasing faster than any other agriculture sector. Within the past ten years, aquaculture has grown by about 160 percent. Tilapia farming was encouraged by the Fisheries Department during the 1990s, rearing tilapia (*Oriochromis niloticus*/ *O. mosambiques* hybrids). One large facility is currently in operation along the Sibun River. Large and small facilities have been developed to rear Pacific white shrimp, Australian red-clawed crayfish (*Cherax quadricarintus*), and other conventional aquaculture organisms. In the mid 1990s until the early 2000s the shrimp industry greatly expanded in Belize, based on the cultivation of the Pacific white shrimp, *Penaeus vanname*. Shrimp farming has increased from a production of 85,905 kilograms worth BZ$1.8 million in 1990 to 84,200,000 kilograms that earned BZ$84,280,000 in 2004. However, the shrimp industry is experiencing economic challenges as the price of shrimp globally is being reduced by Asian producers such as China.

Challenges

The aquaculture industry affects local biodiversity through the introduction of non-native species and impacting critical habitats (mangrove and riparian forests). Fish fingerlings were given out to farmers for use in small farm ponds and tilapia were therefore spread to several areas of the country. Commercial tilapia production facilities are now in operation within Belize. Tilapia has escaped from farm ponds and large aquaculture facilities, invading many of our rivers and lagoons, possibly threatening local fish communities. This situation was aggravated by fishes washed out of ponds within the Mopan River watershed in Guatemala due to flooding caused by

Hurricane Mitch in 2002. Current research on the distribution and impact of this invasive species on local fishes is currently being investigated by a doctorial student. *P. vanname* are found in local waters and beds of the Gulf oyster, *Crossostera virginica* are established in our coastal waters.

Alternative local candidate species for aquaculture are being investigated or considered. Research in biology and cultivation methods is addressed in the National Policy for Aquaculture Development in Belize. Purposes for cultivation of select species may be for food or for release of stock into the wild to enhance local stock. Ranching is also being considered for some of the marine species. These include:

Freshwater Species

- River shrimp (*Macrobrachium* spp.)
- Mountain Mullet (*Agnostes monticola*)
- Tuba (*Cichlasoma synspilum*)
- Crana (*Cichlasoma uropthalmus*)
- Bay Snook (*Petenia splendida*)
- Blue Catfish (*Ictalurus furcatus*)
- Hiccattee (*Dermatemys mawii*)

Saltwater Species

- Queen Conch (*Strombus gigas*)
- Spiny Lobster (*Panulirus argus*)
- White Shrimp (*Penaeus schmitti*)
- Common Snook (*Centropomus undecimalis*)
- Nassau Grouper (*Epinephelus striatus*)
- Green Turtle (*Chelonia midas*)

Shrimp farms pose serous threats to coastal ecosystems. Construction of intake and discharge canals involves dredging through mangroves. Some facilities have been built on areas where mangroves have been cleared. Discharge waters from ponds usually contain heavy amounts of organic materials, promoting eutrophic conditions in coastal waters. Ponds are often treated with pesticides after harvest to kill any pathogens and parasites that may remain in the sediments. These ponds are then flushed prior to restocking, with discharge waters being emptied into coastal areas. There is also concern about the introduction of pathogens and parasites into local waters that may affect local crustaceans and fishes.

2.5.5. Tourism Industry

Status

Tourism has also been a growing business in Belize. Historically, San Pedro was the primary tourist destination in Belize, attracting a large number of sport fishermen and divers. Originally tourism was largely controlled by foreigners having visions of a profitable future and the capital to invest. Ecotourism and the development of its support facilities (hotels, cottages, trails, archaeological sites, etc.) have spread throughout the country since the beginning of the growth surge in the mid 1980s and now represents a collective investment of about $750,000,000.00 BZ in infrastructure, much of this investment owned by Belizeans (personal communication, Executive Director, BTIA). Education tourism has also been a steady growth area, with more and more facilities being built to accommodate academic groups from the United States, Canada, the United Kingdom and now Europe, Asia and other countries.

Challenges

Cruise ship tourism has recently arrived on a large scale in Belize, with numbers now reaching about 800,000 per year, although accommodations (transportation, toilets, guides, etc) are not adequate to handle such large numbers effectively. The cruise ship industry envisions about 3 million visitors to Belize per year. These tourists generally only spend one day in the country, visiting a Maya site, going on a river float, horse back riding in the jungle or similar activities. Therefore they contribute comparatively little directly to the local economy, with most monies going into the hands of a select few wealthy investors given privileged access to the industry. One privately owned “tourist village” has been constructed in Belize City where cruise ship tourists enter and exit Belize. Several other tourist villages are planned or under construction.

The growing numbers of cruise ship tourists are potentially stressing local reefs, caves, rivers, trails and Maya sites that are heavily visited. Facilities are being constructed in environmentally fragile areas to accommodate tourists. For example, a canal system has been dug along Mile 10-11, Western Highway that connects with a lagoon within the Sibun River Watershed that offers air-boat tours to tourists. Reaches of Caves Branch that flows through a series of caves, has as

many as 800 tourists per day floating through in inner tubes (personal communication with guides). Laughing Bird Caye and other marine sites are receiving heavy use, with local corals showing signs of stress and fresh breakage. Eventually this type of tourism will likely suppress ecotourism and education tourism that have become major direct contributors to the local and national economies.

The Belize Tourist Industry Association is an active organization that represents the interests of the hotel owners, guides and other professionals. Newer organizations are being formed specifically for tour guides and international education providers. These organizations are often very supportive of biodiversity preservation and ecosystem conservation efforts, recognizing how dependent tourism is on these efforts.

2.5.6. Mining and Petroleum Industry

Mining for aggregates is a large and growing business in Belize as more concrete houses, roads and airstrips are being built and low land (largely converted mangrove in coastal areas) is being filled. In-stream gravel mining is a particularly destructive activity that potentially threatens the biodiversity of heavily mined rivers through habitat destruction (head cutting, siltation, disruption of sediment transport). Research is needed to better understand impacts incurred from this activity in our local rivers. A few minerals, including gold and dolomite, are mined in small-scale operations. Limestone is mined for use as an aggregate, with marl being a primary roadbed material. Some limestone is being mined, cut and polished for use as floor tiles. "Burnt lime" is made by firing limestone in kilns filled with wood and is used on agricultural soils and in shrimp cultivation to adjust and buffer water pH.

Petroleum has been found in Belize. Six oil companies hold seven access areas within Belize. Fifty-one wells have been drilled all around Belize. Currently the 51st well is being drilled at Spanish Lookout; the sight having been selected based on advanced geological assessment techniques. Oil is also reputed to be located off shore of southern Belize. At present there are no productive wells for oil or natural gas in Belize. Oil production represents another industrial threat to marine ecosystems local to the wells.

2.6. Awareness Efforts, Training Programs, National Colleges and the University of Belize

Primary and Secondary Education

Training, educational opportunities and environmental experiences for primary and secondary students, teachers and the greater Belizean public are essential and available. Many projects and programmes, often funded and facilitated through NGOs with support of the Government, offer awareness and learning experiences for school age children. For example, the Belize Zoo Camp is a summer activity that has provided unique and stimulating environmental awareness experiences for many Belizean children over the years. The Sibun Watershed Association (SWA) presented the 'Watershed Mobile Classroom' that visited schools throughout the watershed and the country. SWA also sponsored "Watershed Celebration Day" and facilitated watershed community meetings. Currently this organization is not funded and all activities are conducted on a volunteer basis. PfB has actively engaged Belizean students in educational opportunities at Hill Bank and La Milpa field stations. Friends for Conservation and Development (FCD) and Society for the Promotion of Environmental Conservation, Tourism and Education (SPECTE) have been active in local environmental awareness efforts. SPECTE was involved in riparian replanting and iguana breeding projects, using cultural arts to help promote environmental awareness. Educational courses are also being offered through Las Cuevas Field Station in the Chiquibul Forest and Jaguar Creek near Caves Branch along the Hummingbird Highway.

Educational materials and programs have been offered for years through BAS, the Mesoamerican Biological Corridor Project and many international efforts at work in Belize. Some of these educational materials are listed in Appendix 6. Many of these same institutions have also been very active in providing environmental and biodiversity awareness outreach to the greater Belizean community, to the point where such words as 'species', 'watershed', 'ecosystem' and 'biodiversity' are in common usage.

Tertiary and University Education

Several tertiary institutions within Belize offer associate programs in environmental science, natural resource management, biology and related fields (Table 12). Belizean students also have

access to environmental programs through the University of the West Indies branch in Belize City. Galen University has recently been established in Belize and offers opportunities for a M.Sc. degree in Sustainable Development. UB offers associate and B.Sc. level degrees in biology and an associate in natural resource management. Beginning in August 2005, UB will offer a B.Sc. degree in natural resources management possible through funding from Oak Foundation and PACT.

Table 12. Natural Resource Management and Environmental Programs in Belize.

INSTITUTION	PROGRAM
University of Belize	B.Sc. in Biology and A.A. in Natural Resource Management with a B.Sc. program starting up in during the next semester, B.Sc. degree in Marine Science planned through the Institute of Marine Studies.
Sacred Heart Community College	A.A. degree
St. John's Community College	A.A. degree in General Science
Corozal Junior College	A.A. degree
Muffles Junior College	A.A. degree
Toledo Junior College/UB	A.A. degree in Natural Resource Management
Galen University	Bachelors degree in business with an emphasis on sustainable development

University of Belize is a young institution, amalgamated from six different institutions around the country, and is struggling to establish itself as a national resource that contributes to biodiversity protection, ecosystem conservation and sustainable and sensible development. As such, faculty and administration are working to develop and provide accessible educational and training programs that address national needs. In accordance with its vision and mission statements, UB is obligated to produce students who will act as catalysts for change through positive action and responsible use of their education, service, and research skills. UB is striving to meet the diverse needs of environmental students and stakeholders, including the greater society, by providing a Bachelor's Degree program in Natural Resources Management that focuses on applied assessment, management and monitoring theory and methodology. The UB-NRMP will cover fundamental principles in terrestrial, watershed, coastal resources and recreational/tourism management.

UB is striving to become a research and service oriented institution. As such, the UB-NRMP has become engaged in projects of need identified through NGOs, CBOs and Government agencies, identifying areas where students and faculty can make a contribution to community-based conservation and natural resource management efforts. Typically select courses offered through UB-NRMP are wrapped around appropriate projects where students and faculty conduct work on Rapid Ecological Assessments (REAs), aquatic surveys, development of management plans, human impact mapping and other services we are equipped to handle. Not only does this provide an information need when minimum funding may be available to conduct the efforts, but it provides students with real world experiences and the opportunity to work directly with communities, NGOs CBOs and Government agencies.

Tour Guide Training

Technical tour guide certification is available at the national and local levels through many different programs. Tour guides are certified through the National Tour Guide Training Program offered through the Belize Tourist Board. The Trainers Manual (2001) provides students with a strong exposure to ecology, biodiversity and cultural diversity of the country. The training program is often offered in conjunction with several agencies and organizations, such as the Belize Tourist Board, BAS and in the near future with the University of Belize Natural Resource Management Program (UB-NRMP). BAS offers training for park wardens and the Forest Department provides training for forest rangers. PACT is interested in funding training workshops in various areas involving biodiversity and ecosystem conservation, and is considering working with UB-NRMP to facilitate the efforts.

2.7. Environmental Field Stations, Laboratories and Monitoring Activities

Parrot Wood Biological Field Station was established by Dora Weyer along the Western Highway (across from the Belize Zoo) in the early 1970s to support environmental field courses and promote ornithological research in the area. This facility has since been purchased by the Belize Zoo and is now called the Tropical Education Center. It is still catering to environmental field course programs and promotes research in many areas of environmental concern. During the past thirty years, many field stations have been established in the country and most of them

continue to function, supporting research activities by experts from around the world, many of them having been involved in Belize for many years.

Las Cuevas Field Station is a very active facility located in the Chiquibul Forest Reserve, hosting researchers from the United Kingdom and the United States. Through a memorandum of understanding, it is being managed in conjunction with the Royal Botanic Gardens (previously involving the Natural History Museum, London), the Forest Department, the Maya Forest Enterprises, the Conservation Management Institute and the University of Belize. The facility includes dorm rooms, a dining hall, camping area, laboratory space, a small but growing library and a trail network. Several on-going research projects have generated published reports and taxonomists are developing taxonomic lists for the area.

It is difficult to give an exact number as there is no agency that keeps a register of field stations, laboratories and activities. An inventory of facilities and the kind of research and activities in which they are engaged or support must be compiled through direct contact with facility operators. Table 13 lists many of the field stations found around the country but the list is not complete. Some of these facilities may be maintaining monitoring efforts and support multi-year research projects.

BAHA and the Ministry of Health operate a laboratory complex in Belize City. Ministry of Health laboratory can conduct routine water quality analysis, including heavy metals and microbial samples. BAHA maintains an agriculture pathology laboratory and can conduct high-level water quality assessments, soils analysis and pesticide assessment. An insect taxonomy laboratory is in operation at Central Farm. Presently a plant propagation laboratory is in operation on the UB Belmopan campus.

Efforts are underway to establish a full capacity water quality laboratory at UB through efforts of TNC. This facility will contain equipment to conduct standard water quality analysis and test for heavy metals, micronutrients and pesticides. Researchers and lab managers associated with TNC will set up the lab at a facility on the Belmopan Campus, train students and faculty how to

operate the equipment and help maintain the facility. BAHA will be approached as the in-country agency that can inspect and certify the laboratory.

Table 13. Environmental Field Stations, Museums, Rearing Facilities and Laboratories.

Wild Tracks	This field station is located in Sarteneja along the lagoon. It offers accommodations for educational groups, largely from Great Britain. Owners have been involved in EIA activities, REAs, frog studies and rehabilitation of young manatees.
Tropical Education Centre	It is a facility of Belize Zoo located at Mile 29, Western Highway in pine savanna. It hosts researchers, foreign student groups and Belize Zoo Camp, offering dormitories, camping area, kitchen/dining facilities, library, nature trails and bird observation decks.
Monkey Bay Wildlife Sanctuary	A privately owned environmental education facility located at mile 31.5 on the Western Highway in the savanna. It hosts foreign students, interns and researchers, offering a bunk house, palapas for camping, private rooms, library, kitchen/eating area, nature trails and canoe rental.
Trek Stop (Tropical Wings)	Butterfly rearing facility just outside of San Jose Succotz. Many different kinds of butterflies are reared at the facility. Accommodations are available.
Chaa Creek Nature Museum and Butterfly House	Natural history museum offers self-guided environmental education, hosts seminars and meetings and monarch butterflies are reared.
Ixchel	Private facility that supports research on medicinal plants and production of plant-derived products. Seminars and
Green Hills	Butterfly rearing facility and research station. Owners are responsible for setting up butterfly facilities in other parts of the country and are actively involved in research in dragonflies and butterflies. A book on the butterflies of Belize will soon be available.
Jaguar Creek	A Christian environmental education facility funded by the Eden Conservancy, located off the Hummingbird Highway, opposite the Blue Hole, hosting international students who carry out independent projects, facilities include cabins with electricity, private shower and toilet, a dining hall, work area, class room library, GIS equipment, nature trails and a swimming area. Eden Conservancy owns/manages a large conservation area.
PfB La Milpa Field Station	Located in the Rio Bravo Protected Area, it accommodates ecotourism, student groups and researchers, including a focus on archaeology.
PfB Hill Bank Field Station	Located in the Rio Bravo Protected Area, it accommodates ecotourism, student groups and researchers.
Las Cuevas Field Station	Located in the Chiquibul Reserve, it is a joint initiative between the Government of Belize, Maya Forest Enterprises, the Conservation Management Institute and the Royal Botanic Gardens Edinburgh (previously involving the Natural History Museum, London), hosting foreign student groups and researchers. Dorm rooms, dining room, camping area, laboratory, library and a trail network are among facilities offered.
Belize FREE	This field research station is located adjacent to the Bladen Nature Reserve and supports researchers from many different disciplines and representing a wide range of institutions.

	Herpetology is the main area of interest by the owners.
Glover's Reef Field Station	Operated by Wildlife Conservation International.
Possum Point Biological Field Station	Located on the lower Sittee River, this facility accommodates research and educational activities for many foreign university groups.
Wee Wee Caye Marine Lab	This facility is located on Wee Wee Caye east of Dangriga. It accommodates marine research activities, some of which have been under way for several years.
Calabash Caye Marine Station	This is the marine research and education station owned and operated by UB and has a ten-year history of research activities involving institutions from around the world.
Pelican's University at Southwater Caye	Customized field itineraries provided for educational groups, including trips to marine and mainland sites around the country.
Reef's End Lodge	Tobacco Caye based facility that accommodates university groups, providing logistical support and trips to marine and mainland sites, lectures on geology and ecology.
Wildlife Conservation Society	Maintains a research station on Glovers Reef
Smithsonian Carrie Bow Caye Marine Station	This is a major field lab that has been in operation within the country for about 33 years and provides access to researchers from around the world. Over 800 technical publications have resulted from research conducted at the facility.
Belize Herpetarium and Aquarium Park	This facility will be built on a fifty-acre lot lying along Mount Pleasant Creek in Belmopan. It will specialize in reptiles but also have bat, insect and aquarium displays.
Hunting Caye Marine Station	This field station is presently being constructed in the Sapodilla Cayes area and will be owned and operated by UB in conjunction with Earth Watch and TASTE.

A taxonomy laboratory is also being established at UB on the Belmopan campus, currently focusing on aquatic indicator organisms, but expanding into other areas. There is also potential for establishing a soils laboratory and later a microbiology laboratory.

The Citrus Research Institute (CREI) maintains a plant pathology and insect taxonomy laboratory. Bowen and Bowen, Inc. operates a water quality laboratory related to the bottling of water and brewing of beer. Larger aquaculture facilities such as Nova conduct water quality assessment and pathology laboratories on production sites. The Belize Sugar Industry operates a laboratory that is reputed to be one of the better facilities in the country (personal communication, Mr. Harry Vernon). Certification of laboratories is a critical issue that needs to be fully addressed in Belize. Currently there is no organization in the country that can conduct proper certification checks.

Rapid Ecological Assessments, human impact mapping and other assessment activities have recently been completed in several areas by consultants and environmental groups. This

represents a growing body of information on the biodiversity and ecology of local areas around the country. The faculty and students of UB-NRMP have been involved in conducting aquatic surveys and REAs in several protected areas, a process that continues each semester. Students have also assisted DOE and other agencies in conducting field assessments and surveys. Documents generated by these efforts are useful to NGOs, CBOs and Government agencies in developing management plans and implementing appropriate actions to effectively address critical environmental issues.

Compilations of bibliographies on published and unpublished biodiversity and ecology information on Belize and related topics have revealed over 4,000 titles. The Smithsonian Institute and its research associates working out of the Carrie Bow Caye station have generated over 800 publications. Most of these documents are not generally accessible within Belize. Much of the materials that are in country are scattered among private libraries and agency libraries around the country. Many researchers that are permitted for work in Belize often neglect to submit final reports once they have completed their work. However, with greater internet access and the availability of search engines for technical literature, a large number of these documents can be found and downloaded into electronic libraries.

Actual monitoring efforts taking place within the country are few in number. The National Meteorological Service (NMS) office routinely collects stage data on key rivers within the country. The Meteorology Department maintains records of climatic data that spans several decades. Monitoring activities have been on-going by several groups (Green Reef, MBRS, UB Institute of Marine Science, Smithsonian Institute) for select reef areas, mangroves and sea grass beds. The DOE ECMEU conducts enforcement/monitoring activities to ensure compliance with Environmental Compliance Plans and regulations. Basic water quality monitoring was being conducted by Belize River Keeper under the FCD, but that program has been discontinued. Many organizations involved in conservation efforts are gearing up with field water quality kits and are reporting data based on these results. However, there is a need to develop standardized protocols and to create a full- scale water quality laboratory that can provide certified and dependable data.

A detailed national assessment of biological diversity monitoring activities and capacities was recently conducted (Envic Consulting, 2004). Results called for establishment of a Biodiversity Monitoring Working Group composed of one statutory agency, two government agencies, five local NGOs and three international NGOs. The study determined that very little actual monitoring was actually occurring within the country, with common weaknesses sited being lack of human and financial resources. The MBRS synoptic monitoring protocols were determined to be the most holistic and the easiest to apply system in Belize and the entire MBRS. Sylva Maya, Mayamon abnd NeoBat protocols were found to be the best systems utilized in the terrestrial environments. No long term monitoring is occurring within protected areas that allow for the identification and observation of seasonal patterns, and multi-year trends and changes. This report also pointed out the lack of a national official monitoring agency sets monitoring policies and standards.

2.8 International Institutions and Foreign Universities

Many international NGOs are very active in Belize, some having been involved for years (Table 14). These organizations have collectively provided significant funds to support conservation and research efforts throughout the country by funding corridor programs, eco-regional planning and mapping, monitoring protocol development and implementation, establishing protected areas/conservation areas management, training opportunities, and other activities.

It is very difficult to actually get information on the actual amount of funding contributed by these organizations as there is no agency that registers this activity in the country. These organizations have a long history of working with and through local NGOs and have often been instrumental in helping create those local organizations where none existed but the need was there. As for the CCAD, this regional organization has been instrumental and proactive in the development of regional biodiversity related conventions.

Table 14. Select International Non-Government Organizations and Programmes Involved in Issues Related to Biodiversity/Ecosystem Research, Conservation and Sustainable Use.

Birds Without Borders	Rainforest Alliance
Central American Commission on Environment and Development	The Nature Conservancy
Conservation International	Trek Force
Darwin Initiative	Wildlife Conservation Society
Flora and Fauna International	World Resources Institute
International Union for the Conservation of Nature	World Wildlife Fund
LightHawk Conservation Airwing	UNDP/GEF/SGP
Oak Foundation	

These organizations have supported needed biodiversity and ecological research, helped build natural resource management capacities at administrative and local levels, equipped many field projects and programs and facilitated environmental education programs. They have played major roles in strives toward biodiversity preservation and ecosystem conservation and will continue to do so into the future. They now have a vested interest in Belize and our long efforts to conserve and wisely use our critical natural resources.

Many universities have a long history in Belize as well, including institutions from the Scotland, England, Canada, the United States, Mexico and Costa Rica. Students, faculty and researchers conduct many kinds of studies that contribute to in-situ management, knowledge of biodiversity and better understanding of ecology from species to ecosystem-levels. Often groups work on projects that have been identified as needed by an organization involved in protected areas management or other environmentally related activities. Many researchers come to Belize to pursue their personal research interests. Much of this information becomes published in technical journals. A list of many of these universities is given in Table 15.

Table 15. Select Universities Recently/Currently Active in Belize.

Arizona State U.	Malaspina U.	U. of Boston	U. of Montana
Baylor U.	Murray State U.	U. of Calgary	U. of North Carolina
CATIE	New Mexico State U.	U. of California Davis	U. of North Florida
Colorado State U.	Pennsylvania State U.	U. of California Los Angeles	U. of South Florida
Dalhousie U.	Princeton U.	U. of Edinburgh	U. of the West Indies
East Carolina U.	Tuskegee U.	U. of Funderland	U. of York
Florida State U.	U. Autonoma de Yucatan	U. of Louisville	Washburn U.
Kutztown U.	U. de Havana	U. of Mississippi	York University
Louisiana State U.	U. de Quintana Roo		

Some important regional initiatives are currently underway, helping to build connections among Belize and our Central American neighbors. The Mesoamerican Barrier Reef System (MBRS) is a shared regional ecosystem among Mexico, Belize, Guatemala and Honduras that stretches from the southern half of the Yucatan Peninsula to the Bay Islands of Honduras. The Mesoamerican Barrier Reef Project is a UNDP GEF supported effort to address biodiversity issues, ecosystem functions and sustainable use of this vital regional resource. The project seeks to support existing mechanisms and create new ones where needed to safeguard the integrity and productivity of the MBRS. Goals of the project include:

- facilitating harmonization of policies and regulations addressing sustainable management of trans-boundary resources that includes establishing a standard monitoring protocol, promoting best practices certification for marine tourism development and harmonizing regulations governing extraction of marine resources;
- strengthening the MPA system within the MBRS to protect and maintain critical ecological processes and ensuring that all habitat types are represented in the MPA system and
- building capacity by providing training, environmental education and improved information systems to encourage public and private participation in MBRS conservation.

The Mesoamerican Biological Corridor Project originated out of the 1992 Central American Commission of Environment and Development ratification of the Central American Agreement on Biodiversity. This agreement promoted development of the Mesoamerican system of

protected areas as an effective Mesoamerican biological corridor. The MBC project is a system of land use planning made up of natural areas that include nucleus areas, buffer zones, multiple use areas, and interconnected areas. Project goals include:

- organize, consolidate and manage MBRS so that environmental goods and services are provided and maintained for the Mesoamerican area and the world;
- promote social involvement that encourages investment in the conservation and sustainable use of this shared natural resource and
- contribute to improving the quality of life of the inhabitants of the region.

3. ENVIRONMENTAL AND BIODIVERSITY RESEARCH AND INFORMATION ON BELIZE

Belize has a significant history of environmental research activities that have involved primarily British and U.S. organizations. There are many map resources available that have proven to be vital in general field studies, rapid ecological assessment processes, environmental impact assessments and general environmental work conducted in the country. The geology map of the country is the composite effort of many expeditions into the country dating back to the 1880's.

3.1. **Soils and Vegetation Maps**

Charles Wright headed a team in the 1950s charged with creating the first soils map not only for Belize, but the first national soils map for a tropical country. This process required creating a new classification system for tropical soils. Besides the generation of a 1:250,000 scale soils map for Belize, a vegetation map (based largely on the affinity of certain plant community types for limestone-based soils or non-limestone soils and a potential land use map, both also at 1:250,000 scale, were developed. Updated vegetation and land use maps have been generated but the soils map is still the primary source of soil descriptions used today. Another 1:250,000 scale vegetation map was developed for the country by NARMP in 1995, applying a modified classification system. Other maps of sections of the country were created during several extensive land use and classification studies. Belize has a full coverage of topography maps at 1:50,000scale that were developed by the British. These maps have proven invaluable over the

years, with several editions created every decade or so based on updated aerial photography. Topography maps date back to the late 1940s and give a good indication of topographical and land use changes that have occurred over the years.

3.2. **Information Management**

There are many information sources within the country, including maps, data, reports and other forms of 'gray' literature. DOE has EIAs on the shelf in its library, along with many other unpublished or limited edition reports. Libraries are also maintained at the Forest Department, the Fisheries Department, the Department of Geology and Petroleum, the Tropical Education Centre and in many private libraries around the country. Often there is a deficiency of information sharing among many agencies and professionals, largely due to the scattered nature of information holdings. Sometimes it is difficult to access much of this information. However, such agencies as the Archives Department and the DOE have libraries that are open to the public with use of materials largely restricted to the offices. Efforts are under way through UB NRMP and other groups to compile a relatively comprehensive bibliography and to electronically archive papers, reports and data sets.

Several key internet sites provide biodiversity and ecology information on Belize. Some of these are updated periodically as new information is accumulated. These include:

- biological-diversity.info/- This site contains general biodiversity information on Belize
- fwie.fw.vt.edu/wcs/bbisbird.htm- Bird list and distribution for Belize
- fwie.fw.vt.edu/wcs- Neotropical bat information system
- www.transnatura.com/belize/- Belize biodiversity mapping system
- LIC- (Conservation and Environmental Data Base, GIS system)

Over the years a large number of international NGOs, institutions and researchers have taken a long-term interest in the biodiversity of Belize and have initiated many conservation and research projects that have resulted in a considerable amount of information. Studies have resulted in the accumulation of taxonomic lists and inventories. Based on the Belize First

National Report to the UNCBD (1998), a general estimate of biodiversity for the country has been compiled (Table 16).

Table 16. Documented Biodiversity of Belize (Castaneda and Jacobs 1998, Earth Trends 2003).

TAXA	Number of Species	TAXA	Number of Species
VASCULAR PLANTS	3,600	CHORDATA	
MONOCOTYLEDONS	850	**Vertebrata**	
DICOTYLEDONS	2,750	Chondrichthyes	195
Orchids and Bromeliads	317	Inland fishes	45
Medicinal Plants	613	Amphibia	46
ANNIMALS		Reptilia	141
MOLLUSCA	158	Aves	577
ARTHROPODA		Mammalia	163
Insecta			
Odonata	174		
Lepidoptera	288		

An estimate of 634 genera, representing 1,302 species of algae, invertebrates and fishes are documented from the marine ecosystems of Belize. The list does not contain information from more recent studies and should only be considered as a rough indication of the biodiversity within Belize. Fifty-eight plants, two species of fishes, two species of amphibians and one species or reptile have been determined to be endemic to Belize. One hundred and thirty-seven species of plants and animals occur on the IUCN Red List of Threatened Species, ranging from "extinct" to "least concern." Forty-three mammal species occurring in Belize are endangered, rare and/or hunted range-wide. Thirteen of these mammal species officially registered as being of international concern and are listed in the CITES, under the US Endangered Species Act or in IUCN Red Data Books (PfB, 1995). The Forest Department is currently conducting a gap analysis of endangered species to develop a more refined list. As studies continue, these numbers will likely increase.

Belize also has several major endangered species assets. Morelet's crocodile (*Crocodylus moreletii*) populations have recovered from years of hunting and are now considered to be healthy. American crocodiles (*Crocodylus acutus*) occur in significant numbers, mostly on a few

select cayes. One of the larges populations of West Indian manatee (*Trichechus manatus*) occurs in Belize, with the highest numbers being found in the Southern Lagoon. The adjacent coastal area is also considered to be one of the largest hawksbill sea turtle (*Eretmochelys imbricata*) nesting beaches in the Caribbean.

Legislative protection is extended to most endangered species, but laws are not enforced. Game animals routinely hunted for family food. Restaurants advertise wild game meat. The range of animals hunted include white-tail deer (*Odocoileus virginianus*), brocket deer or antelope (*Mazama americana*), agouti (*Dasyprocta agouti*), paca or gibnut (*Agouti paca*), armadillo (*Dasypus novemcinctus*), peccaries (*Tayassu tajacu* and *Tayassu pecari*), ocellated turkey (*Agriocharis ocellata*), crested guan (*Penelope purpurascens*), great curassow (*Crax rubra*), various ducks, green iguana (*Iguana iguana*), freshwater Hiccattee (*Dermatemys mawii*)and marine turtles (*E. imbricata, Chelonia midas*). Many other animals are also often hunted for food, including tapir, manatee, coati (*Nasua nasua*), monkeys, ibises, egrets, storks, parrots, toucans and macaws. Cormorants and other birds are routinely killed on aquaculture sites. Coatis, parrots and parakeets are killed because they eat agricultural grains. Woodpeckers and other birds are known to damage citrus and are often hunted. Jaguars (*Panthera onca*) and other large cats are hunted due to fear or concern over livestock. Since construction of the Chalillo Dam some of the last remaining scarlet macaw populations have been displaced from their home range and are showing up in places where they have not been seen before.

A wealth of research papers, data sets, maps and guiding documents exists for Belize. Scientific research and study has been occurring within Belize for over a century. This information is still valuable today, providing foundation knowledge for current ecological assessments and research. A lot of the published studies were taxonomic descriptions and distribution information. Charles Darwin described the atolls off the coast of Belize during a brief visit in the last half of the 1800s. Since that time, the former country of British Honduras has undergone several periods of very active and focused biodiversity research. During the 1920s and early 1930s there was as great focus on botanical studies. Wildlife studies began to increase in the 1960's. The 1970's were marked by intensive studies of select species from a vector-borne disease perspective (lishmaniasis, trypanosmiasis). The Smithsonian Institute set up a field station at Carrie Bow Caye in 1972, starting an ever-expanding era of marine research over the past thirty-three years.

Most of the earlier work was focused on biodiversity inventories of select taxonomic groups within the marine environments around the Carrie Bow Caye and Twin Cayes area. A body of over 800 research papers has resulted, scattered throughout technical journals.

A bibliography of literature on the biology and ecology of Belizean fauna and flora was compiled by Boles (1988) that documented over eight hundred citations. This literature search primarily involved listings in Biological Abstracts and references given in major papers. Jan Meerman greatly updated this list, compiling a bibliography of over 4,000 published and unpublished documents addressing biological and ecological information in Belize through a consultancy with MBC Project. Many field station managers and environmental professionals around the country have been working to compile all of the biological and ecological information available on Belize. Government offices have also been repositories for reports and information. NGOs, CBOs and private individuals around the country have specialized information holdings and libraries that contain much of the information on Belize. Currently there is no repository for this information within Government agencies. A clearing-house mechanism (CHM) for biodiversity is being set up through the Forest Department. Several important web sites provide biodiversity information on Belize and are helping to compile information and making it widely accessible. The UB NRMP is planning to compile an electronic library of this information as documents are retrieved, ultimately making that body of literature available to anyone interested. There is a lack of a formal process through which information is returned to the country.

Many of the references listed are taxonomic and range distribution reports and cover a wide variety of organisms. Many of the reports listed are ecological studies and taxonomic listings from select geographical areas, protected areas or study sites. Efforts at UB-NRMP are underway to categorize these citations by taxonomic groupings and by topic of ecological study. Table 17 gives the approximate number of publications addressing each general taxonomic group. Some of the oldest information referenced in this current bibliography dates back to the 1920s and 1930s. Most of the marine articles are the results of work through the Smithsonian Institute during the past three decades. Recent marine research not yet captured in this version of the bibliography include research focused on whale sharks, spawning aggregates, manatee, dolphins, coral reef surveys and probably many more areas.

Table 17. Work Conducted in Belize on Taxonomic Groups.

TAXA	Number of Papers	TAXA	Number of Papers
VIRUSES	9	ARTHROPODA	
BACTERIA	21	**Chelicerata**	
PROTISTA	20	Pycnogonida	1
FUNGI	32	Arachnida	17
ALGAE	67+	**Mandibulata**	
VASCULAR PLANTS	255+	**Crustacea**	56
ANIMAL		**Insecta**	208
PORIFERA	29	ECHINODERMATA	25
CNIDARIA	58	CHORDATA	
PLATYHELMINTHES	6	**Vertebrata**	
NEMERTINA	2	Chondrichthyes	4
KINORHYNCHA	1	Osteichthyes	95
NEMATODA	3	Amphibia	46
ECTOPROCTA	1	Reptilia	143+
SIPUNCULOIDEA	5	Aves	172+
MOLLUSCA	23	Mammalia	200+
ANNELIDA	29		

A full stocktaking review of reports on biodiversity projects and related activities that have been completed or are underway in Belize is beyond the scope of this project, as the information is extensive. A list of available reports is given in Appendix 4.

3.3. **National Herbarium Collections and Botanical Garden**

Collections of botanical specimens are maintained at the National Herbarium at the Forest Department. The collection includes about fifteen cabinets with over 15,000 specimens representing 1,219 genera and 3,409 species. About 5,050 of these specimens have been entered into an electronic data base from the Royal Botanic Gardens, Edinburgh. These holdings have specimens that date back to the 1930s, with many of them identified to the species level. The Forest Department is involved in the Project, “Biodiversity as an Instrument for Development in

Central America", a regional herbarium program that helps to build skills and capacities to compile and maintain national herbarium collections. The project is conducted through the National Institute of Biodiversity (Costa Rica) and the National System of Conservation Areas (SINAC). Through this effort, several technicians and a student for UB have received technical training and other support. Also, a small collection of four herbarium cabinets is maintained at the UB Central Farm campus.

The Belize Botanical Garden holds living specimens and has recently been involved in harvesting plants from the forest being cleared for the Chalillo Reservoir. Table 18 lists several facilities in the country for housing biological collections. This is a privately funded facility that is associated with a local tourist resort.

3.4. **Other Collections**

An insect collection, primarily of those insects of agricultural importance, is maintained at Central Farm. Pinned and living specimens of butterflies are maintained at some of the butterfly farms around the country. Currently there are about five of these facilities. The Craig family maintains a very extensive and well-curated insect collection that includes a wide range of orders and families. A growing collection of aquatic macroinvertebrates (largely insects) that are used as biological indicators is being compiled at the University of Belize. St. Johns College maintains a collection of freshwater fishes that were compiled by Thomerson and Greenfield (1996) during their field survey efforts around the country in the early 1970s. Some specimens of marine fishes are maintained at the Fisheries Department facility in Belize City, collected during research and stock assessment efforts. The Smithsonian Institute holds an extensive collection of Belizean marine fauna and flora in Washington D. C. resulting from thirty-three years of research in the country. Other museums around the world probably have Belize collections of organisms accumulated over the years, including the National Museum in Chicago, Illinois (USA), University of Edinburgh and others.

Table 18. Biological collections maintained in Belize (orchid houses and plant nurseries not included).

FACILITY	DESCRIPTION	USES
Belize Zoo	Collection of Belizean mammals and birds	Public education and recreation and tourism
Tea Kettle Enterprises	The company maintains an extensive collection of introduced and native palm species, currently holding about 300 species.	Seeds are exported to various countries for planting.
Belize Botanical Gardens	The ex-situ collection of ornamental, forestry and fruit tree species is maintained.	The botanical garden is a tourist attraction.
National Herbarium	The only in country herbarium maintains a general collection of native plant species, containing 155 families, 824 genera and 2,054 species.	This reference collection is used by students, technicians and scientists.
BAHA's insectarium	BAHA maintains a collection of insect species native to Belize and introduced pest species. An ex-situ culture of Pink Hibiscus Mealybug (*Maconellicoccus hirsutus*) and their predator, the parasitic wasp, (*Anagyrus kamali*) that is maintained for the region.	This reference collection is used by students, technicians and scientists. Wasps are grown for mealy bug control
Trek Stop (Tropical Wings)	Butterfly rearing facility just outside of San Jose Succotz. Many different kinds of butterflies are reared at the facility.	The facility is part of a tourism operation.
Chaa Creek Nature Museum and Butterfly House	Natural history museum offers self-guided environmental education, hosts seminars and meetings and monarch butterflies are reared.	The museum is part of the facilities available for tourists.
Central Farm	An insect collection of native insects has been maintained for years and includes many orders with representatives that are both agriculturally important and of ecological interest.	This reference collection is used by students, technicians and scientists.
Green Hills	Butterfly rearing facility and research station. Owners are responsible for setting up butterfly facilities in other parts of the country and are actively involved in research in dragonflies and butterflies. A book on the butterflies of Belize will soon be available.	Tourists are attracted to the facility, but research on butterflies of Belize is a primary directive.
University of Belize	Maintains a plant propagation laboratory for the production of orchids, bananas and other plants.	This is used as a research lab but will also be producing banana stock.
St. George's Caye Aquarium	Maintains a collection of select local marine fishes, crustaceans, polychaetes and corals	Small scale tourism and recreation.
Belize	Under construction, but will focus on maintaining reptiles and	This facility will support research,

Herpetarium and Aquarium Park	amphibians, probably also freshwater aquariums and a live insect collection.	conservation, education and tourism.

4. STOCK-TAKE OF REQUIREMENTS UNDER THE CONVENTION OF BIOLOGICAL DIVERSITY

A considerable amount of biodiversity conservation and ecosystem protection efforts have occurred in Belize over the past thirty-five years. During this time, older Government agencies have been able to develop greater capacities to address growing conservation responsibilities through new technologies such as GIS and acquiring training for staff. Agencies have also expanded their mandates to address the challenges of conservation within this era of globalization, accelerating development and increasing biodiversity erosion. NGOs and CBOs have emerged becoming involved in advancing assessment and conservation efforts, with several of these organizations now managing protected areas. Educational institutions are also beginning to take active roles in biodiversity conservation and sustainable use projects. The UB has recently added a B.Sc. programme in Natural Resource Management and is beginning to take a more active role in addressing conservation issues within the country, assisting NGOs, CBOs and Government agencies in field activities.

The NCSA CBD Workshop held on May 6, 2005 was attended by a cross section of professionals representing many of the active environmental and education organizations in the country. A table of CBD articles and requirements under those articles was presented and workshop participants were asked to list any activities and efforts that have been conducted, or that are currently underway, which address each requirement. Result of this consultation is listed in Appendix 1. A list of preliminary requirements under the UNCBD is presented in Table 19, citing many of those activities conducted by organizations and individuals in Belize that address these requirements.

Table 19. Eleven Preliminary Requirements under the UNCBD

REQUIREMENTS	GENERAL DESCRIPTION OF RECENT/ON-GOING PROGRESS
National biodiversity conservation planning	The Belize Biodiversity Strategy and Action Plan prepared/adopted by GOB 1998 Forest Department is the Biodiversity Focal Point Forest Department policies and work plan development under way Fisheries Department policies development under way PACT updating strategic action plan
Identifying and monitoring biodiversity and its conservation	GIS and biodiversity data maintained by LIC Minimum activities conducted by DOE and Fisheries Dept Smithsonian and other foreign institutions have accumulated data and specimens, developed collections and published information on Belize biodiversity Terrestrial assessment and monitoring information compiled by Selva Maya, Mesoamerican Biological Corridor Program. Marine assessments and monitoring involve CZMAI, TIDE, FON, Green Reef, UB.
In-situ conservation, including protected areas system management	Forest Department, Fisheries Department and the Institute of Archaeology manage protected areas, many of these in conjunction with select NGOs and CBOs. BAPPA represents growing number of private protected areas NPAPSP project is underway
Preserving indigenous and local knowledge, innovations and practices	Archives Department maintains collection of historical documents and photographs. Ixchel and associated organisms worked to preserve medicinal plant knowledge. El Pilar project seeks to preserve Ancient Maya forestry use and knowledge base. Several ethnic groups are making conscious efforts to preserve cultures (Garifuna, Maya, Creole) Tumulk'in Center of Learning for Toledo Maya strives to recover and preserve culture while providing alternative empowering educational program
Ex-situ conservation of biodiversity	The Belize Zoo and the Belize Botanic Gardens maintain collections of living fauna and flora of Belize. Belize Herpetarium and Aquarium planned for development in Belmopan City. Private iguana breeding projects and butterfly breeding facilities established.
Developing and introducing economical and social incentives	Tax incentives for private protected areas and corridors being explored. PES system is being investigated.
Providing scientific and technical education and training	UB is establishing a four-year NRM Program and eventually a four-year marine science program that will provide theoretical background and practical experience for students while being involved with agencies involved in natural resource management.
Raising understanding and awareness	Environmental education efforts are being undertaken by several NGOs. Forest Dept. developing educational materials. UB getting involved in environmental education projects with Gov and NGOs.

Utilizing EIA process for biodiversity conservation	The DOE is responsible for facilitating the EIA process, manuals and procedures that have been developed.
Regulating the handling of living modified organisms	Policies are being drafted by BAHA
Regulating access to and transfer of genetic resources	Forest Department collection permit process. Fishery Department collection permit process.
Regulating the commercialization and ensuring benefit-sharing from genetic resources	Fishery Department policies concerning marine bio-prospecting Forest Department policies concerning medicinal plants and other extractable forest resources
Managing information, mainly through clearing-house mechanisms	A CHM is being established through the Biodiversity Office in the Forest Dept. UB NRMP is beginning to accumulate an electronic library of environmental information (published and unpublished) on Belize. Internet sites containing biodiversity and ecology information on Belize. LIC distribution of map data
Implementing the Cartagena Protocol on Biosafety	BAHA is developing policies for addressing biosafety issues.
Accessing financial resources	PACT is helping to fund many conservation and preservation efforts UNDP GEF/Small Grants Program supports many efforts, such as co-mgt. Payment for Environmental Services program being proposed.

The range of activities listed includes efforts initiated by all categories of organizations described above. Although there is a concerted amount of effort invested in many areas addressed by the Convention, these are not necessarily coordinated, but rather are often results of investigators, researchers and project developers operating relatively independently. Consequently, opportunities to share information, expertise and data and to develop synergism are often missed.

5. NEEDS AND CHALLENGES

Many areas were identified where information, action and capacities are needed in order to move forward in complying with the UNCBD articles. Table 20 lists those requirements of Articles of the UNCBD that have not been addressed in Belize.

Table 20. Requirements of the UNCBD where no identifiable actions have been taken

Article 8. In-situ Conservation
Where a significant adverse effect on biological diversity has been determined, regulate or manage the relevant processes and categories of activities (although now addressed by NPAPSP project)
Article 9. Ex-situ Conservation
Adopt measures for the ex-situ conservation of components of biological diversity, preferably in the country of origin of such components
Article 11. Incentive Measures
Adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity
Article 16. Access to and Transfer of Technology
Take legislative, administrative or policy measures with the aim that the private sector facilitates access to, joint development and transfer of technology for the benefit of both governmental institutions and the private sector of developing countries
Article 18. Technical and Scientific Cooperation
Encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies
Article 19. Handling of Biotechnology and Distribution of its Benefits
Take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties to the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties
Article 20. Financial Resources
Take full account of the specific needs and special situation of least developed countries in their actions with regard to funding and transfer of technology
Take into consideration the special conditions resulting from the dependence on, distribution and location of, biological diversity within developing country Parties, in particular small island States
Article 26. Reports
Each contracting party shall present reports on measures that it has taken for the implementation of the Convention, and their effectiveness in meeting the objectives of this Convention

A list is provided below but is by no means exhaustive. Many of these areas have been identified several times during discussion sessions, representing common needs that emphasize the potential to share resources and energy to obtain common goals.

5.1. Needs

1. Legislation and policies

- Effective land use planning policies and procedures
- Improvement of monitoring, enforcement and court actions
- Compilation of all legislation, including policies for all Government agencies charged with biodiversity and ecosystem management and made available to any interested persons and organizations

2. Information and data management

- Revise and update number of species documented in Belize for major taxonomic groups
- Identify, standardize and coordinate biological specimen archiving projects within the country and implement an electronic cataloguing system
- Compile a bibliography of the natural science literature of Belize
- Compile an electronic library of literature listed in the bibliography
- Compile and maintain a directory of environmental professionals throughout Belize and working within the country
- Develop and maintain registers for field stations, laboratories, visiting universities, international NGOs and researchers

3. Assessment, Monitoring and Research

- Coordinate research, assessment and monitoring efforts among all active institutions
- Adopt standard methods and assessment and monitoring protocols
- Develop a list of research needs from which researchers can choose

4. Protected Areas

- Consolidate the National System of Protected Areas (NPAPSP project)
- Promote and implement community forest management pilot projects that involve people living in buffer zones
- Provide training for field staff involved in managing protected areas on the ground.

- Create a functional system of revenue generation for protected areas
- Create a transparent process that governs the de-reservation process for protected areas
- Develop more effective collaboration and communication among agencies involved in protected areas management
- Improve management regimes for protected areas

5. Awareness, Training and Education

- Create an advisory committee for the UB NRMP that is made up of Government, NGO, CBO and industry representatives that require employees with environmental training
- Coordinate and implement effective biodiversity and ecosystem awareness
- Promote biosafety awareness

6. Financial Resources

- National focal point follows the recommendations set forth in the Action Plan for Capacity Building and other convention requirements
- National focal point should coordinate with local NGOs and CBOs, international NGOs and universities to implement requirements prioritized in the Action Plan

5.2. Challenges

1. Biodiversity preservation and ecosystem conservation efforts in Belize are confronted by many internal challenges, including

- training needs (from PA management to information management)
- capacity needs (such as GIS and GPS technology and training)
- funding needs that supplement GOB budgets (the main challenge is to achieve some measure of sustainability, drawing funds through such sources of payment for services such as user fees and environmental taxes)

2. Loss of preferential markets

- liberalized global markets or our natural resource base, particularly those linked to timber, agriculture, fisheries and tourism

- rapid expansion of shrimp farming and tourism in the coastal environment with impacts such as mangrove deforestation, discharge of nutrient rich wastewaters and the introduction of alien and invasive species
- promote a more effective EIA process in order to promote development within environmental restraints

3. Poverty

- Over 25% of Belizean households or 33.5% of the total population are below the national poverty line.
- Increased slash and burn agriculture
- Increased clearance of steep slopes for subsistence and commercial agriculture
- Heavy dependency on local natural resources, but lack of sustainable harvesting strategies by people who depend on these resources for basic needs, has resulted in the overexploitation of forests, fisheries and wildlife.
- Unemployment and under employment
- Heavy dependence on imported goods
- Small internal markets
- Dependence on a few cash crops (citrus, sugar, bananas, papayas, pond raised shrimp)

4. Debt servicing

- Belize National Debt is currently above BZ$ 2.2 billion
- Increased pressure to further exploit the nation's national resources to pay toward debt

5. Large projects resulting from Globalization

- The proposed highway to link Mexico/Peten tourist hubs under the Plan Puebla Panama Initiative will cross through protected areas and proposed trans-boundary corridors in Belize and Guatemala
- Mention the water project- massive change in vegetation and fauna habitats
- One of our greatest challenges will be to developing conservation and preservation plans at the wider landscape level for the conservation of the region's rich biodiversity.

6. Impact of Climate Change and Land Degradation (cross cutting issues among the three conventions)

- changes in dry season and wet season patterns are being seen and the impact felt by the agricultural sector
- Sea level rise threatens the country's coastal ecosystems and saltwater intrusion threatens coastal groundwater aquifers
- Increased hurricanes will force those organisms who can move to migrate to inland sites
- Droughts will stress the productive sectors of our economy and stress ecosystems
- Non-sustainable land use patterns by the agriculture sector create habitat, soil and water loss
- Modification of flow regimes of watershed systems
- Reduce soil fertility
- Increase soil erosion and sedimentation impacts on biodiversity

6. SYNTHESIS

The Belizean economy is strongly linked to the natural resource base, particularly in agriculture, fisheries and tourism industries that contribute to the bulk our earning potential. Conservation of our natural resources has long been a concern. Belize ratified the United Nations Convention on Biological Diversity on December 30, 1993. In compliance with its commitments, Belize submitted the Belize Biodiversity Strategy and the Belize Biodiversity Action Plan 1998-2003" in 1998 (Jacobs and Castaneda 1998, eds.). This stock-taking exercise is undertaken to identify the current on-going activities Belize that support the requirements of the UNCBD and to identify what has or has not been done to achieve those requirements.

Many different ministries, agencies and other government institutions have responsibilities over and make decisions involving (directly and indirectly) biodiversity and ecosystem conservation and the sustainable use of critical natural resources (land, trees, soil, wildlife, and water). Several long-established key Government agencies (i.e. Forest Department, Fisheries Department, Lands and Surveys Department) have evolved over time to address the increasing biodiversity and resource use issues associated with a rapidly developing country. Newer agencies have emerged to address more specific issues and tasks, examples including Lands Information Center (LIC), Department of the Environment (DOE), Land Utilization Authority

(LUA) and Protected Areas Conservation Trust (PACT). Collectively these agencies permit and regulate extraction, resource use activities and discharge allowance, require assessment and monitoring efforts and manage protected areas. Three GOB agencies are charged with monitoring and managing PAs, these agencies being the Forest Department (forest reserves, national parks, wildlife sanctuaries, natural monuments), the Fisheries Department (marine reserves) and the newly formed Institute of Archaeology (archaeological reserves). Other very important GOB agencies include DOE (overseeing the EIA process), PACT (providing funding), CZMAI (coastal planning, monitoring and research), BAHA (biosafety issues) and the Lands and Surveys Department (land distribution). The Department of Geology and Petroleum is responsible for overseeing mining activities and ensuring that environmental guidelines are followed.

In-situ conservation efforts have developed over the years, particularly during the late 1990s when approximately 35 protected areas were declared. UNDP GEF/SGP has contributed greatly to the development of capacities for community organizations involved in co-management and the Biodiversity Operational Programme, including small ecotourism projects. PACT was founded in 1995 and opened its door for business in June 1996. It offered its first grant in early 1997 to the Association of Friends of Five Blues Lake. The Trust is now a major funding agency for co-management efforts and also supports education through scholarships for Belizeans seeking professional development opportunities within the environmental field, all of these activities and actions implemented through many different government agencies, NGOs and CBOs.

BAS, the oldest environmental NGO in the country, has entered a PA management agreement with GOB and currently manages eight protected areas. TIDE, located in Punta Gorda, is responsible for managing two protected areas. Friends of Nature, based in Placencia, is overseeing the management of two MPAs. There are a host of smaller CBOs that have been formed to administer day-to-day activities for select sites through co-management agreements with the Forest Department and the Fisheries Department. Examples include AFFBL (Five Blues Lake National Park, Friends of Gra Gra Lagoon (Gra Gra Lagoon National Park) and Friends of Freshwater Creek (Freshwater Creek National Park). PfB has introduced a new private

conservation ethic to Belize and has supported many research efforts aiming at developing a balance between conservation and use of our natural resources.

The NPAPSP is a long-term strategy for protected areas management. A recent analysis of the NPAPSP recognizes the need to better define management objectives, combine all three Government agencies involved in PA management into one agency and develop a more efficient monitoring system. The report further recognized the importance of community-based co-management and the importance of private protected areas in the management and conservation of our natural resources. A functional biological corridor system is necessary for long-term maintenance of our protected areas system.

At least twenty-one private or NGO field stations are located around the country. Each of these facilities accommodates environmental field work while some accommodate educational groups and a few conduct management activities under agreements with appropriate GOB agencies. Many international organizations have been active in Belize for many years and others are beginning to take interest. These organizations have made great contributions to many of the ongoing efforts. These organizations include IUCN, CI, TNC, WCS, WWF and the UNDP/GEF Small Grants Program.

Over the years, many universities and institutions have conducted work in Belize. The current estimate is that there are over 4000 documents on the biodiversity and ecosystems of Belize that have been compiled by various institutions and researchers. Many of these documents are published in technical journals. The Smithsonian Institute, for example, has an extensive research history in Belize, extending back 32 years, documented in over 800 publications. Most of these 4000+ documents are not available in the country. However, a growing number can be accessed over the internet. A significant body of maps covers the country, including 1:50,000 scale topography maps. Also a growing archive of GIS data is being compiled, most of this stored with LIC, CZMAI or in the libraries of individual professionals.

Several important regional initiatives are underway that involve Belize with neighboring countries. The MBRS is focused on trans-boundary management of the Barrier Reef System, a

World Heritage Site. The MBC project has been instrumental in identifying potential corridor linkages that would tie our PAs into a network of Central American PAs.

Many things have been and are being achieved in Belize that address the requirements of the CBD, but much of this effort has occurred through many different organizations and individuals, often working independently, and often not conscious of the CBD requirements to which their efforts contribute. There is a general lack of effective coordination, and sometimes awareness, of activities being conducted by so many different organizations, professionals, educators and community leaders. Coordination of assessment, monitoring and research efforts and a functional information and data management/sharing system has not created an environment for synergism.

Several requirements of the CBD have not been addressed. These areas were identified through the CBD workshop held on May 6, 2005 during which participants identified activities and actions undertaken around the nation by many different organizations for each requirement itemized (Appendix 1). Table 20 lists those nine requirements within eight articles for which no actions or activities were identified. Although we have submitted our First National Report in 1998 (Article 26), the Second National Report, due in 2003, is still in draft form. The Third National Report, not yet written, was due in May 2005.

Appendix 1

Expanded List of Actions Taken by GOB Agencies, NGOs and CBOs Addressing Agreements as Outlined by Sixteen Articles of the UNCBD

(Started in group consultation during UNCDB Workshop, May 6, 2005)

UNCBD ARTICLES	ACTION TAKEN
ARTICLE 6. General Measures for Conservation and Sustainable Use	
Develop or adapt national strategies, plans or programmes for the conservation and sustainable use of biological diversity	The Belize Biodiversity Strategy and Action Plan was prepared and adopted by the Government in 1998 Forest Department moving from a timber resource management agency into a sustainable forest management, PA, biodiversity, wildlife management etc. agency. Fisheries Department revising policies and work plans. PACT developing an updated strategic action plan NPAPSP project
Integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies	PACT is involved in funding conservation efforts that help support community economic systems. Tourism sector policy addresses PA, scenic areas, biodiversity CZMAI is involved in tourism, climate change, and marine biodiversity.
ARTICLE 7. Identification and Monitoring	
Identify components of biological diversity important for its conservation and sustainable use	Selva Maya protocol data sets Large data set on land cover exists at LIC and distributed to other agencies and organizations Aquatic indicator community assessments ongoing at UB A significant collection of marine specimens from Belize are housed at the Smithsonian that represents historical information (Ascidian taxonomic studies for biologically active compounds). Mesoamerican Biological Corridor Project data EIAs on file at DOE contain relevant information
Monitor components of biological diversity, paying particular attention to those requiring urgent conservation measures or which offer the greatest potential for sustainable use	Minimum monitoring activities are currently being conducted (e.g. DOE, Fisheries Dept, NGOs, and UB). Some vertebrate monitoring done by visiting researchers and some local NGOs. Monitoring of reef, sea grass beds and mangroves and select endangered organisms conducted by CZMAI TIDE, FON, Green Reef, Smithsonian, UB and some routinely visiting universities (U. of Mississippi)

Identify processes and categories of activities which have adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects	Identified as part of EIA process with documents on file at DOE, but no consistent monitoring. Rapid ecological assessments and human impact mapping conducted by UB NRMP students and faculty.
Maintain and organize data derived from identification and monitoring activities	CHM at Forest Dept. is in process of establishment Belize Biodiversity Information System (BAS/WCS) CZMA/I, Fisheries Dept/MBRS Regional Information Database LIC data base and the CEDS system (not current) Belize biodiversity database– www.biodiv.org Meerman- eco-regions maps and data bases WCS Smithsonian Institute data base
Article 8. In-situ Conservation	
Establish a system of protected areas or areas where special measures need to be taken	National Parks System Act and supportive legislation has resulted in creation of a national park system. Forest Act, Fisheries Act, NICH Act, Land Utilization Act (Special Development Areas) address PAs NPAPSP project
Develop guidelines for the selection, establishment and management of these areas	In progress as part of NPAPSP project.
Regulate or manage biological resources important for the conservation of biological diversity with a view to ensuring their conservation and sustainable use	Active management and co-management of PAs on-going that involve GOB, NGOs and CBOs. Biological corridors system being developed. Privately owned PAs are being developed (BAPPA). Thirteen grouper spawning aggregate sites closed- is this the best site? Seasonal harvest of conchs, spiny lobsters regulated Sea turtle harvest regulated Community-based watershed associations being formed.
Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings	Several major protected areas initially focused on a single species, but those that encompasses ecosystems, have been established (Cockscomb Basin WS, Southern Lagoon WS) Crooked Tree WS set us as a RAMSAR site
Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas	Special Development Areas have been established in many areas and the national corridor system has been proposed. EIA process in place Working with buffer zone communities
Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species	Limited efforts in some riparian areas and Mountain Pine Ridge
Establish or maintain means to regulate, manage or	National Biosafety Committee is in the process of establishing

control the risks associated with the use and release of living modified organisms resulting from biotechnology	a national framework for biosafety.
Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species	BAHA is conducting this effort through the Biosafety framework
Endeavour to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components	A few small industries have been created around a medicinal plant use through Ixchel Inclusion of %age of natural land in developments Sustainable forest use criteria to be applied: Toledo Healthy Forest Initiative Sustainable Forest Management Licensing Zoning and sustainable fishing practices in M/Reserves. Organic farming (Toledo cocoa growers) Habitat maintenance (Baboon Community Sanctuary SPECTE reforesting of riparian areas on the Mopan River for iguanas
Respect, maintain and promote appropriately knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity	Use of medicinal plants and sustainable resource use e.g. other plans, fishery etc. promoted among rural communities, indigenous communities, ITZANA Society (traditional lifestyles and PA management)
Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations	Legislation has been developed but enforcement is very minimal
Where a significant adverse effect on biological diversity has been determined, regulate or manage the relevant processes and categories of activities	Iguana breeding projects have resulted in repopulation of areas where they were hunted heavily Butterfly breeding facilities Macaw parrot studies conducted Freetown Sibun Hicatee river turtles protected area Conch and lobsters have been studied and management efforts put into effect Deer have seasonal harvest but not on gibnut
Cooperate in providing financial and other support for in-situ conservation, particularly to developing countries	GEF/UNDP (enabling activities), PACT US Gov/Gov Belize Debt for Nature Swap (BZ$19M); GEF Small Grants, COMPACT, International ENGO donors, Corporate sponsors, Interna-tional development private organizations, local NGOs
Article 9. **Ex-situ Conservation**	
Adopt measures for the ex-situ conservation of components of biological diversity, preferably in the country of origin of such components	No action

Establish and maintain facilities for ex-situ conservation of and research on plants, animals and micro-organisms, preferably in the country of origin of genetic resources	Some ex-situ efforts have involved with plants (orchids, xate palm, Belize Botanic Garden), iguanas, Belize Zoo Central Farm with Taiwan TC Butterfly farms Germless collections (CARDI, Citrus Growers Assoc, Belize Sugar Industry)
Adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions	Reintroduction of Howler monkeys into former ranges, release of a few king vultures, and many iguanas. Harpy eagles reintroduction (Belize Zoo). Lifeline for wild cats Belize Marine Mammals Stranding Network also manatee rehabilitation
Regulate and manage collections of biological resources from natural habitats for ex-situ conservation purposes so as not to threaten ecosystems and in-situ populations of species	Belize Botanic Garden is taking the lead role in this effort. Some experimentation for maintaining seed bank for trees has been conducted. Private aquarium for marine species (select fishes, and invertebrates) at St Georges Caye
Cooperate in providing financial and other support for ex-situ conservation, and in the establishment and maintenance of ex-situ conservation facilities in developing countries	A plant propagation lab has been set up on the UB Belmopan campus and was at one time operating at full capacity, focusing on orchids. Regional cooperation through the Herbarium project/CA Belmopan Herpetarium
Article 10. **Sustainable Use of Components of Biological Diversity**	
Integrate consideration of the conservation and sustainable use of biological resources into national decision-making	Closure of 13 aggregation sites to commercial fishing Forest management and issue of long-term licenses. Advice through EIA process (NEAC) PAs establishment consistent with this requirement
Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity	Requirement for EIAs CREI working to minimize introduction of citrus diseases and biological control of insect pests. BAHA maintains parasitic wasp breeding project
Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements	Medicinal plant research, education and conservation at Ixchel. Manufacturing and marketing of ointments, elixirs, teas and other formulations of naturally occurring medicinal materials are available for sale. Aruba Resort in Belize District Belize Indigenous Training Institute Individuals in the Belize and Cayo Districts
Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced	Promotion of riparian forest rehabilitation is being done through several NGOs and UB NRMP. SPECTE, FCD on Mopan River

	Mario Chaparral and Mount Pleasant Creek
Encourage cooperation between governmental authorities and the private sector in developing methods for sustainable use of biological resources	Long term forest licenses Organic cocoa bean export Belize Assoc of Private PA/Forest Dept. CZMA/I Advisory Council (MPAs and zoning) Fisheries Advisory Board (list species) Aquiculture of native species (fishes and crustaceans)
Article 11. Incentive Measures	
Adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity	No action
Article 12. Research and Training	
Establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of biological diversity and provide support for such education and training for the specific needs of developing countries	Several institutions around the country offer A.A. programs in environmental science and natural resource management. UB is offering a B.Sc. program in natural resource management that provides services in projects of need. NGOs and CBOs also have significant programs. Better land management/agriculture practices by citrus growers association. An advisory committee of select experts from Government, NGOs and business is being set up for the UB NRMP to help ensure quality in the program is being set up. PACT scholarship programme and is funding the 4 year NRM Programme WWF scholarship Smithsonian Institute has provided scholarships for technical training for UB NRMP students GOB/OAS Scholarships and priority training includes NRM (Oak Foundation) GOB and international partners funds training through bilateral scholarships in USA, Canada, Europe, Australia and New Zealand institutions BTB Guide training programme TEC hosts Belize Zoo Camp for students and teachers
Promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries	Forest Department and Fisheries Department issue permits for conservation research projects in the country especially by visiting researchers (problems exist in coordinating with permit holders to submit reports.
Promote and cooperate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources	Rapid biological assessment protocols, sonic and ultrasonic recordings, camera traps, digital photography, remote imagery and advanced water quality equipment are being used in

	projects conducted at some protected areas. Tagging and tracking devices for selected species Global learning networks among NGOs
Article 13. Public Education and Awareness	
Promote understanding of the importance of, and the measures required for, the conservation of biological diversity, in particular through the media and educational programmes	This has been done by NGOs/CBOs and some GOB Departments (especially Fisheries, Forest and Environment and Health), projects including production of books, videos, CDs, workshops and on-site training. Science curriculum at primary school and high school levels. Environmental/Natural Resource Awareness Weeks Environmental health statistics Environmental Exhibitions at primary and secondary schools through Ministry of Education Curriculum Development Unit by MBC education manual
Cooperate with other States and international organizations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity	Some cooperation with International NGOs, Peace Corps, Mesoamerican states, CCAD RARE is involved in a project PRIDE that is applied in the region
Article 14. Impact Assessment and Minimizing Adverse Impacts	
Ensure environmental impact assessment of proposed projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects	The EIA requirement under the law is inconsistently applied, especially involving projects that induce major landscape modification
Ensure that the environmental consequences of programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account	Environmental compliance signed for projects, eg bond held by Geology and Petroleum Dept and DOE for projects.
Promote notification, exchange of information and consultation on activities which are likely to significantly affect the biological diversity of areas beyond the limits of national jurisdiction	Some efforts are underway...status unknown...revisit CCAD, also with regional NGOs, some bilateral arrangements also Selva Maya protocol monitoring protocols Neonate protocols monitoring protocols
In the case of imminent or grave danger or damage to biological diversity within areas beyond the limits of national jurisdiction, notify immediately the potentially affected States of such danger or damage, as well as initiate action to prevent or minimize such danger or damage	Some efforts are underway to establish closer linkages with neighboring states concerning shared environmental issues in general e.g. Port Honduras & Sapodilla Cayes, and Corozal Bay MBRS Project has such mechanism with TRIGOH; BEMAMCCOR Border Commission between Mexico and Belize Bi-National Commission between Belize and Mexico with a NRM component

Promote national arrangements for emergency responses to activities or events which present a grave and imminent danger to biological diversity and encourage international cooperation to supplement such national efforts and establish joint contingency plans	There is an emergency response strategy developed by NEMO Forest fire notification in Central America based in Nicaragua funded by British and CCD in partnership with NOAA to get satellite imagery
Article 15. **Access to Genetic Resources**	
Endeavour to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties, avoiding restrictions that run counter to the objectives of this Convention	Careful guidelines are being considered through the Fisheries Department and Forest Department in response to activities from institutions such as the University of Mississippi interested in select sponges, algae and coral species as. Guidelines for marine bio-prospecting being developed (see Fisheries Dept)
Endeavour to carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties	Limited scientific research is being conducted in marine and terrestrial ecosystems on genetic resources, collaboration on medicinal plants between Ixchel and the New York Botanical Gardens (no longer active)
Take legislative, administrative or policy measures with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources	Policy revisions in progress for several agencies however access and benefit sharing components of those reviews are unknown Coastal Zone Management plans and advisory body incorporates these considerations No action on ABS policy development
Article 16. **Access to and Transfer of Technology**	
Provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment	Exchange of satellite info by some persons/agencies for use in habitat identification, such as used by UC-Berkley for identifying *Anopheles* breeding sites. GOB providing enabling environment for projects such as Darwin Initiative project. MAF exchange of biodiversity with Taiwan CARINET Belizean Fishing Cooperatives collaborating with Siam Kan Fishing Cooperative in Quintana Roo Mexico lobster shade construction.
Take legislative, administrative or policy measures with the aim that Contracting Parties which provide genetic resources are provided access to and transfer of technology which makes use of those resources	BAHA working on Biosafety framework that would benefit both GOB and private sector
Take legislative, administrative or policy measures with the aim that the private sector facilitates access to, joint development and transfer of technology for the benefit of both governmental institutions and the private sector of	No action taken

developing countries	
Article 17. Exchange of Information	
Facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries	Several groups are working to meet this need. Biblio-graphy of research in Belize has been compiled and some effort is underway to compile this information into electronic format by private libraries and NGOs. OSPESCA sharing fisheries data Clearing House Mechanism for biodiversity in process for development Environmental Statistics Unit MBRS data bases DOE EIA documents CZMAI data bases Land Information Centre data bases Networks, internet and participation in international/ regional information exchange (IABIN SIAM)
Article 18. Technical and Scientific Cooperation	
Promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity through the appropriate international and national institutions	Many researchers (universities, individual researchers and the Smithsonian Institute) representing institutions around the world, are conducting research in marine, terrestrial and freshwater realms.
Promote technical and scientific cooperation with other Contracting Parties, in particular developing countries	The CCAD (Spanish Government) has contributed equipment to Latin American countries, including Belize, for protected areas management
Encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies	No action
Promote the establishment of joint research programmes and joint ventures for the development of technologies	Joint assessment and research efforts are being developed with UB students and faculty and foreign researchers, but no action taken on joint ventures
Article 19. Handling of Biotechnology and Distribution of its Benefits	
Take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities by those Contracting Parties which provide the genetic resources for such research	Policy being developed in Fisheries and Forest Depts. National BioSafety Committee development of the Biosafety Framework
Take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties to the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties	No action
Provide any available information about the use and	Available through BAHA

safety regulations required by other Contracting Parties in handling living modified organisms resulting from biotechnology, as well as any available information on the potential adverse impact of the specific organisms concerned	National BioSafety Committee development of the Biosafety Framework
Article 20. Financial Resources	
Provide financial support and incentives in respect of those national activities which are intended to achieve the objectives of this Convention, in accordance with its national plans, priorities and programmes	PACT, GEF/UNDP, and from international donors to local NGOs and CBOs GOB Department budgets No incentives provided
Developed country Parties shall provide new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs to them of implementing measures which fulfill the obligations of this Convention and to benefit from its provisions	Several international NGOs have been instrumental in providing funding for select projects. The CCAD (with support from the Spanish Government) has contributed equipment to Latin American countries, including Belize, for protected areas management Debt for Nature swap through the Ministry of Finance to large NGOs and PACT TNC Freshwater Initiative (watershed management and biodiversity) and Port of Honduras (coastal zone management and biodiversity)
Take full account of the specific needs and special situation of least developed countries in their actions with regard to funding and transfer of technology	No action
Take into consideration the special conditions resulting from the dependence on, distribution and location of, biological diversity within developing country Parties, in particular small island States	Belize is signatory to the SIDS and participated in the BPOA
Article 26. Reports	
Each contracting party shall present reports on measures that it has taken for the implementation of the Convention, and their effectiveness in meeting the objectives of this Convention	Prepared the first national report in 1998 Second national report submitted through the CCAD Feb. 2002

Appendix 2

Local and National NGOs and CBOs Involved in Biodiversity Conservation and Management

ORGANIZATION	MISSIONS AND COMMENTS
Association of the Friends of Five Blues Lake (AFFBL)	Co-manages Five Blues National Park in conjunction with the Forest Depart. They are involved in education and promote research and assessment activities in the park. AFFBL was the first funding recipient of a PACT grant
Association of National Development Agencies (ANDA)	Works towards coordinating NGO's concerned with policy analysis and change within the development sector. It strives to promote a forum of cooperation, which supports NGO's, institutions and Government agencies and to assist those groups in working towards sustainable human development within Belize and the Central America and Caribbean regions.
Belize Alliance for Conservation NGOs (BACONGO)	Seeks to "support the efforts of (its) members and to advocate for natural resource conservation and sustainable development for the benefit of the people of Belize" (BACONGO leaflet). The organization was formed through the need for coordination and proper management, is involved at local and national level debates and serves as an independent advisor.
Belize Association of Private Protected Areas (BAPPA)	Seeks to promote recognition of private protected areas as a viable land use category and to encourage development of legislation to support these efforts.
Belize Audubon Society (BAS)	A non-governmental membership organization dedicated to the sustainable management of our natural resources through leadership and strategic partner-ships with stakeholders to create a balance between people and the environment.
Belize Botanic Garden	To grow, study, protect and promote tropical flora, especially our native species; to provide information for our community, science, government and industry and to do this in an educationally useful setting.
Belize Enterprise of Sustainable Technology (BEST)	Helps create economic benefits for the poor, strengthen ability of community-based enterprises to sustain their own development through provision of credit, promotion of enterprise development, application of business management training, promotion of sustainable natural resource management and participation of women in the social and economic development of Belize.
Belize Institute for Environmental Law	Promotes development of necessary environmental legislation and public awareness of that body of legislation.
Belize Research Connections	Increase the storehouse of knowledge of Belize's natural ecosystems and its people to facilitate informed land use planning and management, assisting researchers with in-country administrative, logistical support, government permits, communications, research partners and assistants, lodging, guides
Belize Tropical Forest Studies (BTFS)	Local NGO involved in the collection and distribution of biodiversity information on Belize
Belize Zoo	Maintains examples of Belize vertebrates in ex-situ, promotes conservation efforts, and implements environmental education programs, including Zoo Camp.

Friends of Conservation and Development (FCD)	Involved in local conservation issues in central western Belize, helped to facilitate Belize River Keeper program and is involved in Mopan River issues.
Friends of Gra Gra Lagoon	Community association that co-manages Gra Gra Lagoon National Park and promotes environmental education at the local level
Friends of Mayflower Bocawina National Park	Community association of stakeholders who promote and co-manage the park as an archaeological site and park for the protection of natural resources.
Friends of Nature	Currently involved in co-management of Gladden Spit Marine Reserve and Laughing Bird Caye on behalf of Hopkins, Independence, Monkey River, Placencia and Seine Bight communities.
Friends of Swallow Caye	Community association that co-manages Swallow Caye Wildlife Sanctuary
Janus Foundation	Was Involved in development of sustainable living model and developing old pasture rehabilitation projects.
Mesoamerican Biological Corridor Program (MBC)	Promotes management of natural resources within the wider Mesoamerican landscape, aiming to maintain natural biodiversity by developing links between protected areas of land within the seven Central American countries, Mexico and northern Columbia. Contributes to the overall sustainable development of Central America, being used as a tool for community development, enhanced environmental education, tourism and research opportunities. Working to establish viable corridor linkages among terrestrial protected areas and develop a working relationship with stakeholders within the corridors
Mesoamerican Barrier Reef System (MBRS)	Working to promote biodiversity protection throughout the Mesoamerican Barrier Reef System region through effective management of marine resources.
Monkey Bay Wildlife Sanctuary, Ltd.	A non-profit organization that manages Monkey Bay Wildlife Sanctuary, a private PA, and co-manages Monkey Bay National Park with the Forest Dept.
Maya Leaders Alliance (MLA)	Composed of Maya from southern Belize who are concerned with the impact of development
Program for Belize (PfB)	Promotes conservation of Belize's natural heritage and wise use of its natural resources, managing Rio Bravo for Belize to demonstrate practical applications linking tropical forest conservation with sustainable land use leaving forest ecosystems intact, promotes research, environmental education, professional training, environmental awareness amongst visitors. Facilitates/ conducts research on the land and its resources, ecotourism, sustainable timber extraction, carbon sequestration, agro-forestry and extraction of non-timber products
Rancho Dolores Environmental and Development Group	Community association involved in the co-management of Spanish Creek Wildlife Sanctuary.
Sarstoon Temash Institute for Indigenous Management (SATIIM)	Works to promote community-based management of natural resources and protected areas involving Indigenous Peoples.
Shipstern Nature Reserve Ltd.	A non-profit company that manages Shipstern Nature Reserve
Sibun Watershed Association (SWA)	Was a non- government community- based organization primarily committed to protecting the integrity of the Sibun River's natural ecosystem for the benefit of future generations, while recognizing the diverse interests of all its inhabitants

Siwa Ban Society	Involved in development of protected areas on Caye Caulker.
Society for the Promotion of Education and Research (SPEAR)	Working to promote cultural and social research, education and participatory democracy within Belize.
Society for the Promotion of Eco-cultural Tourism and the Environment (SPECTE)	Active in the Cayo District around San Ignacio, promoting management of local natural resources, maintains iguana breeding project and promotes environmental education at the local level.
Southern Alliance for Grassroots Empowerment (SAGE)	Community association working to promote environmental awareness and address unsustainable and unregulated logging in the Toledo District.
Steadfast Tourism and Conservation Association	Community association promoting local tourism and conservation efforts
Toledo Association for Sustainable Tourism and Empowerment (TASTE)	Involved in the development of tourism within the Toledo District and in the co-management of the UB Hunting Caye Marine Field Station in conjunction with Earth Watch within the Sapodilla Cayes
Toledo Institute for Development and the Environment (TIDE)	Involved in the co-management of the Port of Honduras Marine Protected Area and the watershed systems flowing into that coastal zone, participating in REAs and other efforts to evaluate critical areas of concern.
Trees Belize	Promoted the cultivation, planting and nurturing of trees on public/ private lands
Wildlife Trust	Promotes manatee research and management efforts in Belize.
Ya'axche' Conservation Trust (YCT)	Implements and advances participatory conservation and sustainable use of natural resources for equitable regional development

Appendix 3

Protected Areas of Belize and Management Status (listed from North to South).

Protected Area	Management Status and Notes	Year Est.	Area (hectares)
FOREST RESERVES			
Caye Caulker Forest Reserve	Co-managed by Forest Dept and Caye Caulker community	1998	37.9
Chiquibul Forest Reserve	Managed by Forest Department	1995	59,822.1
Columbia Forest Reserve	Managed by Forest Department	1997	60,016.3
Commerce Bight Forest Reserve	Managed by Forest Department	1997	*
Deep River Forest Reserve	Managed by Forest Department	1990	27,237.4
Freshwater Creek Forest Reserve	Managed by Forest Department.	2001	13,513.7
Grants Works Forest Reserve	Managed by Forest Department	1989	*3,199.5
Machaca Forest Reserve	Managed by Forest Department	1998	1,253.0
Manatee Forest Reserve	Managed by Forest Department	1959	*42,050.2
Mango Creek Forest Reserve	Managed by Forest Department, four sections	1989	12,090.0
Maya Mountain Forest Reserve	Managed by Forest Department	1997	16,887.6
Monkey Caye Forest Reserve	Managed by Forest Department	1996	669.5
Mountain Pine Ridge Forest Res.	Managed by Forest Department	1977	*43,039.6
Sibun Forest Reserve	Managed by Forest Department	1977	*43,055.9
Sittee River Forest Reserve	Managed by Forest Department	1977	*37,359.4
Swasey Bladen Forest Reserve	Managed by Forest Department	1989	5,980.7
Vaca Forest Reserve	Managed by Forest Department	2003	*14,118.2
NATIONAL PARKS			
Aguas Turbias National Park	Managed by Forest Department	1994	3,541.2
Bacalar Chico National Park	Managed by Forest Department	1996	4,510.3
Billy Baquedier National Park	Co-managed by Forest Department and Friends of the Valley	2001	663.3
Chiquibul National Park	Managed by Forest Department	1995	106,838.8
Five Blues Lake National Park	Co- managed by Forest Department and Association of Friends of Five Blues Lake.	1994	1,643.5
Gra Gra Lagoon National Park	Co-managed by Forest Department/ Friends of Gra Gra Lagoon	2002	534.1
Guanacaste National Park	Managed by BAS in agreement with Forest Department	1994	23.3
Honey Camp National Park	Managed by Forest Department	2001	3,145.2
Laughing Bird Caye National Pk	Co-managed by Forest Department and Friends of Nature	1996	4,095.3
Mayflower Bocawina National Park	Co-managed by Forest Department and Friends of Mayflower Bocawina National Park	2001	*3,178.4

Monkey Bay National Park	Managed by Forest Department and Monkey Bay WS.	1994	858.8
Nojkaax Meem Elijio Panti National Park	Co-managed by Forest Department and Tahan-Nojkaax Meen Elijio Panti. World's only medicinal plant protected area	2001	5,122.2
Paynes Creek National Park	Co-managed by Forest Department and TIDE	2004	14,738.9
Rio Blanco National Park	Co-managed by Forest Department and Rio Blanco Mayan Association		38.2
Sarstoon/Temash National Park	Co-managed by Forest Department and SATIIM	1994	16,9638.1
St. Herman's Blue Hole N. P.	Managed by BAS in agreement with Forest Department	1986	268.9
NATURE RESERVES			
Bird Cayes Nature Reserve	Managed by Forest Department, cayes used as rookeries. BAS co-manages Man-of-War Caye	1977	5.9
Bladen Nature Reserve	Co-managed by Forest Department and BMC	1990	40,336.7
Burdon Canal Nature Reserve	Managed by Forest Department	1992	*2,126.6
Tapir Mountain Nature Reserve	Managed by BAS for Forest Department, tropical research and preservation of genetic biodiversity.	1994	2,549.4
WILDLIFE SANCTUARIES			
Aguacaliente Luha Wildlife S.	Co-managed by Forest Department and Aguacaliente Management Team	1998	2,212.8
Cockscomb Basin Wildlife Sanctuary	Managed by BAS with support funding from WWF. Jaguar preserve, Expanded in 1997.	1990	49,477.1
Corozal Bay Wildlife Sanctuary	Co-management Amigos de la Bahia (Sarteneja)/ Forest Dept.	1998	73,049.4
Crooked Tree Wildlife Sanctuary	Co-managed between BAS and the Crooked Tree Village. Protect resident and migratory birds	1984	14,762.7
Gales Point Wildlife Sanctuary	Co-managed by Forest Department/ Gales Point Village	1998	3,681.4
Spanish Creek Wildlife Sanctuary	Co-managed by Forest Department and Rancho Dolores Development Group	2002	2,428.7
Swallow Caye Wildlife Sanct.	Co-managed by Forest Department/Friends of Swallow Caye	2002	3,630.9
NATURAL MONUMENTS			
Actun Tunichil Muknal Nat. M.	Co-managed by Forest Department and BAS	2004	185.1
Blue Hole Natural Monument	Co-managed by Forest Department and BAS	1996	414.0
Half Moon Caye Natural Monument	Co-managed by Forest Department and BAS, protects nesting colony of Red-footed Booby.	1982	3,954.2
Victoria Peak Nat. Monument	Managed by Forest Department	1998	1,958.9
1000 ft. Falls Natural Monument	Managed by Forest Department	2004	522.2
MARINE RESERVES			
Bacalar Chico Marine Reserve	Managed by Fisheries Department	1996	6,391.6
Caye Caulker Marine Reserve	Co-managed by Fisheries Department and Marine Reserve Association of Caye Caulker	1998	3,913.4
Dog Flea Caye Marine Reserve	Managed by Fisheries Department, fish spawning aggregate	2003	576.4
Emily or Caye Glory Marine R.	Managed by Fisheries Department, fish spawning aggregate	2003	1,617.5

Gladden Spit/ Silk Cayes Marine Reserve	Co-managed by Fisheries Department and Friends of Nature with input from CZMAI and TNC, fish spawning aggregate	2003	10,513.1
Glover's Reef Marine Reserve	Co-managed by Fisheries Dept. and Glover's Atoll Islanders Group, 7,226 ha no-take zone	2001	35,067.5
Hol Chan Marine Reserve	Managed by Fisheries Department. Expanded in 1999 to include Zone D (Shark Ray Alley)	1987	1,543.1
Nicholas Caye Marine Reserve	Managed by Fisheries Department, fish spawning aggregate	2003	673.1
Northern Glovers Reef M. R.	Managed by Fisheries Department, fish spawning aggregate	2003	621.7
Port Honduras Marine Reserve	Co-managed by Fisheries Department and TIDE	2000	40,469.2
Rise and Fall Bank Marine R.	Managed by Fisheries Department, fish spawning aggregate	2003	570.1
Rocky Point Marine Reserve	Managed by Fisheries Department, fish spawning aggregate	2003	570.1
Sandbore Marine Reserve	Managed by Fisheries Department, fish spawning aggregate	2003	521.4
Sapodilla Cayes Marine Reserve	Managed by Fisheries Department	1996	15,618.5
Seal Caye Marine Reserve	Managed by Fisheries Department, fish spawning aggregate	2003	647.8
South Point Lighthouse M. R.	Managed by Fisheries Department, fish spawning aggregate	2003	532.8
South Point Turneff M. R.	Managed by Fisheries Department, fish spawning aggregate	2003	557.9
South Water Caye Marine Res.	Managed by Fisheries Department	1996	47,702.5
ARCHAEOLOGICAL RESERVES			
Altun Ha Archaeol. Reserve	Managed by Institute of Archaeology	1994	15.6
Barton Creek Archaeol. Reserve	Managed by Institute of Archaeology	2001	0.2
Cahal Pech Archaeol. Reserve	Managed by Institute of Archaeology	1995	9.1
Caracol Archaeological Reserve	Managed by Institute of Archaeology	1995	10,339.5
Caves Branch Archaeol. Reserve	Managed by Institute of Archaeology		6.2
Cerro Maya Archaeological Res.	Managed by Institute of Archaeology	1976	9.9
El Pilar Archaeological Reserve	Managed by Institute of Archaeology	1998	771.6
Lamanai Archaeological Reser.	Managed by Institute of Archaeology	1985	396.5
Lubaantun Archaeol Reserve	Managed by Institute of Archaeology		13.5
Nimli Punit Archaeol. Reserve	Managed by Institute of Archaeology	1995	16.9
Santa Rita Archaeol. Reserve	Managed by Institute of Archaeology	1995	1.6
Xunantunich Archaeol. Reserve	Managed by Institute of Archaeology	1995	3.1
PRIVATE RESERVES			
Aguacate Lagoon	Private reserve		114.9
Block 127	Private, co-managed with TIDE		3,736.0
Community Baboon Sanctuary	Private reserve co-managed by BAS and park communities		5,252.9
Cox Lagoon Crocodile Sanctuary	Private Sanctuary set aside for Morelet's Crocodile. Not yet formally recognized.	2001?	
Eden Conservancy	Private protected area managed by Jaguar Creek. Not yet formally recognized	2000?	
Golden Stream Reserve	Private protected area. Managed by YCT		6,085.7
Monkey Bay Wildlife Sanctuary	Private protected area	1992	465.4

Rio Bravo Conservation and Management Area	Private reserve managed by Program for Belize. Includes Hill Bank Field Station and La Milpa Field Station	1988	104,897.2
Shipstern Nature Reserve	Private nature reserve managed by ITCF. Financed through European organizations and WWF.	1989	8,228.4

* Park boundaries being adjusted or under consideration

APPENDIX 4

Persons Interviewed

Mr. Osmany Salas	Chief Forest Officer and Biodiversity Focal Point, Forest Department
Ms. Ivis Chan	Biodiversity Officer and Alternate Biodiversity Focal Point, Forest Department
Mr. Earl Codd	Forest Officer, Forest Department
Mr. George Yvette	Senior Fisheries Officer, Fisheries Department
Mr. James Azueta	Assistant Fisheries Officer, Marine Reserves, Fisheries Department
Ms. Icilda Humes	Department of the Environment
Mr. Jose Perez	Head of Grants Department, PACT
Dr. Michael DeShield	National Biosafety Focal Point, Director of BAHA
Ms. Emelda Lizarraga	National Project Coordinator, Biosafety Framework, BAHA
Mr. Andre Cho	Geologist, Department of Geology and Petroleum
Mr. Richard Reid	Senior Trade Economist, Ministry of Finance
Mr. Brian Woodye	Associate Director, Institute of Archaeology
Mr. Carlos Santos	Community Monitoring Liaison Officer, Land Management Program
Mr. Andrew Godoy	Executive Director, BTIA
Ms. Nellie Catzim	Co-management Manager, BAS
Ms. Christine Anthony	Accounts and Office Manager, BAS
Ms. Stephanie Supal	Office Manager, TIDE
Mr. Anselmo Castaneda	Project Manager, NCSA
Dr. Steven Williams	Research Director, CREI
Mr. Harry Vernon	Environmental laboratory testing expert

APPENDIX 5

Priority Matrix Mailed Out to Participants at the First Workshop

The NCSA focused on the Convention on Biological Diversity is compiling the Thematic Assessment on Biological Diversity for Belize. This thematic assessment will be the basis for all future action to develop capacity. This must be a participatory process that reflects the capacities and capacity needs of the nation. It is essential that all stakeholders, or a representative cross-section, or at least the key stakeholders charged with biodiversity preservation and conservation, have input into this document. This package is being sent to enlist your input. It is long, possibly requiring an hour or two of your time. The time frame is short and responses are needed by Monday, June 6, 2005. E-mail to bzboles@yahoo.com.

This is a priority matrix for biological diversity issues addressed within the CBD articles. Select those issues related to the goals, objectives and responsibilities of your organization. Rate each of the relevant issues as to scale of influence, the importance of the project to biodiversity protection and conservation and the ability of your agency to address the issue. Finally give a priority rating for each chosen issue as to the urgency for addressing the issue. If you wish to comment on any of the issues listed, highlight your input in the same cell at the end of the statement in question.

SCALE	Global = G	Regional = R	National = N	Local = L
IMPORTANCE	High = H	Medium = M	Low = L	
ABILITY TO ADDRESS ISSUE	High = H	Medium = M	Low = L	
PRIORITY	High priority = 1 2 3 4 Low priority = 5			

ISSUES WITHIN ARTICLES	SCALE	IMPORT	ABILITY	PRIORITY
Article 6. General Measures for Conservation and Sustainable Use				
Develop or adapt national strategies, plans or programmes for the conservation and sustainable use of biological diversity				
Integrate the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies				
Article 7. Identification and Monitoring				
Identify components of biological diversity important for its conservation and sustainable use				
Monitor components of biological diversity, paying particular attention to those requiring urgent conservation measures or which offer the greatest potential for sustainable use				
Identify processes and categories of activities which have adverse impacts on the conservation and sustainable use of				

biological diversity, and monitor their effects				
Maintain and organize data derived from identification and monitoring activities				
Article 8. In-situ Conservation				
Establish a system of protected areas or areas where special measures need to be taken				
Develop guidelines for the selection, establishment and management of these areas				
Regulate or manage biological resources important for the conservation of biological diversity with a view to ensuring their conservation and sustainable use				
Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings				
Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas				
Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species				
Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology				
Prevent introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species				
Endeavour to provide conditions needed for compatibility between present uses and conservation of biological diversity and the sustainable use of its components				
Respect, maintain and promote appropriately knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity				
Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations				
Where a significant adverse effect on biological diversity has been determined, regulate or manage the relevant processes and categories of activities				
Cooperate in providing financial and other support for in-situ conservation, particularly to developing countries				
Article 10. Sustainable Use of Components of Biological Diversity				

Integrate consideration of the conservation and sustainable use of biological resources into national decision-making				
Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity				
Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements				
Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced				
Encourage cooperation between governmental authorities and the private sector in developing methods for sustainable use of biological resources				
Article 13. Public Education and Awareness				
Promote understanding of the importance of, and the measures required for, the conservation of biological diversity, in particular through the media and educational programmes				
Cooperate with other States and international organizations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity				
Article 15. **Access to Genetic Resources**				
Endeavour to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties, avoiding restrictions that run counter to the objectives of this Convention				
Endeavour to carry out scientific research based on genetic resources provided by other Contracting Parties with the full participation of, and where possible in, such Contracting Parties				
Take legislative, administrative or policy measures with the aim of sharing in a fair and equitable way the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources				
Article 17. **Exchange of Information**				
Facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special				

needs of developing countries				
Article 19. Handling of Biotechnology and Distribution of its Benefits				
Take legislative, administrative or policy measures to provide for the effective participation in biotechnological research activities by those Contracting Parties which provide the genetic resources for such research				
Take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties to the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties				
Provide any available information about use and safety regulations required by other Contracting Parties in handling living modified organisms resulting from biotechnology, as well as any available information on the potential adverse impact of specific organisms				
Article 20. Financial Resources				
Provide financial support and incentives in respect of those national activities which are intended to achieve the objectives of this Convention, in accordance with its national plans, priorities and programmes				
Developed country Parties shall provide new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs to them of implementing measures which fulfill the obligations of this Convention and to benefit from its provisions				
Take full account of the specific needs and special situation of least developed countries in their actions with regard to funding and transfer of technology				
Take into consideration the special conditions resulting from the dependence on, distribution and location of, biological diversity within developing country Parties, in particular small island States				

APPENDIX 6

Stock-Take of Reference Materials

Reference Materials related to Biodiversity		Format		
Document	**Source**	**Paper**	**Electronic**	**Remarks**
NATIONAL DOCUMENTS				
Land in British Honduras, 1959, C. Wright et al.	Col. Res. Pub. No. 24. HMS Stationary Office, London	Out of print		The soil classification system set forth in this report is still in use today and vegetation mapping is useful.
Government of Belize 1990-1994 Development Plan	M. Economic Devel	X		Discusses natural resources as productive sectors
Belize National Report to the World Summit on Sustainable Development, 2002	MNRE		X	Discusses major initiatives supporting sustainable development, policy and decision making processes and strengths and weaknesses of planning process
Belize National Plan of Action on Ecology and Health to the Year 2000, K. M. Toure, 1992 (MASICA and NARMAP	UNDP	X	X	Provides some baseline information for the conditions of environmental health and institutional structure at the time
Belize First National Report to the UNCBD, Castaneda and Jacobs, NBSAP, 1998.	UNDP		X	
Belize's Interim First National Report, National Biodiversity Committee. 1998. Ministry of Natural Resources.	MNRE		X	Discusses significance of biodiversity to Belize and the nation's commitment to the convention, history of conservation in Belize, efforts underway at the time, threats, policy and legislation.
Belize National Biodiversity Strategy. Jacob, N. D. and A. Castaneda (eds.). 1998. National Biodiversity Committee, Ministry of Natural Resources and the Environment.	UNDP		X	Lists goals and objectives, assessment and analysis methods of biological resources, gives strategic recommendations and actions and an implementation plan for Belize.
Framework for national assessment of implementation of the Convention on Biological Diversity	UNEP		X	Gives a general overview of the capacity of Belize to implement UNCBD requirements

Belize National Assessment Report for the Ten-Year of the Implementation of the Barbados Program of Action. Jones, D. (ed.) 2003.	UNDP		X	Reviews the progress of Small Island Developing States in addressing such issues as sustainable development, climate change and economic issues.
Belize National Report to the World Summit on Sustainable Development, 2002	MNRE		X	Provides a background on pertinent issues in Belize and a framework for creating a working national plan
National Protected Areas Policy Belize 2000, 2000, National Protected Areas Policy Committee	MNRE		X	Discusses key issues in PA management and makes policy recommendations.
Biodiversity and Protected Areas- Belize. Earth Trends Country Profiles, 2003.	internet		X	General statistical information on the protected areas of Belize and number and status of different species that have been recorded for Belize.
Coastal and Marine Ecosystems- Belize. Earth Trends Country Profiles, 2003.	internet		X	Gives general statistical information on the area of marine preserves and marine ecosystem types, describes fisheries harvest, information on the kind of territorial waters that occur in the country.
Belize Country Environmental Profile, Hartshorn, et al. 1984	Out of print			Provided a detailed description of the geography, geology, natural resources and environmental issues, and gave species lists
Belize Country Environmental Profile, 2nd edition, Griffith (ed.) 2000, M. Toure (ed.) 2004	In draft			Will provide an updated detailed description of the geography, geology, natural resources and environmental issues of the country.
Environmental Law Manual of Belize, Z. Ellis, 1996	BELPO	X		Discusses theoretical framework, monitoring, enforcement, permits, concessions, civil liberties relevant to environmental laws of Belize
Belize Environmental Law Manual, 2nd, M. A. Alegria, 2003	CEDARENA	X		Compilation of Belizean environmental law and gives information on the legal framework
Environmental Water Quality Monitoring Program, Final Report and Annexes, J. McGann and M. D. Lee, 1995	NARMAP/ DOE	X		Gives basic information on each major watershed within Belize.
Belize Protected Areas Policy and System Plan Result 2- Protected Area System Assessment and Analysis, J. Meerman,	PASPO		X	Offers extensive information on the protected areas of Belize, background, management efforts and other

2005, Public Draft				information.
Regional Development Plan for Southern Belize, ESTAP, 2000	GOB/IADB	X		Contains environmental and socioeconomic information on southern Belize
Belize Population Census 2000,	Central Stat. Office		X	Information on population, economics, education
Belize 2002 Poverty Assessment Report, National Human Development Advisory Committee, 2002	GOB	X		Gives an overview of poverty issues in Belize relevant to environmental use by the poor.
National Report on Protected Areas- Belize, 2003			X	Gives overview of PA issues and challenges
MINISTRY OF NATURAL RESOURCES AND THE ENVIRONMENT				
Ministry of Natural Resources and the Environment Forest Department Annual Operational Plan 2005-2006	Forest Department DRAFT		X	This is the first year plan of the Forest Dept. 5-Year Strategic Plan
Sustainable Forest Resources Management Principles	Forest Department	X		Developed by the Forest Stewardship Council and serving as a guiding document for development of Forest Dept. operational plans.
Rapid Assessment of Status of Biodiversity Monitoring and Systemization of National Best Practices in Biodiversity Monitoring in Belize, 2004, Envic Consulting	Forest Department		X	Reviews monitoring of biodiversity and methods used in Belize and discusses constraints to monitoring
Belize Clearing House Mechanism User NeedsTechnical Document, Clabaugh and Meerman	Forest Department		X	Review of technical capacity within Belize for a CHM and user needs
Guide for Developers, W. McCalla, 1995	DOE	X		Guide to laws and development guidelines for various industries within Belize
Environmental Impact Assessment Training Manual, E. S. Cayetano, 1996	DOE	X		Guide giving relevant information on the need for EIAs and processes for conducting them.
Report on the Survey Regarding the EIA Process in Belize, M. Alegria,	DOE		X	Gives a history of the EIA process in Belize and results of the survey
Procedures for the Preparation of an Environmental Impact Assessment	DOE	X		Gives details on conducting an acceptable EIA for a development project
Belize National Report- United Nations Conference on Environment and Development, 1992	DOE	X		Gives some baseline information for the state of the economy and the environment at the time
First National Symposium on the State of the Belize	DOE	X		Compilation of presentations on a wide range of

Environment, June 3-4, 1993				environmental issues of the day
Lands and Surveys Department Information Handbook	Lands and Surveys Department	X		Gives detailed information on the structure and responsibilities of the Lands and Surveys Dept.
Protected Areas Conservation Trust Annual Report 2003-04	PACT	X		Provides a detailed breakdown of PACT funding activities, data on protected areas.
Strategic Plan 2005 to 2010 Protected Areas Conservation Trust, R. Young, L. Wolf, V. Marfarlane and L. Lilly	PACT	X		Outlines strategic focus for PACT, listing objectives and providing a time line.
PACT Strategic Plan 1997-2000	PACT	X		Outlines PACT funding and activities for time frame indicated
Rapid Ecological Assessment Mayflower Bocawina National Park, J. C. Meerman, B. Holland, A. Howe, H. L. Jones, B. W. Miller, 2003	PACT, UNDP/GEF		X	Baseline information on this protected area given
Characterization of a Tropical Estuarine System: Placencia Lagoon, E. Ariola, 2003	PACT, UNDP/GEF		X	Baseline information on this estuarine system.
MINISTRY OF AGRICULTURE AND FISHERIES				
Belize- Conservation and Sustainable Use of the Barrier Reef Complex,	MAF, UNDP/GEF		X	Addresses impact issues in the coastal zone area of Belize
Options for Institutional Rationalization of Coastal Zone Management in Belize, 2004, Trevor Hamilton and Associates	MAF		X	Reviews strengths and weaknesses of CZM in Belize, operational strategies and funding potential
National Policy for Aquaculture Development in Belize, Tunich-Nah Consultants and Engineering, 2003	Fisheries Department		X	Provides policy guidelines and objectives for development of aquaculture in Belize
The Status of Aquaculture in Belize- 2002, G. Myvette and R. Quintana	Fisheries Department		X	Reviews history of the industry in Belize, economic contributions, species cultivated and environmental impact issues
Institutionalizing Elements of the Convention on Biological Diversity in the Belize Integrated Coastal Zone Management Program, V. Gillett	CZMAI		X	Outlines biodiversity efforts and development of integrated management in Belize
State of the Coastal Zone Report 1995	CZMAI	X		List state of Belize coastal zone, management activities and strategies at that time

State of the Coastal Zone Report 1998	CZMAI	X		List state of Belize coastal zone, management activities and strategies at that time
State of the Coastal Zone Report 2002	CZMAI	X		List state of Belize coastal zone, management activities and strategies at that time
Development Guidelines for Belize City Cayes (1996)	CZMAI	X		Gives guidelines for development
Development Guidelines for Turneffe Islands (1995)	CZMAI	X		Gives guidelines for development
Belize Manatee Recovery Plan, N. Auil, 1998	CZMAI		X	
The National Integrated Coastal Zone Management Strategy for Belize	CZMAI		X	Lists and describes three strategic objectives for implementing integrated CZM management
Goff's Caye, Preserving Belizean Heritage	CZMAI		X	Management strategies for Goff's Caye, an educational guide for resource users
Ecological Status of Belize's Southern Reef System: Impacts of Hurricane Iris, N. Bood, 2001	CZMAI		X	Gives a description of the reef system and ecological impacts of the hurricane
Proceedings of the 1st National Coastal Symposium, Belize, 2003	CZMAI		X	Gives seminars presented by technical people on many issues affecting the coastal zone of Belize
Tourism and Recreation Best Practice for Coastal areas in Belize	CZMAI	X	X	Provides brief discussions and bulleted pointers concerning tourism related issues and solutions
Conservation and Sustainable Use of the Belize Barrier Reef Complex, 1999, M. Horak	CZMAI		X	Primarily focused on bio-prospecting and proposing a legislative framework
Proceedings of the 1st National Coastal Symposium-Belize, 2003	CZMAI		X	Focuses on CZM policies, watersheds, economic costs and benefits and climate change
Fishers Perception of Marine Protected Areas in Belize	TNC/TIDE		X	Issues of fisheries mgt related to resource users
Assessment of the National Capacity on Biosafety in Belize-Toward the Development of a National Biosafety Framework, Agri-Health Consultancies	BAHA		X	Gives a general review of biosafety issues and an evaluation of the capacity and needs within Belize
MINISTRY OF TOURISM				
National Tour Guide Training Program Trainers Manual, S. Christ, S. Matus and V. Palacio (eds.), 2001	BTB	X		Training manual gives detailed information on the ecology, cultures and tourism areas of Belize.

DOCUMENTS OF INTERNATIONAL AND NATIONAL NGOS, INSTITUTIONS, FUNDING AGENCIES, PROGRAMS				
Belize Country Environmental Profile: A Field Study. 1984, G. L. Hartshorn et. al.	Robert Nicolait and Associates, Ltd	X		Gave the best general overview of Belize and its biodiversity and ecosystems at the time.
Belize Country Environmental Profile, 2nd Edition, 2004 draft, K. M. Toure (ed.)	DOE	draft		Gives an updated general overview of Belize and its environmental situation.
Belize National Report of the Participative Planning Process for the Characterization of Belize's Priority Areas, 2002	MBC Project		X	Defines and describes Corozal/Chetumal Bay, Selva Maya and Port of Honduras Priority Areas and the process of establishing corridors
The Directory of Belizean Protected Areas and Sites of Nature Conservation Interest, 2nd Edition, S. Zisman, 1996	USAID, WWF	X		Describes protected areas and co-management efforts at the time
Central American Ecosystems Map, 2001, J. Meerman and O. Sabido	PfB		X	Important maps of the region that help in planning and management efforts
Feasibility Study for the Proposed Northern Belize Biological Corridors Project (NBBCP) Volume II- Monitoring Report, J. Meerman, 2000	PfB		X	Gives information about general monitoring methodologies, optimal monitoring regime and evaluation of protocols. Discusses indicator species.
The Future of El Pilar, A. Ford, 1997	National Technical Information Service US Dept of Commer	X		Gives background of the integrated research and development plan for the El Pilar Archaeological Reserve for fauna and flora, Guatemala/Belize
Guide to Community-Based Ecotourism in Belize, 1994	BTB, BEST	X		Early guide to communities involved in ecotourism within Belize
Final Report for the Cruise Ship Tourism Forum, Raddison Fort George Hotel and Marina, September 28 and 29, 2004	BHA, BTI		X	Gives background on the cruise ship industry, explores potential impacts and concerns and seeks solutions to expected and occurring problems.
Compendium on Environmental Protection and Natural Resource Legislation in Belize, W. McCalla, 1995	DOE	X		Gives a good general listing and review of environmental legislation of Belize
Belize Environmental Law Manual, 2nd Edition, 2003, M. A. Alegria	CEDARENA			Gives an updated listing and review of the environmental legislation of Belize
The Voice of the Fishermen of Southern Belize, W. Heyman	TIDE/TRIGOH	X		Provides good overview of fishing in Southern Belize,

and R. Graham (eds.), 2000				provides management recommendations
An Investigation of the Impact on Reef Environments of Changing Land-Use in the Stann Creek District of Belize, EU Project No. B7-6200/97-02/VII/ENV, WRISC, 2001	WRISC	X		This is a five module report giving results of a three year study of coastal sediment transport from watersheds being converted to citrus
Feasibility Study of the Proposed Northern Belize Biological Corridors Project (NBBCP), Volume I Main Report, J. Meerman, 2001	PfB		X	
Feasibility Study of the Proposed Northern Belize Biological Corridors Project (NBBCP), Volume II Monitoring Report, J. Meerman, 2001	PfB		X	Describes the biological corridors concept and the situation in northern Belize, gives a significant amount of information on the area, maps. Describes methodologies for assessment and monitoring of plants, wildlife, aquatic invertebrates, water quality, etc.
Environmental Agenda 2002 and Beyond, BAS, 2002	BAS	X		An Update of an Environmental Agenda for the 21st Century
The Development of the Cockscomb Wildlife Sanctuary and Crooked Tree Wildlife Sanctuary as Centers for Co-Management of Protected Areas, N. Catzim, 2002	BAS		X	Describes co-management of these PAs, activities, results and economics
Land Resource Management of Northern Belize, R. B. King, et. al, 1992, Natural Resources Institute Bulletin 43	ODA	X		Gives detailed land cover descriptions, including vegetation, use patterns and resources. 2 volumes
Resources and Development in Belize, G. M. Robinson and P. A. Furley, 1983	U. of Edinburgh	X		An Account of the U. of Edinburgh Expedition to Central America, 1981 with information on soils and on land use and conservation at the time
Enhancing Collaboration for Conservation and Development in Southern Belize, 2003, G. W. De Vries, M. F. Haines, S. B. Hufnagel, A. K. Laird, K. D. Rearick and O. E. Salas	U. of Michigan		X	Group thesis that describes different existing transects and the issues such as land tenure that challenge the effort to collaborate.
Examination of the Belize Audubon Societies Management of Protected Areas	U. of Michigan		X	Masters thesis that examines national conservation policy, international law, organizational structure, education and communities involved.
Carrie Bow Caye, Belize. K. H. Koltes, J. J. Tschirky and I. C.	Smithsonian Institute		X	Gives information on history of research activity on

Feller				Carrie Bow Caye through the Smithsonian.
A Critical Analysis of the Management Constraints within the National Parks System of Belize, 2000, J. A. Pinelo	U. of London		X	Thesis for Masters degree program. Evaluates the protected areas system in Belize and biodiversity strategies.
Reforestation with a Focus on Ecosystems- The Belize Report, 2001	IUCN		X	Describes forest administration and policies, explores deforestation causes and offers solutions
Sustainable Development and Management of Biologically Diverse Coastal Resources- Belize. Project No. BZE/92/G31	UNDP GEF	X		Institutional Development and Sustainable Financing Mechanisms for Coastal Zone Management in Belize
Sustainable Development and Management of Biologically Diverse Coastal Resources- Belize. Project No. BZE/92/G31	UNDP GEF	X		Project Performance Evaluation Report, March 1996
Community Co-managed Park System for Belize, 2002, V. Ravendal	UNDP GEF		X	Explores barriers to co-management and gives ideas on project design, activities, products and monitoring
Development of a Marine Pollution Monitoring Project for the Mesoamerican Barrier Reef Systems Project (MBRS- Belize Country Report, 2002, M. Fernandez	MBRS		X	Gives a review of legislation and agencies involved in pollution issues, sources of pollution and lab capacities. Proposes a monitoring program.
Current Status of Environmental Knowledge and Environmental Monitoring Activities in the Mesoamerican Barrier Reef Region, with Particular Reference to Belize, Guatemala and Honduras, 2002, P. F. Sale, J. P. Kritzer, J. E. A. Gonzales	MBRS		X	Reviews current monitoring efforts and recommends implementation of a synoptic monitoring program
Sustainable Development Policy for Fisheries Resources, Tourism and Trans-boundary Marine Protected Areas in the Mesoamerican Barrier Reef System, 2003	MBRS		X	Policy decision document for the MBRS
Belize Country Report "Coral Reef Ecology", 2002, I. Majil	MBRS		X	Gives description of local and international organizations involved in monitoring and research.
Critical Analysis of Information on Spawning Aggregation sites in MBRS Project Countries and Recommendations for their Monitoring and Management, 2002, Green Reef Environmental Institute	Green Reef		X	Gives detailed description of spawning aggregate sites and species that are common to those areas. Summarizes geo-spatial life history data for target species.

Selva Maya Priority Area Report Preliminary Draft Belize, E. Avella, A. Herrera and E. Boles, 2000	CCAD/MBC		X	Provides environmental and socioeconomic information on the area.
Gulf Honduras Priority Area Report Preliminary Draft Belize, E. Avella, A. Herrera and E. Boles, 2000	CCAD/MBC		X	Provides environmental and socioeconomic information on the Port of Honduras area.
Final Report of the Mesoamerican Biological Corridor, E. Avella, A. Herrera and E. Boles, 2000	CCAD/MBC		X	Good general review of biological corridors potential in Belize, review of environmental laws
Proceedings of the First Belize Freshwater Summit, 2003	PfB, TNC		X	Provides information on surface water environmental issues, stakeholders and needs
Maya Mountains Marine Area Transect Site Conservation Plan, 2000, TIDE, W. Heyman	TIDE		X	Describes the ecology of the terrestrial and marine ecosystems within the proposed transect, giving conservation targets and goals.
Community Involvement in Establishment, Planning, and Management of GEF Priority Protected Areas in the Mesoamerican Barrier Reef System, 2002, J. R. Barborak, et al.	WCS		X	Gives case studies of fifteen MBRS protected areas, including the eight marine protected areas in Belize.
National Protected Areas Management Plan Zoological Faunal and Site Analysis, 1995, B. Miller and C. M. Miller	WCS		X	Provides maps of high diversity sites for different faunal groups, proposed corridors
Reefs at Risk in the Caribbean, L. Burke and J. Madins	World Resource Institute		X	Describes threats to Caribbean corals, status, economic impacts and recommendations, good regional maps
Mapping Impact Hot-Spots: Predicting Stresses to Aquatic Ecosystems Through Use of Spatially Explicit Stress-Source Information, P. Esselman, 2001	Environmental Monitoring and Assessment		X	Describes the importance and methodology for impact mapping and its use as a planning and management tool.
Human Impact Mapping of the Mopan and Chiquibul Rivers within Guatemala and Belize, J. Karper and E. Boles, 2004	FCD, Mobile Conservation Mapping Station		X	Provides maps of rivers showing riparian forest conditions, describes mapping process and discusses riparian forest ecology
Impact Hot Spot Mapping of the Temash River in Southern Belize, J. Karper and E. Boles, 2004	FCD, Mobile Conservation Mapping Station		X	Provides maps of rivers showing riparian forest conditions, describes mapping process and discusses riparian forest ecology
Belize Case Study: Fisheries Advisory Board in the Context of Integrated Coastal Management, M. McConney, R. Mahon, R.	CCA		X	Provides important coastal zone information and focuses on the Fisheries Department and management needs

Pomeroy, 2003				
Work Plan for the Formulation of Belize's Protected Areas Policy and System Plan, 2004, J. Meerman et al.	NPAPSP		X	Conducts an assessment and analysis of Belize's PA system and reviews monitoring and management needs
Biodiversity and Protected Areas- Belize, 2003, Earth Trends Country Profiles	Earth Trends		X	Gives general biodiversity and protected areas information on Belize
Activity Guide for Belize, C. Morter-Lewis and A. Hoare, 2003	CCAD/MBC	X		Education about the Mesoamerican Biological Corridor for primary and secondary schools
GENERAL NATURAL HISTORY AND TAXONOMIC GUIDES AND LITERATURE ON BELIZE				
Belize Biodiversity Mapping Service. Meerman, J., J. Clabaugh and M. Vasquez. 2005. GIM International, Mar 2005:47-49/729 KB. Belize Tropical Forest Studies.			X	This paper describes the BBMS and the kinds of information that is available. Examples are given.
Trees of Rio Bravo- A Guide to Trees of the Rio Bravo Conservation and Management Area, Belize, N. Brokaw, E. Mallory and P. Alcorn, 1990		X		Gives taxonomic keys to tree species with photocopied specimens from the Missouri Botanical Garden
A Field Guide to the Snakes of Belize, T. Garel and S. Matola, 1996	Belize Zoo/TEC and WWF	X		General guide to many snakes found in Belize
A Field Guide to the Amphibians and Reptiles of the Maya World, J. C. Lee	Cornell U. Press	X		Covers lowlands of Mexico, northern Guatemala and Belize, includes range maps
Birds of Belize, H. L. Jones, 2003	U. of Texas Press	X		First bird field guide written especially for Belize
Neotropical Rainforest Mammals, L. H. Emmons, 1997	U. of Chicago Press	X		Mammal guide with range maps
A Field Guide to the Mammals of Central America and Southeast Mexico, F. A. Reid, 1997	Oxford U. Press	X		Description of mammals from the region with field maps
Fishes of the Continental Waters of Belize, 1996. Thomerson and Greenfield.	press	X		A good guide to those fishes of the inland waters (streams, rivers, lakes and lagoons) of Belize
Belize Biodiversity Information System, Miller, B. W. and C. M. Miller. 2001. Summary of Species Accounts for Belize-Neotropical Bat Information System. WCS.	WCS		X	Gives information on BBIS with a focus on information specific for bats.
Aquatic Biota of Mexico, Central America and the West Indies, S. H. Herlbert and A. Villalobos-Figueroa (eds), 1982	Out of print	X		150 biologists report on taxonomic status and literature for freshwater fauna and flora

A Belizean Rain Forest, R. H. Horwich and J. Lyon, 1990	Orang-utan Press, Gays Mills, WI	X		Good general guide to the ecology and biology of organisms in the Community Baboon Sanctuary
REGIONAL DOCUMENTS				
Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, 1983			X	Gives articles and resolutions of the convention
Regional Project for the Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS), GEF, 2001, Report No. 21786 LAC	MBRS Project	X		Project document that gives detailed description of the MBRS project and background information on the project area
Reefs at Risk in the Caribbean, L. Burke and J. Maidens, 2004	World Resource Institute	X	X	Describes state of the reef systems throughout the Caribbean with maps showing different parameters
Conservation and Sustainable Use of the Mesoamerican Barrier Reef System, 2001	CCAD		X	Project proposal document submitted for funding from UNDP GEF
Regional Strategy for the Conservation and Sustainable Use of Biodiversity in Mesoamerica	CCAD and MBC	X		Gives a regional perspective of biodiversity conservation efforts for Central America
Conservation and Sustainable Use of the Mesoamerican Barrier Reef System (MBRS) in Mexico, Belize, Guatemala and Honduras, P. F. Sale, E. A. Chavez, B. G. Hatcher, C. Mayfield, J. J. H. Ciborowski	United Nations University for the World Bank		X	Offers guidelines for developing a regional monitoring and environmental information system
Regional Environmental Awareness Strategy, 2003	MBRS		X	Provides strategic, conceptual and methodological frameworks for increasing awareness among communities of the MBRS region
Recommendations on Monitoring the Effectiveness of MPA Management, 2003	MBRS		X	Methodologies for monitoring bio-physical environmental metrics and socio-economic metrics
Fish Spawning Aggregation Sites in the MBRS Region: Recommendations for Monitoring and Management, W. Heyman and N. Requena, 2003	MBRS		X	Provides recommendations based on several years of assessment, monitoring and research of spawning aggregation sites
Manual of Methods for the MBRS Synoptic Monitoring	MBRS/TNC		X	Describes selected methods for measuring physical and

Program, P. C. Amanda-Villela, P. F. Sale, G. Gold-Bouchot and B. Kjerfve, 2003				biological parameters for use in the MBRS region
State of the Environment and Natural Resources in Central America, 1998	CCAD	X		Describes state of the environment and biodiversity conservation throughout the region.
Assessment of Land-Based Sources and Activities Affecting the Marine, Coastal and Associated Freshwater Environment in the Wider Caribbean Region, 1999	UNEP		X	Discusses climate, ecology and socio-economic conditions within the region, identified impacts and solutions
Tourism and Coastal Resources Degradation in the Wider Caribbean, D. A. Milligan, 1996	Island Resources Foundation		X	Reviews tourist impact in areas throughout the region
Tourism and the Environment in the Caribbean, an Economic Framework, 2000	CGCED		X	Discusses tourism and environmental relationships and systems of tourism economics

Appendix 7

Terms of Reference for National Consultant for the UNCBD

National Capacity Self-assessment Project (NCSA)

Terms of Reference

For a Consultancy on the United Nations Convention on Biological Diversity

OBJECTIVES AND DELIVERABLES

1. OBJECTIVES OF THE CONSULTANCY

A. *Profile of Thematic Area*

The consultancy is to conduct a capacity self-assessment within the **biodiversity thematic area.** At the end of the assignment there should be a full profile on this thematic area, including, but not limited to:

a. A review of the relevant legal instruments, policies and non-regulatory mechanisms;

b. The responsibilities and relevant activities of ministries, agencies and other government bodies;

c. The role of the private sector and other relevant stakeholders;

d. The existence of relevant information and databases;

e. Capacity development activities that have been or are being undertaken including training and human resource programmes; and

f. Financial resources to execute action plans, monitoring, evaluation and reporting frameworks and capacity constraints and priorities for action.

B. *Tasks of the Consultancy*

The consultant will, under the direction of the Project Manager, and in consultation with the Inter-Ministerial Project Steering Committee, working in tandem with a lead consultant, conduct a full assessment of the capacity issues within the biodiversity thematic area. The consultant will work with the support of technical experts executing national action plans and other projects related to implementation of Belize's commitments under the UNCBD.

Specifically the National Consultant will:

a. Collate and compile reports on activities and projects carried out in regards to the Convention on Biodiversity (UNCBD);

b. Carry out a stocktaking review of:

   i. Relevant convention reports and national communications, including but not limited to the National Biodiversity Strategy and Action Plan (NBSAP), the first and second National Reports to the CBD, and the Biodiversity Enabling Follow-on Project;

   ii. Biodiversity related programs and projects, including The Belize Protected Areas Systems Plan, Northern Belize Biological Corridor Project, the Mesoamerican Biological Corridor Program, the PACT Co-management Project, The National Protected Areas Policy and Systems Plan Initiative, The Mesoamerican Barrier Reef System Project, and the Conservation and Sustainable Management of Biologically Diverse Coastal Resources Project;

   iii. National environmental documentation, including the Belize's National Environmental Action Plan (NEAP), the Belize Report to the UN Conference on Environment and Development (Rio-1992), the Belize Report to the WCSD (Johannesburg-2002), Belize Report to the Barbados Plan of Action-SIDS (2004), the Belize Report to the World Congress on Protected Areas, the National Protected Areas System Plan; Belize Environmental Profile by World Bank; Country Environmental Analysis-IDB, etc;

   iv. General countrywide planning documents, such as the Public Sector Investment Program, the Medium Term Economic Strategy Paper, and the Poverty Alleviation Strategy and Action Plan; National Human Development Report;

   v. Existing reports with analysis of capacity issues in Belize, including evaluation reports on existing GEF projects (Community Co-managed Park System for Belize, Conservation and Sustainable Use of the Belize Barrier Reef Complex), the report on Effectiveness of Management Systems for Marine Resources, and the Belize Audubon Society Environmental Agenda 2002 and Beyond;

(***The Stocktaking Assessment is expected to feed into the national analysis and prioritization phase to be headed by a lead consultant***)

c. Participate in a situational analysis exercise aimed at identifying:

   i. national priorities, capacity constraints at individual, institutional and systemic levels;

ii. needs as well as gaps in information and actions; and

iii. implementation bottlenecks with reference to the specific thematic area.

d. Participate in the categorization of opportunities in terms of a) creating new capacity, b) mobilizing or redeploying existing capacity, and c) enhancing existing capacities;

e. Identifying and recommending necessary corrective actions;

f. Assist the Project Manager in the organization of the workshop to share the findings of the thematic assessment;

g. Liaise with relevant members of the IMPSC and report to the IMPSC on the progress of the work on an as needed basis as well as with other thematic assessment consultant(s); and

h. Participate in the preparation of the final report on the biodiversity thematic assessment, including the results of the workshop and the prioritization of issues, which should be addressed in an action plan.

Note: Points "c" through "h" will be done in collaboration with a Lead Consultant to be contracted by the PMU.

C. *Possible Table of Contents of the NCSA Final Report or Document*

In the "*Guide for Self-Assessment of Country Capacity Needs for Global Environmental Management*" (page 34), a sample Table of Contents is presented as follows:

Executive Summary

1. Introduction and Background.
2. Identified Thematic Priority Issues.
3. Summary of Capacity Constraints and Opportunity for Capacity Building in the Three Thematic Areas.
4. Opportunities for Synergistic and Cross-cutting Capacity Building Approaches and Projects.
5. Elements of a Strategy for Capacity Building to Protect the Global Environment.
6. Proposed Next Steps and Follow-up.
7. Monitoring and Evaluation.

Annexes

This sample Table of Contents can be improved and adapted to the Belize situation by the Consultants in consultation with the Project Management Unit.

2. EXPECTED OUTPUTS/DELIVERABLES

A. *The Lead Consultant*

The Lead Consultant will guide the NCSA process and produce the final report to the Project Management Unit once the National Consultant has endorsed in writing his/her approval of the said final reports.

B. *The National Consultant*

The expected outputs from the National Consultant are as follows:

a. Attendance at all team meetings;
b. Attendance at IMPSC meeting as required;
c. Attendance at the relevant thematic workshop and final national workshop;
d. Facilitation of the relevant thematic workshop;
e. A list and copies (electronic and hard copies) of materials reviewed supplied to the PMU library; and
f. Participation in the preparation of the final report detailing the evaluation of capacity issues within the thematic area including the prioritization of issues.
g. Prepare a Terminal Report on his/her consultancy (Get format from PMU).