BELIZE

COUNTRY
ENVIRONMENTAL PROFILE

EXECUTIVE SUMMARY

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Robert Nicolait & Associates Ltd.

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International Development

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Country Environmental Profile

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by

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Preface

This Country Environmental Profile (CEP) of Belize is one of a series of environmental profiles funded by the U.S. Agency for International Development (USAID), Bureau for Latin America and the Caribbean (LAC), Office of Development Resources (DR), and AID mission to Belize. The scope of work for this in-country study was developed jointly by Neboysha Brashich, USAID mission to Belize, and James Talbot, USAID Caribbean Regional Environmental Management Specialist (REMS/CAR).

Robert Nicolait & Associates Ltd. (RN&A), Belize City, contracted team leader, Gary Hartshorn, and local specialists to prepare sector reports during the second half of 1983. Consultants for the institutional and legal sector reports were contracted through the International Institute for Environment and Development (IIED). Gary Hartshorn prepared this synthesis and analysis of the status of the environmental and natural resources in Belize. Lynne Hartshorn edited the final report.

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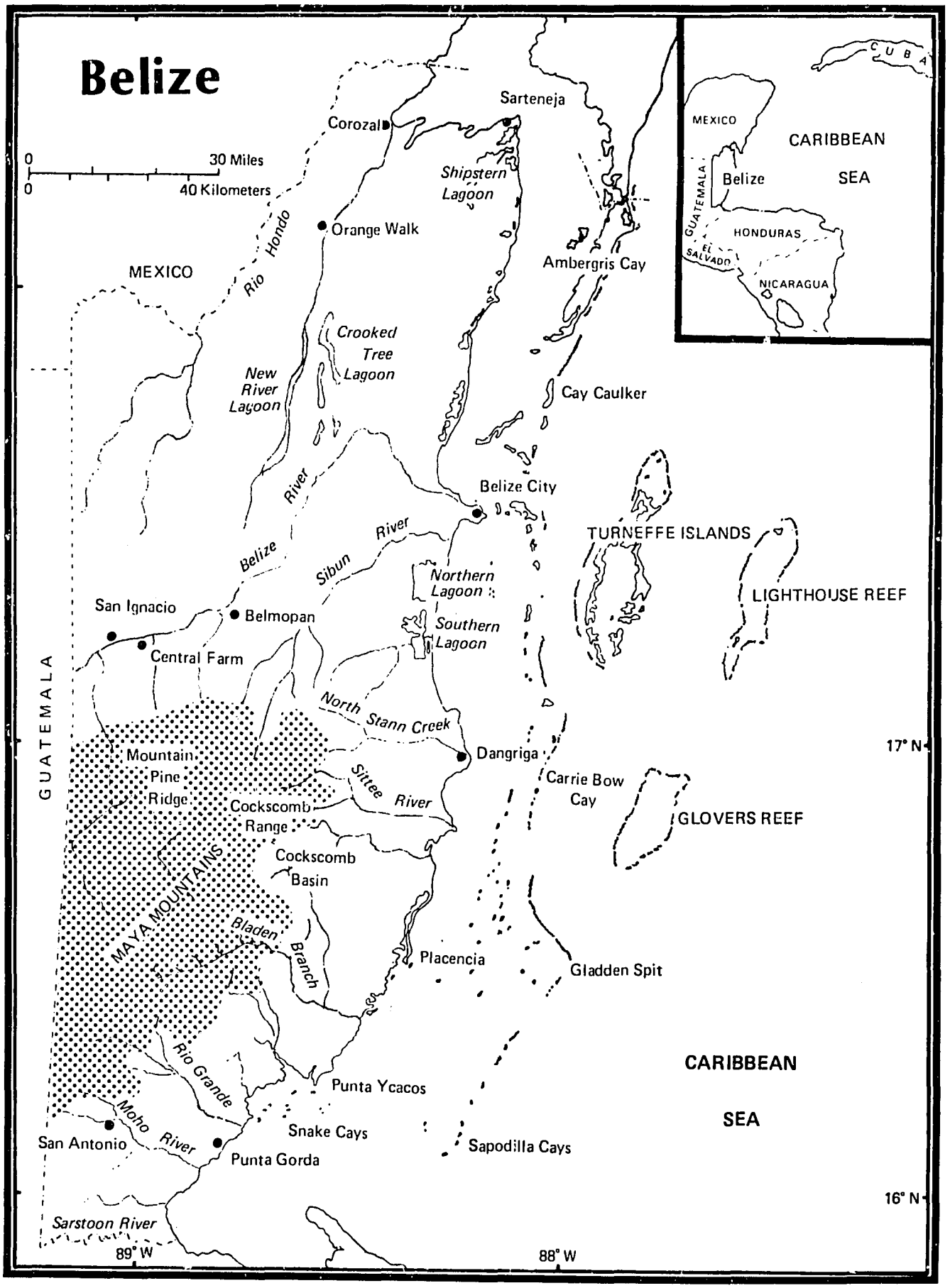

Figure II–1. — Geopolitical map of Belize. See Fig. III–5 for district boundaries.

I.

Executive Summary

This country environmental profile of Belize (BCEP), financed by USAID, was carried out during the second half of 1983 by Robert Nicolait & Associates Ltd. of Belize. Sixteen specialists contributed sector analyses (individual reports at RN&A) to the BCEP. Included in the field study are syntheses of the country's cultural heritage and history, human resources, natural resources, as well as institutional and legal aspects of environmental issues and natural resources management.

Situated south of the Yucatan Peninsula, Belize has 22,963 km^2 of land area (including 689 km^2 on 450 offshore cays), 280 km of coastline, 23,657 km^2 of territorial sea (extending 20 km into the Caribbean Sea) and a spectacular barrier reef that is second in length only to Australia's Great Barrier Reef. Seaward of the barrier reef are three beautiful atolls.

At 15-19°N latitude Belize is in the subtropics, with typical temperature regimes. Rainfall ranges from about 1,500 mm/yr in the north to over 4,000 mm/yr in southern Toledo district. Belize has a history of devastating encounters with tropical cyclones.

After steady economic growth through the 1970's, Belize's economy has stagnated since 1981. A 60% drop in world sugar prices reduced export earnings by B$12 million in 1982, causing serious balance of payments problems for such an import-oriented economy. The Belize dollar (B$) is officially tied to the US dollar at the rate of B$2=US$1.

History, Culture and Human Resources

The cultural factor is especially important in Belize's history and identity. Several hundred archaeological sites in Belize attest to the exceptional Maya civilization that flourished for more than a millennium. The present population of about 150,000 consists of eight major ethnic groups: Creole, East Indian, Garífuna (Carib), Kekchí, Ladino, Mennonite, Mopan and Yucatec. Though Mennonites and North American landowners are a small, advanced component of the population, they have the technological facilities to greatly alter the landscape.

Not surprisingly, 80% of the Belizean populace is multilingual; English is the official language. Over 90% of the population is clustered in cities, towns and villages, leaving about 75% of the country virtually uninhabited. Over the past decade Belize had an annual rate of natural population increase of 3.6%, giving it 50% of its population under 18 years old; but because one of every eight Belizeans emigrates, the average annual net increase was a modest 1.9%. Nevertheless, 11% of the 1980 population was foreign-born, reflecting the long tradition of immigration. Civil strife and warfare in Central America have brought numerous refugees to Belize. Estimates of Salvadoran refugees in Belize range from 2,000 to 15,000; however, only 1,585 is the estimate for this CEP. The GOB-sponsored Valley of Peace project is attempting to resettle 200 agrarian families from El Salvador and Belize.

Contamination

Water pollution is the principal contamination problem. Most communities depend on surface waters for potable water, thus the dumping of faecal material, sugar-processing effluents and industrial wastes into streams has caused some public health problems and fish kills. Belmopan is the only urban area fully served by a sewage system. A CIDA-funded project is constructing potable water and sewage systems for Belize City. Solid wastes are a source of roadside eyesores and beach debris. Air and noise pollution are insignificant.

Coastal and Marine Ecosystems

Few countries have the coastal and marine richness of Belize, with extensive coastal lagoons, mangroves, sea grass

beds, coral reefs and cays. Belize's barrier reef is the second longest in the world, supports the country's most economically important fishery (spiny lobster) and atracts a growing tourist trade to this world-class resource.

Fisheries exports in 1982 earned US$6.2 million, ranking second in export earnings after sugar. Lobster exports account for 81% of fisheries export earnings, with conch exports a distant second with 11% The fishing industry is organized in four major cooperatives. Lack of capital is the major constraint to expansion of the industry to deep water fishing. Mariculture and aquiculture projects have recently been started.

Because of the prominent role of cooperatives in the industry, the Fisheries Unit is part of the Ministry of Health, Housing and Cooperatives. Notwithstanding a solid legal base for resource management, the Unit is hampered by a lack of enforcement capabilities. Foreign poaching of lobster and conch in southern Belizean waters is the most serious problem affecting the country's fisheries.

Despite recent upgrading of Belize's port facilities, the country lacks a natural deep water port. There is no evidence that environmental considerations are examined prior to port maintenance (e.g., dredging) or development activities.

Belize is particularly vulnerable to hurricanes because most urban centers are on or near the coast. Because of continued vulnerability to hurricanes, the capital was moved inland to Belmopan and the GOB has an elaborate plan to cope with natural disasters.

Belize's coastal area and the more attractive cays are largely privately owned. Notwithstanding legal instruments such as the 1939 law and the 1973 Aliens Landholding Ordinance, foreign speculation and beach access for local residents are occasional problems. The 1982 Land Tax Act, which taxes land on unimproved value, may result in value being determined by foreign buying demand, especially in popular tourist areas such as Ambergris Cay and the Placencia peninsula.

Environmental issues involving coastal development (including the cays) include improving basic services to the community, conservative uses of natural resources to support settlements, evacuation plans in case of natural disasters, improvement of human and corporate waste disposal systems, and providing additional housing. These issues are most evident in Belize City, which is situated on a mangrove peninsula. Beach erosion is a problem in the Commerce Bight area and near the mouth of the Sibun River. Perhaps the most serious coastal development problem is the provision of potable water. Fresh water is scarce and drawing down the water table leads to saltwater intrusion. Contamination of groundwater aquifers from other sources is also a growing problem.

The principal sector recommendation is to increase the administrative, monitoring, enforcement and educational capacity of the GOB to effectively manage the development of the country's coastal and marine resources. These complex resources require a multi-sectoral approach involving administrative units responsible for fisheries, ports, public lands, potable water, sewage, mangroves and tourism.

Geology

The mainland is dominated by the low Maya Mountains, of which the Mountain Pine Ridge is a remnant of the oldest land surface in Central America. The northern half of Belize consists of heterogeneous sediments deposited on the Yucatan platform. Except for the Maya Mountains, limestone and sediments derived from limestone are the dominant geologic features. Karst topography is common on the perimeter of the Maya Mountains.

Of the seven geologic formations described, the *Coban limestone* is the probable source of petroleum. The *Campur limestone* formation will probably prove to be the major aquifer underlying Belize's lowlands.

Several economically important minerals such as barite, bauxite, cassiterite and gold occur in Belize, but none has yet been found in commercial quantities. Dolomite and hard limestone quarries on the periphery of the Maya Mountains are sources of excellent road ballast.

Since 1955, over 40 petroleum test wells have been drilled with about 65% showing oil. However, poor structural and seismic data have hindered the petroleum exploration efforts. The new Petroleum Office does not have environmental guidelines or regulations for the exploration, production or processing of crude oil.

Hydrology

Surface water resources are abundant in Belize except on the Vaca Plateau where streams disappear in the porous limestone. Surface water from streams is used for domestic purposes by 70% of the population, including Belize City. Pollution of drinking water is not yet a serious problem, although faecal and detergent contamination is a pervasive risk. Streams descending the Maya Mountains offer numerous sites for potential hydroelectric generation, but comprehensive studies will be necessary before development of this resource.

Belize's groundwater resources are poorly known, but appear to have considerable potential as a source of potable water. Both water-table aquifers and artesian aquifers exist, but few wells go deeper than 30 m. Of the seven groundwater provinces described, two have abundant groundwater supplies: The *Campur limestone* formation underlying the Coastal Plain and Shelf province and the *Sepur* formations in Toledo province.

Guidelines and regulations for drilling into artesian aquifers are needed to protect this high quality resource.

Governmental coordination is required of those agencies responsible for well-drilling, water supply and potability.

Soils

Twenty-three subunits in seven principal landforms are used to describe the major soil features of the country. The siliceous soils of the Mountain Pine Ridge (landform N° 1) have low fertility and high erodability. The siliceous soils of the Maya Mountains (2) are singularly unsuited for agriculture due to low fertility, mostly steep terrain and high erosion risk. It appears that the ancient Maya did not use the poor soils of these two landforms for agriculture.

The calcareous soils of karst landscapes (3) occur over a wide range of topography and rainfall. Although these soils have good natural fertility, many are inaccessible or have moisture limitations. The Toledo lowlands of Tertiary mudstones, shales, and sandstones (4) are restricted to Toledo district. The soils are generally fertile under long-fallow milpa agriculture or permanent tree crops, but rapidly lose fertility under short fallow cycles or annual crops.

The calcareous soils of the northern lowlands (5) cover 35% of the country with a complex array of marine and delta sediments. Of the nine subunits, soils derived from hard Miocene limestone (5c) and from soft siliceous limestone (5e) are the best for agriculture. The former is most extensive in northern Cayo district, whereas the latter is abundant in the northern sugar cane region.

The siliceous soils of the lowland pine ridge (6) are the most problematic soils of the country. The oldest soils (Puletan series) are very acid, strongly leached of nutrients and with a compact clay pan in the subsoil. The littoral complex of organic soils and sandy soils (7) occurs along the coast and on the cays. Although of no agricultural importance, much of the human population lives here and the mangroves are important nursery areas for marine organisms.

Land Use

Ancient Maya farmers concentrated their agriculture on calcareous soils of hilly and rolling landscapes. Modern agriculture began in Belize little more than a century ago, thus the country's soils have not been seriously degraded by erosion or overuse. However, recent immigrants and refugees who practice slash-and-burn agriculture are causing erosion problems on hilly terrain.

About 4,500 km^2 (19% of Belize's land) are suitable for mechanized agriculture, particularly the calcareous soils of the northern lowlands (landform N° 5). Production forestry is the most appropriate land use in much of the **Mountain Pine Ridge** (1). Most of the siliceous soils of the **Maya Mountains** (2) should be maintained in protection forest. The calcareous soils of **Karst Landscapes** (3) are most appropriate for milpa production of corn; however, this landform is under increasing pressure for mechanized farming and cattle ranching operations. Milpa and modern agriculture are common on the **Toledo Lowlands** (4), where land use in some areas is nearing maximum human carrying capacity.

The country needs a detailed classification of land use capability based on principal landforms and ecological life zones, as well as technological uses. Such a classification would identify the most appropriate areas for agricultural development and should be used to resolve land use conflicts in the Maya Mountains complex.

Agriculture

Including forestry and fisheries, agriculture is the largest contributor to the national economy—employing one-third of the work force and generating about half the gross domestic product. Sugar accounts for 60% of Belize's agricultural exports. Other important exports are orange and grapefruit concentrates, bananas, mangoes, rice and honey.

Milpa farmers of Toledo district produce most of the hogs for the national market. Milperos, who are considered subsistence farmers, also produce some corn, rice and beans for market. However, most of the food consumed nationally is produced by small farmers. Medium-sized Mennonite farms supply the country with dairy products, poultry and vegetables. Large farms are oriented to export crops and beef cattle.

The GOB's priority is to develop the agricultural potential of the country by increasing production of export commodities and local substitution of imported food. Major constraints to agricultural development are the lack of all-weather roads, difficulty in obtaining credit and capital items for small- and medium-sized farmers, and contemporary attitudes about farming.

USAID has a major project to upgrade several aspects of the livestock industry by reducing production inefficiencies, expanding product markets and involving small and medium producers. The USAID project will focus on improving pastures and cattle management rather than encourage expansion of pastures.

Numerous pests and diseases affect Belize's agricultural crops. The increase in mechanized farming and monoculture crops can only increase the need for careful monitoring and control of pests and diseases. It is strongly recommended that pest control be integrated with agricultural development. A mixture of biological, agronomic and chemical controls is the most promising approach to pest and disease problems. Legislation to regulate the importation, handling, storage and use of pesticides in Belize has been drafted but the laws have not been promulgated.

Forests and Forestry

The Belize flora is estimated to include about 4,000 species of flowering plants. Although the flora is poorly known, few endemic species are restricted to Belize. Exploitation of logwood and mahogany provided the basis for British settlement and three centuries of geo-political identity. Six major ecological life zones (these define the natural vegetation of the area based on latitudinal region, altitudinal belt, potential evapotranspiration ratio, humidity and annual precipitation) occur in Belize. Mangroves are a prominent feature along the Belize coast, as well as on many of the cays.

According to official statistics, 93% of Belize is classified as "forest land", but this figure excludes only urban areas and agribusiness operations and ignores the extensive areas of milpa agriculture in western Cayo and southern Toledo districts. Fifteen forest reserves have legal status, covering 6,367 km^2 (28%) of the country. Although forest reserves are considererd as lands for permanent forestry, 22% of the land in forest reserves is unofficially considered as protection forest. Some forest reserves are under increasing pressure for agricultural use, but the Forest Department does not have the political support to protect the country's forest patrimony.

The Forest Department, a dependency of the Ministry of Natural Resources, concentrates forestry activities in the principal forest lands with exploitable or productive potential, such as the Mountain Pine Ridge and Chiquibul Forest Reserves and the Cockscomb Basin. Although total timber production has increased modestly over the past several years, 1981 forestry exports earned only B$2.4 million, equivalent to 1.5% of foreign earnings. The annual cut of timber is only about 5% of the potential harvest on a sustained-yield basis. However, that potential will only be possible if the production forests are protected from slash-and-burn agriculture, local wood processing facilities are improved, effective forest management plans are implemented, and the technical and administrative capabilities of the Forest Department are strengthened.

Though plantation forestry began in Belize over 35 years ago, only about 3,500 ha of plantations exist. Much Forest Department effort has been focused on fire control in pine forests. The extensive stands of 20-30 year-old pine attest to the success of the Department's fire control program. Pest problems are minor on Belize's forests and plantations.

The principal sector recommendation is for the Forest Department and private enterprise to cooperate on developing viable management programs for the country's productive hardwood forests. This should involve not only mahogany but secondary hardwoods as well. A few key timber concessions should be lengthened so as to encourage private industry in sustained-yield forestry.

Wildlands Conservation

The 1981 National Parks System Act is the legal base for national parks, natural monuments and wildlife reserves. Legally established conservation units only focus on major sea-bird rookeries. A portion of Half-Moon Cay, 100 km offshore on Lighthouse Reef, was declared a bird sanctuary in 1928; then in 1982 the Cay and surroundings were converted to Belize's first Natural Monument. In 1977 seven small mangrove cays were declared bird sanctuaries, but due to the absence of wardens, all but one cay have been destroyed by hunters and fishermen. Guanacaste Park is a 21 ha reserve near Belmopan. The Rio Grande reserve was lost to Indian milpa farmers. The GOB recognizes some other small units but their status is uncertain.

The Belize Audubon Society is proposing three candidate areas as wildlife reserves: Upper Bladen; Crooked Tree Lagoon; and Cockscomb Basin. In the latter area, the New York Zoological Society is conducting a long-term study of jaguar ecology and behavior. Thirteen other potential areas for wildlands conservation are also briefly described.

The GOB has proposed to UNESCO that Belize's barrier reef and atolls be designated a World Heritage Site. Such a designation would bring international recognition to this world-class resource and provide advice and some funding for rationally developing multiple uses of the marine resources while ensuring their conservation.

Critical to the development of a viable wildlands system is an adequately funded GOB agency with trained personnel. International conservation organizations should be invited to help build this institutional capability in the Ministry of Natural Resources. Without the necessary institutional support, there is no merit in creating on paper the proposed conservation units. It is also recommended that experts evaluate the ecological and conservation potential of the existing as well as the proposed conservation units.

Terrestrial Wildlife

Because of her extensive forests, Belize has excellent populations of birds and large mammals, many of which are considered endangered in much of the rest of Central America. Even such species as jaguar, tapir, Ocellated Turkey, and American and Morelet's Crocodiles appear to have healthy populations in Belize. The Forest Department has effectively shut down illegal trade in wild animal hides and pets. Although exploitation of sea turtles is permitted by the 1977 Fisheries Ordinance, these endangered species need complete protection.

Several wildlife species such as brocket deer, paca, and peccary are commonly taken for food, a permissible harvest controlled by the 1982 Wildlife Protection Act. Some wildlife species are pests on crops or livestock, or they transmit diseases. Introduced rats and mice are much more of a pest problem than the native species.

Native species of Belize that are considered endangered or threatened with extinction include 15 mammal species, 33 bird species and 7 reptile species. Belize's endangered animal (and plant) species should be studied to gather basic natural history information and to determine present status, threats, and management possibilities.

Energy

Virtually all of the energy consumed in Belize is produced from imported petroleum products, of which the majority is used by the transportation sector. Electricity is produced by petroleum-fueled generators under the aegis of the Belize Electricity Board (BEB). Total available electricity has remained constant for several years at 70 million KWH/year. Abnormally high transmission losses and frequent generator failures are two of the major problems affecting delivery of electricity. The BEB needs to develop an overall strategy to supply present and future electricity needs.

Belize has considerable potential sources of renewable energy, such as hydroelectric, biomass and solar. These possibilities, as well as the proposal to buy Mexican-generated electricity, need to be thoroughly explored and evaluated.

Institutional and Legal Aspects of Environmental Issues

Belize has the typical British Commonwealth parliamentary system, headed by the Prime Minister. The Cabinet is the principal instrument of policy to direct and control government.

Natural resources and environmental management responsibilities are scattered among ten ministries. There are also several quasi public, statutory boards responsible for crops (bananas) commodities (sugar, market) and services (tourism, telecommunications, electricity). The only significant local conservation organization is the Belize Audubon Society (BAS), which is an effective private force behind GOB conservation legislation. A veritable roster of international conservation groups has contributed to BAS efforts in Belize.

Since Independence, the GOB has passed several laws, ordinances and acts that have greatly strengthened the legal bases for natural resources and environmental management. However, much of this impressive but broad legislative program has not been implemented due to lack of specific regulations and substantive standards. Thus, any application becomes a rule-making process without precise guidelines.

Barriers to effective implementation of environmental programs include jurisdictional disputes between ministries, lack of trained middle- and lower-level public servants, lack of enforcement capability, severe fiscal constraints and lack of knowledge among the general public about the importance of conservation and rational use of natural resources.

Environmental Issues and Potential Actions

Belize's population and good state of natural resources must be allowed to develop fully according to GOB plans and financial resources. However, **development** need not lead to **destruction** nor to **overexploitation** of resources. Various aspects of management of renewable resources and control of non-renewable resources must be identified and studied, and plans should be detailed to secure a continued healthy and productive environment.

The following issues and potential actions are summarized in this section in no special order of priority to give the reader an environmental status report on Belize's natural resources and to suggest potential activities for decision makers directly responsible for Belizean resource management programs. It is hoped that the international development assistance community also will find these recommendations useful in guiding financial support programs in natural resources.

Contamination or pollution of the environment results when the natural system's ability to absorb and process waste is exceeded. This is a social and cultural problem. Belize's primary contamination problem is water pollution. Most communities depend upon surface water for their potable water supply and the general public health depends on potable water.

- Improve facilities for dumping faecal matter where sewage systems do not exist.
- Render harmless all sugar processing effluents and industrial wastes, especially toxic chemicals like cyanide.
- Prevent chemical effects and sedimentation of rivers and the coastal waters that will eventually kill the coral reefs.
- Locate dumping facilities for solid waste away from areas where potable water in drawr..
- Monitor potable water supplies by providing adequate laboratory facilities, technology and trained technicians.
- Address public health education, water use and contamination.
- Enforce strong legislation to prevent contamination of groundwater aquifers and rivers.
- Analyze potable surface water for pesticide residues derived from agricultural runoff (non-point source) and heavy metals or other contaminants from industrial operations (point source).

Coastal and Marine Development will depend upon the establishment of an adequate data base. Before fisheries exploitation can be expanded, the resource must be thoroughly evaluated.

- Provide funding to undertake the necessary basic inventory research.
- Stimulate mariculture and aquiculture of preferred species.
- Protect preferred species from overexploitation.
- Introduce less-preferred species to the domestic market.
- Control poaching.
- Set and enforce fishing limits for preferred species such as conch, lobster, grouper, and snapper.

Coastal development will depend upon water and sewage facilities.

- Evaluate location and potential of water resources including quality and supply.
- Limit development in relation to potable water supplies.
- Improve urban and industrial waste disposal systems.

Forestry in Belize still has tremendous potential.

- Inventory all plant species.
- Identify less preferred tree species and assess their potential uses.
- Enforce minimum cutting sizes for harvesting hardwoods.

Sustained yield forestry depends upon forest protection from slash-and-burn agriculturalists.

- Develop forest management programs for hardwood forests.
- Encourage private industry participation in sustained yield forestry.
- Involve mahogany concessionaires in forest management.

Deforestation will become an issue as the need for agricultural land increases.

- Assess land use capability of existing and potential forest reserves to clearly define production forests.
- Assess land use potential before releasing land for agriculture.
- Return lands not suited to agriculture to forest.

Agriculture, forestry and fisheries employ a third of the work force and generate half of the GDP. The GOB has the potential to produce all of its food. Agricultural development depends on road improvement so that farmers can reach their markets.

- Provide all-weather roads and maintain them to serve this sector.

The GOB is addressing traditional preferences and practices concerning home grown foods.

- Increase production of agricultural crops.
- Produce more foods and process them locally to meet and possibly exceed the level of those foods now imported.
- Provide facilities and training for drying, storage and refrigeration to small and medium size farmers to upgrade their production.
- Instill contemporary attitudes in farmers to integrate traditional techniques with modern technology and needs.

Modern agricultural technology brings its own pest and chemical problems. Potential agricultural problems can be reduced or eliminated by actively educating farmers and the general public about their responsibilities in safeguarding the land from chemical abuses, as well as the public from accidental poisonings.

- Continue and/or develop training in integrated pest management (IPM) programs at Central Farm for teachers and extension agents.
- Draft and enforce legislation to secure the safety of use, handling and storage of potentially harmful chemicals.
- Integrate crop management with biological and chemical pest control.

Health and Nutrition problems stem primarily from Belize's geographical location in the tropics/subtropics. Malaria, potable water supply and sanitation (mosquitos and water/sewage facilities) are the major issues, compounded by lack of trained health staff, facilites, and equipment.

- Define areas of the country with *Anopheles* and *Aedes* mosquitos and maintain checks on their populations.

- Intensify the mosquito control program to control populations of *Anopheles* and *Aedes* mosquitos.
- Provide potable water facilities to all settlements.
- Provide sewage/sanitation facilities in all urban areas.
- Provide information and guidance about sewage/sanitation in rural areas.
- Keep food sanitation standards high.
- Define Public Health staff priorities and provide financial resources to carry out their work.

Nutritional status depends upon the function of food intake and health of the person. Nutritional diseases affect everyone but children under five are the least able to sustain illness combined with insufficient or unbalanced diets.

- Continue to upgrade health education programs incorporating sanitation measures with food habits.
- Continue to alleviate anemia by prescribing iron supplements through district clinics.
- Continue to concentrate on preventive medicine techniques to reduce illness and improve health and nutrition.

Endangered Species and Wildlands Conservation must be addressed together because they are interrelated.

- Identify populations of endangered or threatened species and protect their habitats. Some examples are the green turtle, iguana, harpy eagle, spoonbill, wood stork, certain hawks and cagebirds, including parrots.
- Eliminate hunting pressures on endangered species through enforcement of protection laws.
- Educate the public about the necessity to maintain the balance of nature.
- Protect cays and wildlands, that have been designated as reserves, from poachers and habitat destruction.
- Evaluate for potential education/tourist development areas that have been identified for historic, natural history, scenic or archaeologic value.
- Institute a curriculum in environmental sciences, specifically parks management, at BELCAST.
- Begin a curriculum in archaeological studies at BELCAST.
- Expand secondary school curricula to include tourism management and natural resources development.

The National Conservation Strategy, sponsored by IUCN, to evaluate conservation potentials and needs was initiated in 1983, but it is currently inactive.

- Provide the necessary fund/staff to complete the Conservation Strategy.
- Promote UNESCO's designation of the Barrier Reef as a World Heritage Site.

Soils of a country are the stock from which all other land resources spring. Belize has land areas where the soils are suited to forestry, agriculture or cattle ranching. Human use of the land determines whether it will be maintained at a high level of productivity, or if it will be left as useless for the future.

- Conduct a detailed land-use capability classification of the country.
- Legislate for the proper use of the land and strongly enforce the law.
- Restrict colonization and settlement to lands suitable for sustained agriculture.

Information Access in Belize is severely lacking, especially of environmental baseline data, natural resources and cultural resources. It is important for the GOB to establish archives with access (materials placed in the system and easily retrievable) to all information generated by nationals and foreigners.

- Encourage the Ministry of Education (in charge of the Archives) to play a more active role in collection of reports and country information.
- Introduce data base technology for storage and retrieval of information. Train data processors and provide for technical review of information
- processing.
- Require that natural resource and archaeological reports be deposited in the National Archives in Belmopan.
- Require all scholars working in Belize to submit copies of their work to the Archives.

Water Resources are available in Belize, but the GOB must protect its potable water sources to ensure viability of development and growth.

- Use state-of-the-art drilling techniques especially where there is danger of salt water intrusion into the well.
- Create a National Water Council with responsibilities for water quality, technology, and provision.

Limestone geology indicates that Belize is rich in groundwater resources.

- Identify areas where the groundwater resources are plentiful.
- Protect all aquifers from contamination.