



**United Nations
Environment
Programme**



UNEP

Distr.
LIMITED

UNEP(DEC)/CAR IG.24/INF.9
28 September 2004

Original: ENGLISH

Eleventh Intergovernmental Meeting on the
Action Plan for the Caribbean Environment
Programme and the Eighth Meeting of the
Contracting Parties to the Convention for the
Protection and Development of the Marine
Environment of the Wider Caribbean Region

Montego Bay, Jamaica, 28 September – 2 October 2004

**THE GREATER CARIBBEAN BASIN ECOREGIONAL ASSESSMENT
THE NATURE CONSERVANCY**

SUMMARY

To provide science-based tools for sustainable planning and to promote sound management across political boundaries, the Nature Conservancy has undertaken an intensive two-year Ecoregional Assessment of the Greater Caribbean Basin. This study includes a detailed examination of the region's biological diversity and its socioeconomic factors. At the core of this effort is "*Conservation by Design*", the Conservancy's strategic, science-based planning process which helps us identify the highest-priority places—landscapes and seascapes that, if conserved, promise to ensure biodiversity over the long term.

As a component of the Greater Caribbean Ecoregional Assessment, we have developed the most comprehensive database of biodiversity and socio-economic information ever assembled and we are making the database, tools, and results freely available (for non-commercial use) to any interested stakeholders throughout the Caribbean. Because biology isn't the only source of the Caribbean Basin's complexity and character and effective conservation solutions must transcend political and cultural borders, we suggest that the technical tools and data assembled and used by the Conservancy can be extremely useful for sustainable planning conducted by agencies, nations, local communities and other stakeholders throughout the Caribbean. The need to reconcile human and biological well-being is nowhere more pressing than in the Caribbean -- intense human pressures makes this one of the world's most threatened places of mega-diversity and scientists estimate that less than 10 percent of the region's original vegetation remains intact. We believe that this open-source approach will ultimately help the conservancy promote sustainable conservation throughout the region.

This document briefly describes some of the Ecoregional Assessment products and outlines potential uses. Further detail will be provided during a lunch-time event, on September 30 at the Eleventh Intergovernmental Meeting on the Action Plan for the Caribbean Environment Programme, in Montego Bay, Jamaica.

THE ECOREGIONAL ASSESSMENT PROCESS

We are now assembling, into a standard, seamless GIS database, the biological and socio-economic data necessary to analyze the regional-scale context of Caribbean biodiversity. The general sequence -- including identifying and mapping conservation targets, assessing ecological condition, setting conservation goals and delineating a set of priority conservation areas -- serves as the Nature Conservancy's focus for conservation planning and action. This process is well-grounded in the field of conservation biology and serves to meet four general goals of conservation planning that must be satisfied in order to achieve the overarching mission of maintaining biodiversity and ecological integrity into perpetuity. These goals are:

1. Representation of all native ecosystem types and several stages across their natural range of variation.
2. Maintaining viable populations of all native species in natural patterns of abundance and distribution.
3. Maintaining ecological and evolutionary processes, such as disturbance regimes, hydrological processes, nutrient cycles, and biotic interactions.

4. Designing and managing the system to be resilient to short-term and long-term environmental change and to maintain evolutionary processes

Determining overlap between the Nature Conservancy's priorities for conservation and the priorities of national governments, donor agencies and local communities can promote powerful collaborations between diverse organizations and stakeholders. We suggest that the Ecoregional Assessment tools and data can help facilitate this process. An overview of technical products is provided in the following sections.

TECHNICAL COMPONENTS

Systems for biodiversity and human activity information management. Information is archived in a standardized structure on a freely accessible spatial warehouse using simple, robust systems that are easily and accessible to partners and stakeholders. Standardization and open access promotes updateable archiving systems – so that new information can be easily integrated and compared with existing information – and also facilitates information sharing and collaboration.

Seamless maps of Caribbean terrestrial, freshwater and marine biodiversity. Mapping Caribbean biodiversity provides the basis for conservation decision making. *Coarse-filter* mapping at the level of ecological communities, ecosystems and landscapes is an efficient method to represent all essential elements of biodiversity across the entire region. We identified and mapped a range of *coarse-filter* targets that represent a full spectrum of terrestrial, freshwater and marine biodiversity using combinations of biophysical factors (such as climate, geology, major habitat type, elevation, depth etc.). Detailed component lists and mapping methodology is available on request.

Components include:

- Terrestrial ecosystem maps – historical and current extent of remaining areas
- Freshwater systems maps and comprehensive stream/watershed classification
- Marine ecosystem classification maps including coral reefs, sea-grass, mangroves, sandy beaches, rocky shores, estuaries and deepwater systems
- Tools to assess landscape connectivity based on barriers to movement
- Assessments of predicted viability of all biodiversity components – based on levels of human impacts
- Species-specific data (where available), including elements such as rare plant locations, turtle nesting areas and freshwater species distribution lists

Human Activity information. Distribution of human activities is a critical factor in conservation and resource management. Not all human activities are threats to biodiversity and determining relative human impact and predicting ecological health is necessary for sound management. We assessed human impact in two ways: expert judgments and mapping of the relative intensity of human impacts. Local experts provided judgments on the condition of targets and this information is combined with maps of human activities in order to determine relative human impacts.

General socio-economic components include:

- Protected area maps (spatial extent and management type)
- Industrial agriculture maps (type and intensity)
- Tourism zones and a comprehensive database of hotels of the Caribbean (location and number of rooms)
- Urbanized area, population density and projected population growth rate
- Models of marine threat (developed by WRI) including sedimentation, marine pollution and over-fishing
- A cumulative impact or conservation cost-surface model – predicting relative impacts of human activities and allowing identification of remaining intact areas

Analytical tools and a framework for science based decision-making. Usable and well-founded methods to determine conservation goals, priorities and conflicts can be powerful tools to promote sound resource management. We developed a set of analytical tools to analyze the newly assembled biodiversity and socio-economic database. Components include:

- Representation analysis, including identification of gaps in existing protected area networks
- Mapping of an efficient and comprehensive portfolio of conservation areas using MARXAN analysis. Parameters in MARXAN can be easily adjusted to meet individual country conservation values and goals, allowing for quick and flexible production and comparison of multiple conservation scenarios
- Measures of site irreplaceability -- sites that are most critical for conservation based on rarity, condition and spatial configuration
- Methods and tools for quantifying connectivity areas

USE OF THE ASSESSMENT, TOOLS AND DATA

We hope that this study will support the development of strategic partnerships with local and regional organizations and we are actively seeking new partnerships built around sustainable planning and conservation action. We hope to promote the conservation of the region's irreplaceable terrestrial, freshwater, coastal and marine biodiversity by providing technical tools and data necessary to achieve results and measure success.

Some potential uses:

- Completion of National Gap Assessments in accordance with the Seventh Conference of Parties (COP-7) Program of Work
- Identification of most threatened biodiversity elements and ecosystem types
- Quantifying where human needs, human poverty and ecosystem services overlap
- Conflict resolution, using the completed database as an impartial source of information for disparate stakeholders
- Development of national and regional research needs and priorities – necessary to develop effective long-term partnerships with the academic community
- Assisting counties in evaluating and revising national biodiversity strategies and national park management plans
- Setting objective baselines to measure conservation progress and biodiversity loss

- Developing management plans for key species – including threatened and endangered species
- Identification of critical landscape and seascape connectivity areas and promoting interactions across political boundaries
- Identification of explicit linkages between terrestrial, freshwater and marine biodiversity and objective assessment of human impacts to these connected systems

More information:

Richard M. Jeo

Director of Conservation Science

The Nature Conservancy

Mesoamerica and Caribbean Region

rjeo@tnc.org