

Selecting Sites for Protection to improve the Representation of Biological Diversity

A Case Study from the Dominican Republic *

by

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* Description of the methodology applied in the Project "Biological Diversity in the
Dominican Republic"

SELECTING SITES FOR PROTECTION
TO IMPROVE THE REPRESENTATION OF BIOLOGICAL DIVERSITY

A CASE STUDY FROM THE DOMINICAN REPUBLIC

INTRODUCTION

Until recently scientific criteria were hardly used in proposal and establishment of protected areas in the Dominican Republic. National parks and scientific reserves, the only protection categories with a legal base, were even sometimes established in degraded areas or with emphasis on scenery rather than on natural resources. This has led to a number of parks in urban and rural shoreline areas without biological significance. In some cases areas with high biological diversity are located right next to a protected area, but are not included in it.

Since its establishment in 1979 the Dominican Republic's Wildlife Service (Departamento de Vida Silvestre) is mainly involved in working on inventories and evaluations of natural open spaces (e.g. wilderness areas) and since 1981 has been working together with the German Service for International Cooperation (DED). Highlights of this cooperation is the establishment of Jaragua National Park in the dry southern part of the country. Loma Quita Espuela, a rain and cloud forest in the north will also be set aside as a national park in the near future.

In 1989 the Wildlife Service started a project to study the biological diversity in the Dominican Republic in order to recommend improvements in its conservation. The project is sponsored by WWF-US and is logically and financially supported by DED.

METHODS

The biodiversity project is being divided in two phases and is carried out on two levels: 1. Ecosystem level: ecosystems are studied (vegetation and faunal habitats); 2. Species level: information is gathered on status, abundance, distribution, etc., and threatened species are defined.

1st phase. The project's first phase is divided in four steps for each level (see also fig.):

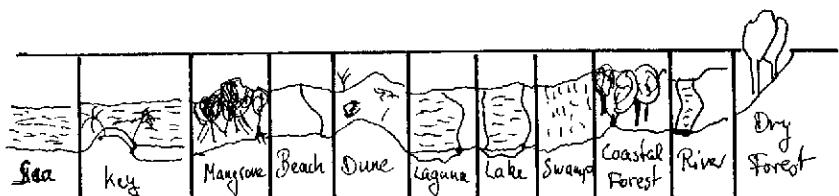
Ecosystem level

- Step I: The ecosystems present in the Dominican Republic are defined due to their type of vegetation and the type of habitat they offer to the fauna. The project is focusing on natural ecosystems, though ecosystems that have been significantly altered by human activities are also investigated under the aspect of loss of habitat.
- Step II: To locate the above defined ecosystems within the country, existing literature is revised, maps and aerial photos are interpreted and field studies carried out. The information collected is analysed and presented in various vegetation and habitat maps. **Example:** The ecosystem (SAND)-DUNES can be found in six different areas in the Dominican Republic
- Step III: Three criteria are used to determine whether a given site where a certain ecosystem was found should be recommended as a new protected area or not:
 - 1) Representation of the site's ecosystem in the already existing system of protected areas
 - 2) Size of the site (sufficient or not to be worth protecting)
 - 3) Degree of alteration of the ecosystem on the siteA site with an ecosystem well represented in protected areas, with a small area and a high degree of alteration certainly will not be recommended, whereas a poorly represented, large and unaltered site certainly will be.
Example: 1) Sand-dunes are found within two national parks.
2) The largest dune area near Bani has no legal protection.
3) The Bani dunes are in great parts unaltered
- Step IV: Once a site has been selected to be recommended, the present and -possible- future impact is estimated. In the case of high human impacts, the site will be given a high priority to be studied as soon as possible in order to elaborate management strategies to reduce these impacts.
Example: The dunes of Bani are highly threatened by sand extraction for construction uses. The area has already been investigated, management proposals have been made.

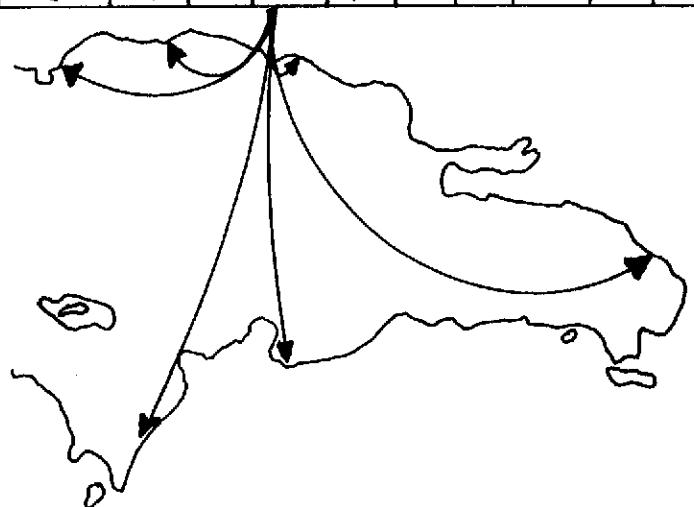
STEPS TO IMPROVE THE CONSERVATION OF BIODIVERSITY

A. Ecosystems

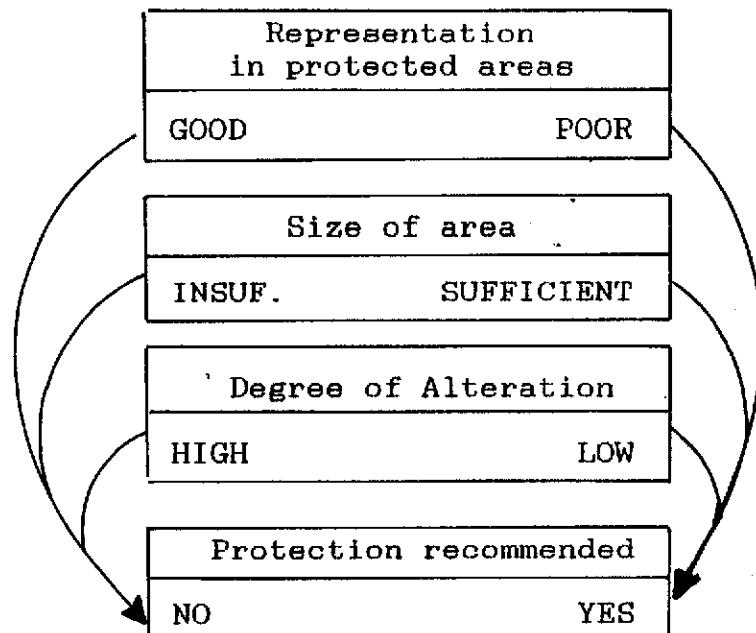
- I. Definition of each ecosystem in Dom. Rep.
 - Vegetation
 - Faunal habitat



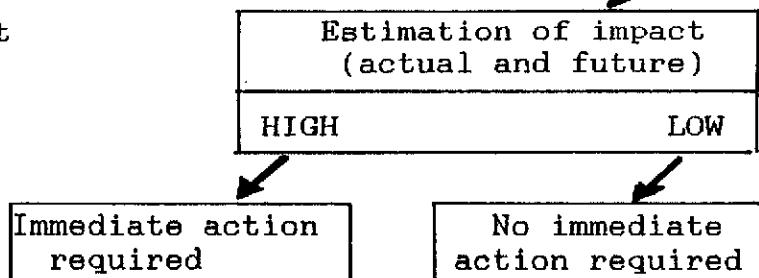
- II. Location of the ecosystem in the Dominican Republic
 - field surveys
 - literature studies
 - map and aerial photos



- III. Criteria to select new protected areas



- IV. Urgency to protect the new area



Species Level

- Step I: A list of all terrestrial vertebrate animals is prepared including, beside other information, data on population status (abundance) and on its tolerance to human impacts (high, medium, low). Taking these aspects into consideration, threatened species are defined and categorized (rare, vulnerable, endangered).
- Step II: All endangered species and some of the vulnerable species (where a high human impact is identified) are considered as "species needing special attention". These species are then described in detail.
- Step III: The distribution of each "species needing special attention" is reviewed in the literature and shown on maps. **Example:** The American Crocodile (*Crocodylus acutus*) is reported in Rio Masacre - Laguna Saladillo in the northwest of the country and in Lago Enriquillo.
- Step IV: It is determined to what extent the species' distribution coincides with the system of protected areas. In cases where important habitat areas for the species are not included, proposals for new areas are made. **Example:** the crocodile (*C. acutus*) in Lago Enriquillo is insufficiently protected by Isla Cabritos National Park. Therefore enlarging the area of this park is highly recommended, to form a new Lago Enriquillo National Park.

Phase 2. Further investigations are executed in the proposed new areas. Field trips of multi-disciplinary teams are arranged: Every team consists of a botanist, an ornithologist, a herpetologist/mastozoologist and a socio-economist. The botanist identifies and describes the vegetation of the area, the two zoologists measure the animal species diversity (by censusing). It is planned (and partly already executed), to include an invertebrate specialist in every team. The socio-economist evaluates social and economical conditions in the area and its surroundings and identifies impacts on natural resources.

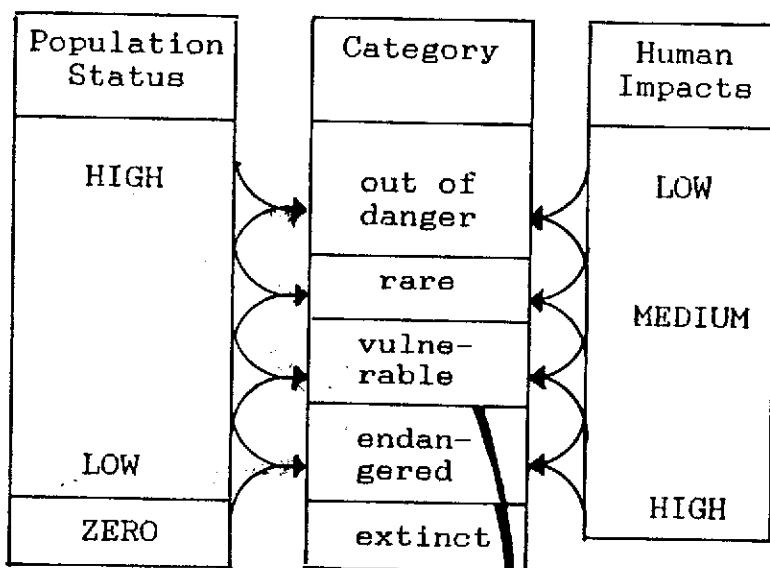
In a second step the team formulates management proposals for the area. They include the promotion of legal protection (by law or decree), the active participation of local inhabitants in decision making, the formation and logistical help of Non Governmental Organizations. Since government agencies are often too weak and have too little funding, the help of NGO's in the management of protected areas is of vital importance.

Another focus of the second phase are endangered species. Better estimations on population status and on human impacts are needed, since in most cases the available data is

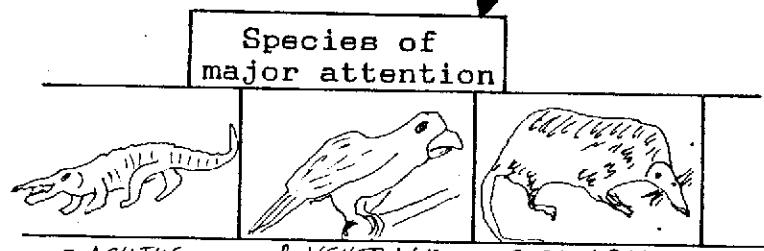
STEPS TO IMPROVE THE CONSERVATION OF BIODIVERSITY

B. Species (here: vertebrate terrestrial fauna)

I. Identification of threatened species



II. Species needing major attention

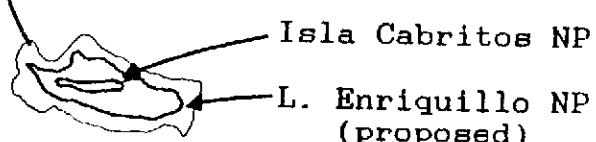


III. Distribution in Dominican Republic



IV. Criteria for site selection

Representation of the species in protected areas



insufficient and old. Sub-projects on certain species like the American crocodile (*C. acutus*), the four species of marine turtles, all marine mammals, the terrestrial mammals *Solenodon paradoxus* and *Flagiodontia aedium*, etc. need to be carried out in this phase. These sub-projects include proposals for species management and for special educational programs to be executed by government and non-governmental organizations.

RESULTS

Recommendation of new protected areas. Fifteen areas were identified which are considered to be of high importance for the conservation of biological diversity and recommended to be included into the national system of protected areas. Within these 15 areas following ecosystems are represented:

- the country's largest (saltwater) lake and its surrounding freshwater swamps: Lago Enriquillo
- the largest mangrove and swamp area near Samaná Bay
- the largest dune system (Dunas de Bani)
- one area of semideciduous coastal plain forest
- one area of primary dry forest
- two areas of semideciduous transition forests (Mahogany)
- four areas of broadleaf humid lowland forest
- six areas of cloud forests
- one riparian forest
- one marine area adjacent to an existing national park

In particular the fragments of humid lowland and the cloud forests differ very much from each other each representing a unique and special ecosystem.

Some of the proposed areas, like Lago Enriquillo, can be protected by simply changing boundaries of existing parks. In some cases we include proposals of delimitations for new areas, though mostly our state of knowledge does not allow to do so. We also suggest the declaration of two areas as Biosphere Reserves under the UNESCO Man and the Biosphere - program one in the northeast, the other in the southwest of the country.