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Measuring Protected Area Management Effectiveness

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Measuring Protected Area Management Effectiveness

FOREST INNOVATIONS PROJECT

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2000

CONTENTS

1. INTRODUCTION

The first Protected Area (PA), as they are known today was established at the end of the 19th century in the United States when Yellowstone National Park was created to safeguard representative natural and cultural resources. The most unique aspect of this park was that, with the exception of park personnel, people were not allowed to live in the area on a permanent basis. This North American model of a pristine national park grew slowly at first, but by the early 1960s had gained momentum and many countries had established national parks that prohibited permanent inhabitants. In 1969, IUCN defined a *National Park* as a:

> "large area that is relatively undisturbed by exploitation and/or human occupation, and the highest national authority has taken action to prevent or eliminate resource exploitation and/or occupation of the entire area" (McNeely *et al.,* 1994).

At present, the world's network of 44,059 protected areas represents 10% of total land on Earth (WCMC pers. comm. J. Beltrán[1]). Only 1,470 of these were modeled after Yellowstone, while the rest have been designated with a variety of denominations (McNeely et al., 1994). In Central America, the number of protected areas increased from only 30 in 1970 to more than 300 in 1987 (including indigenous reserves). At that time, approximately 8% of the Central American territory was protected (Morales and Cifuentes, 1989). A recent review documented that Central America had 388 protected areas representing 22% (115,000 km^2) of the land in the region (McCarthy and Salas, 1998).

[1] Javier Beltrán, Protected Areas, Latin American and the Caribbean, World Conservation Monitoring Center (WCMC).

As development continues to accelerate, it has become increasingly clear that protected areas can, and must, play a critical role in maintaining a balanced overall land use pattern and economic development. PAs benefit society in a variety of ways by:

- maintaining the essential ecological processes on which natural ecosystems depend,
- preserving species diversity and genetic variation,
- maintaining the productive capacity of ecosystems,
- preserving historical and cultural characteristics important to the traditional life-styles and well being of local people,
- safeguarding critical habitats that sustain species,
- providing opportunities for community development, scientific research, education, training, recreation, and tourism,
- mitigating the threat of natural disaster,
- providing environmental goods and services, and
- maintaining sources of national pride and human inspiration.

Protected areas may have even greater economic value in the future as the genetic material preserved in them becomes the building blocks for future biotechnological breakthroughs in the fields of medicine, agriculture and forestry (McNeely, 1995). PAs are also reservoirs for wild populations of animal and plant species native to the region, whose economic and ecological potential should be incorporated into the surrounding production systems (Imbach and Godoy, 1992).

The related goals of conserving biological diversity and protecting ecosystems have been gaining importance in the field of PA management. Throughout most of the history of PA management, an "absolute protection" approach has been used to reach these management goals, with a "don't touch" attitude, founded on the belief that human beings intrude in areas that would otherwise be untouched (UICN/IDB 1993). Now, however, it has become clear that it is equally important to understand the ecological role of ecosystems and the cultural, social and economic functions that revolve around protected areas.

Practice and experience have shown that people have lived in virtually all sites of biological and ecological interest, and that these people have legitimate historical claims on the land. Keeping local and regional realities in mind, the Central American countries have adopted flexible mechanisms to manage their protected areas, establishing areas that permit limited and controlled use, such as indigenous reserves, recreation areas, protection forests, watersheds, and others.

Although there is growing acknowledgement of the important role PAs play in national development, and despite efforts to create new protected areas, many PAs have not progressed further than obtaining their legal charter. While there are hundreds of officially declared PAs, many are not adequately managed or exist only in theory. Such protected areas are often accurately characterized as "paper parks". In Central America, at least 30% of all declared PAs may be described as "paper parks" and more than 60% have yet to resolve land tenancy problems (UICN/IDB, 1993).

Internal and external, direct and indirect forces have made it necessary for PA administrators to use innovative management elements and strategies. PA planning and management have in consequence had to adjust to new circumstances and challenges. New elements and strategies, designed to meet the resource needs of ever more demanding users, have made PA management more complex. At the World Congress on National Parks and Other Protected Areas held in Caracas in 1992, participants identified the need for methodological studies to provide a systematic evaluation of management activities, elements and strategies in PAs around the world.

Protected area management encompasses a large number of interconnected elements that ensure the long-term sustainability of natural, cultural and social resources. The interaction among these elements (legal, administrative, social, institutional, scientific, financial and planning related, among others) requires a flexible and dynamic planning strategy to guide appropriate protected area management.

Some PAs in Latin America have proven, in spite of some inevitable setbacks, to have effective management and to comply with their original objectives. Nevertheless, the vast majority of PAs have been unable to achieve effective management in the face of threats that endanger the biotic and abiotic components they protect, and that generate negative impacts on the surrounding communities.

What progress has been made in the form of actions, processes and activities that would allow PAs to continue functioning well or to improve their operations? How can weaknesses be identified, and what are the problems or critical issues that must be resolved to achieve the adequate management of an individual PA or a system of PAs? What actions can be taken to improve upon deficiencies? Answers to these questions are not easy, but can be found through the periodic and replicable evaluation of relevant management components using structured systematic and sequential methodological procedures. Such procedures can provide organized and pertinent information that allow managers to make more appropriate and timely decisions on how to confront problems and weaknesses.

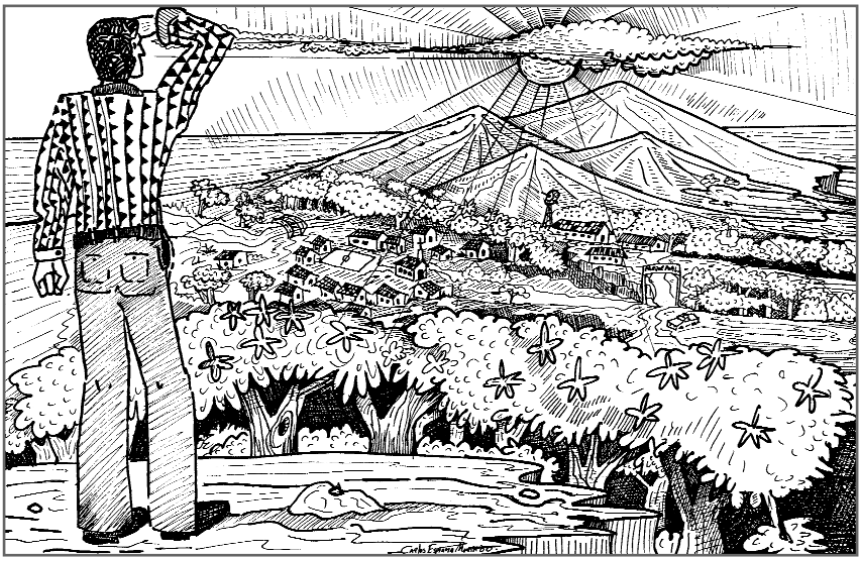
Evaluation is an important part of the management process. It is easier for a PA administrator to make better decisions if he or she has clear knowledge of management problems and their causes. A management evaluation establishes a basis for improving planning strategies, and developing more efficient management actions and programs. Evaluation results can also serve as valuable elements in funding proposals.

Activities related to natural resource use, such as ecotourism and forest management, can also be improved once rating criteria and quality standards have been identified for them during the evaluation processes. These activities can then become part of a quality certification system, offering both economic progress and better natural resource conservation. It is important to point out that once mechanisms are developed to evaluate effective PA management, acceptable management standards can be established that could lead to a PA management certification system in Latin America and perhaps even worldwide.

2. DEFINITION OF EFFECTIVE MANAGEMENT

Effective PA management depends, in large part, on the degree of knowledge about the complex ecosystems that they contain. Because of the ecosystem complexity in the tropics, administrators often face management decisions that have not been previously tested or that are subject to considerable uncertainty (UICN/PNUMA, 1990). Compounding the difficulty of managing a PA, are legal complexities, indigenous cultural values, and economic development interests close to or dependent on PA resources.

In the context of protected areas, we define **management** as:
The combination of actions with a legal, political, administrative, research, planning, protective, co-ordinating, interpretative or educational character, that results in the better use and permanence of a PA, and the accomplishment of its objectives (expanded from Cifuentes, 1983).



The sound use of natural resources is the best way to guarantee benefits for human beings.

Measuring PA management means evaluating how well the protected area managers and others carry out the actions necessary to fulfil the area's objectives. We consider **effective management** to be:
The combination of actions that make it possible to satisfactorily fulfill the function for which the area was created, based on the area's particular traits, capacities and context (Izurieta, 1997).

Various terms are used to describe management effectiveness and efficiency in different documents. UICN/PNUMA (1990) and De Faria (1993) refer to an evaluation of "management effectiveness"; UICN/BID (1993) refers indiscriminately to "management efficiency or efficacy"; SEMARNAP (1996) talks of "efficient decision making" and the "efficient use of resources"; Godoy and Ugalde (1992) speak of "effective management", "management effectiveness" and "management efficacy ", Amador *et al*. (1992) refer to "management effectiveness"; and Cayot *et al*. (1998) speak of "management efficiency". This paper refers to effective management.

3. DIFFERENT APPROACHES TO THE EVALUATION OF PROTECTED AREA MANAGEMENT

In spite of recommendations made at the World Congress on National Parks, until recently, there had been very little progress in developing a methodology to evaluate management effectiveness applicable to any management category (UICN/BID, 1993).

The first attempt at monitoring the effectiveness of PA management was based upon a series of questions related to actions necessary for the fulfillment of a PA's management objectives (UICN/PNUMA, 1990). Subsequently, the defining elements of integrated PA management were identified and translated into indicators. A series of more specific indicators were identified through trials conducted in Central American PAs. These indicators included legislation, management objectives, limits, management plans, local support, available personnel, facilities, financing, feedback, and threats to an area's integrity, and were graded on a four point scale (0 to 3) (UICN/BID, 1993).

In Latin America, the first major attempt at developing a formal methodology of evaluating the effectiveness of PA management was carried out in Costa Rica in 1991 by WWF/CATIE (unpublished report). Many other approaches have been followed to accomplish the same goal and are briefly explained within this chapter.

3.1 Scorecards: Consolidation Criteria for Protected Areas

This mechanism has been utilized by The Nature Conservancy (TNC) to monitor progress made in the management of Protected Area included in that organization's Parks in Peril Program in Latin America. The procedure is based upon a series of 16 pre-established indicators, for each of which there are 5 conditions graded from 0 to 5 (5 being optimal). The indicators are grouped into 4 broad "consolidation standards":

a) Activities for minimum protection;
b) Long-term management;
c) Long-term financing; and
d) Area's territorial boundaries.

3.2 Numeric Methodology to Evaluate Protected Area Systems

This methodology was applied to the Venezuelan system of natural areas to establish the sensitivity of each area and identify those requiring urgent attention (Rivero and Gabaldon, 1992). The methodology defines criteria and assigns them weights in order to infer the sensitivity of each management unit to the use it receives. The weighting of these criteria and the evaluation of the management units are based upon the consensus of a group of experts, who assign them numeric values ranging from 0 to 5 or 0 to 10. The sensitivity criteria used were: size, shape, maturity of the natural communities, isolation, landscape diversity, number of extinct species, degree of intervention, capacity for recovery, watershed control, security, regulations, regulatory plan, budget, technical personnel, equipment, facilities, control and patrolling, access, and political attractiveness.

Using this method, one may evaluate each protected area via its sensitivity index, which is affected by the pressure caused by permitted and prohibited uses, and any other influences. In this way, any area that is vulnerable or in danger can be identified. The method is quite flexible and, with a bit of fine-tuning, can be used to classify the areas to establish a clear overview of the system and prioritize management actions.

3.3 Procedure to Rate Management Effectiveness in Protected Wilderness Areas

De Faria conducted the first systematic, methodological selection of the basic indicators necessary to evaluate PA management (De Faria, 1993). The selection was based on a detailed bibliographic review of management definitions and their most important components. Subsequently, international experts were surveyed to determine the most important management variables (indicators) which were then grouped into fields (macro-indicators). Throughout the evaluation process, the indicators were compared to the PA's conservation objectives to ensure that they fulfill required evaluation needs.

The procedure utilized a 0-4 scale scoring system. A set of conditions was constructed for each indicator with the optimal condition having the highest value. The scale of 5 levels (0 to 4) is related to a modified percentage ratio of the ISO 10004 standard as follows:

RATING	% OF OPTIMUM	SIGNIFICANCE
0	< 35	Unsatisfactory
1	36-50	Minimally satisfactory
2	51-75	Moderately satisfactory
3	76-90	Satisfactory
4	91-100	Very satisfactory

The method identified different levels of indicators: parameters, subvariables, variables and fields. Parameters are lowest in the hierarchy and are located within subvariables, which are located within variables, which are located within fields. Indicators were grouped in nine fields: administrative, political, legal, planning, knowledge, current use management programs, bio-geographical characteristics, and threats. *Variables* were the *key indicators in the rating process.*

The De Faria procedure used individual rating matrices for each indicator and general matrices that permitted an overall view of the rating relationship of all the indicators. Adding up the values of all the fields, and calculating the percentage of the optimum value allows one to determine the overall management rating for a specific protected area. The percentages obtained were interpreted in terms of management effectiveness, using the 5 management levels described in the adopted grading scale (from unsatisfactory to very satisfactory) as a reference.

Evaluation criteria and rating scales are key elements that require special attention.

3.4 Monitoring System for Protected Areas in Central America

This system is a modification of The Nature Conservancy Scorecard System that incorporates some elements from De Faria's procedure (Correau, 1997). The instrument is designed to follow up on management actions undertaken in Central American protected areas, as well as documenting any progress made in management efforts. The procedure utilizes a series of pre-established indicators, each of which has a set of 5 conditions rated from 1-5, with 5 being the optimum. The indicators are grouped into a series of "criteria", each series of criteria are grouped within a series of "factors" and those factors are grouped within 5 "fields" (social, administrative, natural and cultural resources, political-legal, and economic-financial). The procedure has recently been modified so that the rating of each indicator is summed, with the percentage of the total optimum value calculated in a process similar to, but less developed than, the De Faria procedure.

3.5 Validation Procedure for Rating the Management Effectiveness of a Protected Area System in the OSA Conservation Area, Costa Rica

The De Faria method has proven to be effective, regardless of the management category of the area evaluated. In a Costa Rican study, additional indicators from a different hierarchy were added to the validation process, with the goal of meeting the demands and conditions unique to the management of a subsystem of protected areas in the OSA Conservation Area in southern Costa Rica (Izurieta, 1997). For example, the validation helped demonstrate the flexibility of the procedure in evaluating the management effectiveness of each area and the integrated management of a subsystem and its zones of influence. Indicators were incorporated to rate the effectiveness of administrative actions designed to foster the participation of the communities living in the protected area's zones of influence, in decision-making and PA management.

3.6 IUCN Framework to Measure the Effectiveness of Protected Area Management

Since 1997, the World Commission on Protected Areas of the World Conservation Union (IUCN) has been developing a referential framework to rate management effectiveness and a range of tools that can be used to build systems of management effectiveness (Hockings, 1997). The first draft established 3 different evaluation levels including the following elements:

1) design evaluation;
2) input evaluation;
3) process evaluation;
4) output evaluation; and
5) outcome evaluation.

The procedure proposed a series of indicators (issues) for each level of the evaluation, which can be rated according to criteria organized into sets of conditions. A final version of the framework is due to be published in 2000.

3.7 Measuring Management Effectiveness in the Galapagos National Park, Ecuador

The De Faria method was used successfully in the Galapagos National Park in 1995, as a preliminary step to revising the park's management plan (Cayot *et al.*, 1998). The general procedure was administered in its entirety, including the establishment of new indicators and modification of the originals, tailored to the conditions and intrinsic needs of Galapagos National Park and including the participation of key actors from the community in the park evaluation process. The macro-indicators (fields) evaluated in the Galapagos National Park were: bio-geographic, legal, political, administrative and planning characteristics, knowledge, management programs, threats, and current illegal and legal uses.

The results obtained made it possible to identify critical problems and thus propose appropriate solutions to address them in the new management plan.

3.8 Validation of Four Protected Areas in Guatemala

The De Faria procedure was also administered in four PAs in Guatemala and the results were analyzed with and without the qualitative indicators (Soto, 1998). The results of the two analyses did not show significant differences. The test conducted by Soto showed that the procedure best minimizes subjectivity when rating qualitative indicators. It was also shown that the procedure could be administered for any protected area regardless of management category.

3.9 Matrix to Evaluate the Management Effectiveness of Peru's Protected Natural Areas

A matrix developed by WWF-Peru establishes 6 management fields, each of which has a weighting rate (WWF Peru/Centro de Datos para la Conservación, 1998). Within the 6 fields, 12 variables or elements that appear in almost all Peruvian management categories are rated using available secondary information. Each variable or element contains a given number of components to be rated. In addition, an equally arbitrary weighting factor is established for each element that affects the values obtained by its components. The components are rated individually based on the construction of conditions using varied scales (0-1) where the maximum value corresponds to optimum conditions. The procedure attempts to rate "the amount of influence" each element has on the management effectiveness of the protected area, as well as the overall effectiveness of the area's management actions compared to the total optimum (illustrated as a percentage). The results are interpreted using a scale of percentage ranges for management capacity that are defined from "bad" to "excellent".

3.10 Evaluating the Level of Implementation and Vulnerability of the Brazilian Indirect-use Federal Conservation Units

In 1998, WWF-Brazil prepared another methodology designed to meet the unique needs of that South American country, which was basically another variation on the De Faria procedure (WWF-Brazil, 1998). This approach evaluated the protected areas according to two large fields: level of implementation and vulnerability. The procedure identifies 8 elements important for evaluating the level of implementation and 7 elements important for evaluating vulnerability. Each element contains a set of conditions and is qualified using a 0-4 scale, where the optimum condition is 4. The average of all the values obtained within each field is calculated and then interpreted according to where it falls within the three defined ranges that follow: unit in precarious situation/ not very vulnerable (0-1.99) unit minimally implemented/ moderately vulnerable (2-2.99); units reasonably implemented/ very vulnerable (3-4).

4. SCOPE OF THE RATING SYSTEM

The procedure presented in this manual makes it possible to measure protected area management effectiveness on three levels: individual protected areas, systems (or subsystems) of protected areas, and the performance of the protected area administration within its zones of influence.

Based on the experience of De Faria, the WWF/CATIE system presented in this document has been adjusted, expanded and improved upon through several reiterations conducted in various Latin American countries as described previously.

Applied to an individual area, the procedure has proven to be a valuable tool not only for determining the level of general management in the area (rated between very satisfactory and unsatisfactory), but also for discrepancies between the amount of attention paid to different fields. Within the field it is also possible to identify factors or specific management components that require greater attention. This allows managers to improve planning efforts, as well as identify and obtain the support needed to achieve balanced and satisfactory management.

In the case of the Galapagos National Park (Amador *et al.,* 1998) the management evaluation made it possible to conduct an accurate diagnosis of the situation and include in the park's management plan, specific actions and programs necessary to correct inherent problems. Identification of weaknesses allows administrations to focus immediate actions and proposals for grants and technical support, on those "critical points" reflected in the evaluation tables.

The management indicators used in this system have proven applicable and relevant for all of the selected Protected Areas in Latin America, regardless of management category.

Under the current circumstances of PA management, it is also essential to know how effective is the community and public outreach in the zones of influence within and around the protected area. The specific indicators that measure outreach were identified by Izurieta (1997) while validating the methodology for the subsystem of protected areas in the Osa Conservation Area in Costa Rica, and are included in this report.

The procedure has been validated mainly in government administered protected areas. Nevertheless, the indicators and rating criteria presented in this manual could be easily adapted and modified to the realities of any management regime, whether municipal, community or private.

The methodology is neither static nor dogmatic. On the contrary, it has been prepared and validated visualizing a broad spectrum of management situations and categories, for which new indicators, adjusted to the reality of any particular protected area, can be incorporated and evaluated with the same basic tools.

5. PROCEDURES FOR EVALUATING THE EFFECTIVENESS OF PROTECTED AREA MANAGEMENT

This manual outlines a structured, systematic and low-cost procedure that can be used to evaluate the management of a broad range of protected areas. Figure 1 offers a schematic summary of the steps involved.

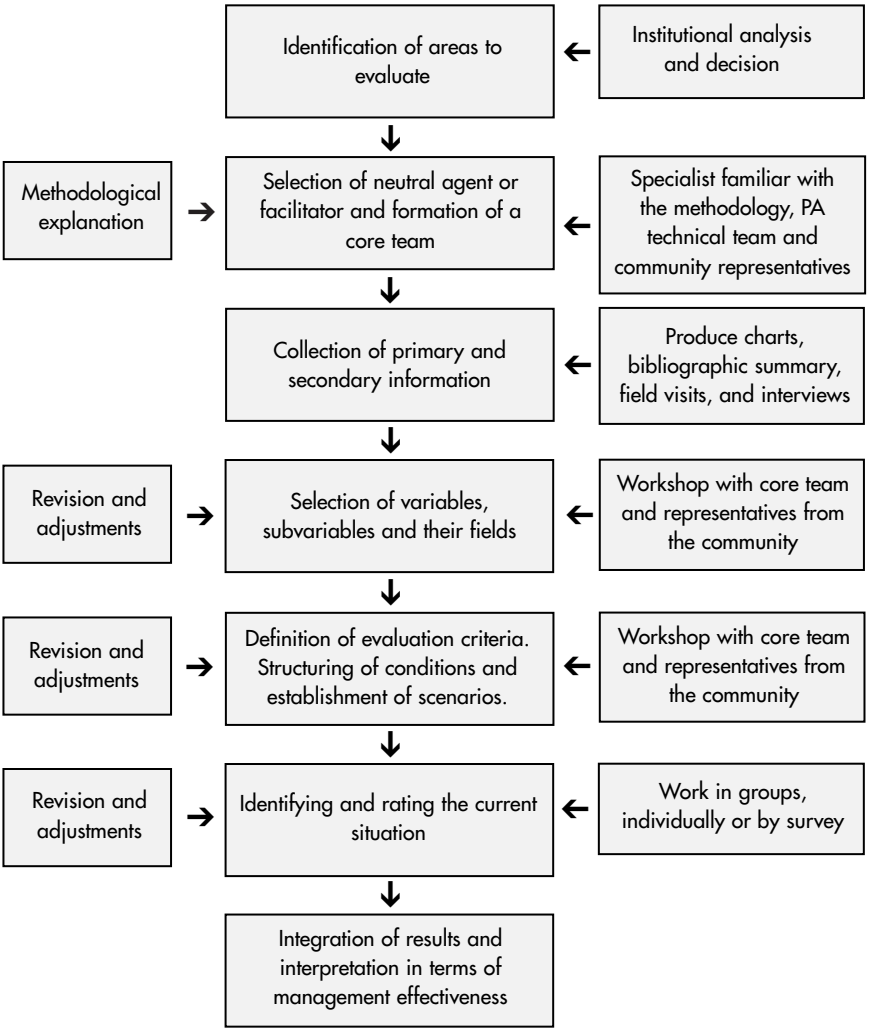


Figure 1. *WWF/CATIE methodological procedure to evaluate the effectiveness of protected area management*

The process evaluates elements that, for the most part, reflect the actions and effectiveness of the PA's administration. For this reason, the management evaluation should be considered to be something of a "self-evaluation" process, where the direct, objective, and technical participation of the PA staff is essential. Their input is included in the appropriate variables. The process must be participatory, including key representatives from institutions, and organized groups from communities living within or around the area, making the evaluation transparent and inclusive.

5.1 Identifying the Protected Area to be Evaluated

Any area that has been declared a protected area and/or is receiving attention to protect its natural resources is eligible for evaluation. Identifying the protected area to be evaluated is usually an institutional decision taken by the area's own administration or at a higher administrative level.

5.2 Selecting the Core Evaluation Team and Key Actors from the Community

The core team should be made up of key individuals from the protected area to be evaluated. It must be comprised of at least a team coordinator to guide the evaluation procedure and follow-up actions; and two experienced technical staff members that can aid the coordinator throughout the process.

The team should be familiar with the management evaluation procedure that is to be utilized. It is also essential that a specialist, well versed in the procedure, be on hand to help with the process. Such assistance can be scheduled according to the needs of each case but would be most appropriate at the beginning of the evaluation to train the core team on the evaluation procedure, and at the end to assist with the interpretation of results.

It is important for the core team to contact key institutions and community actors and to maintain active communication with them. Key actors should be kept well informed about what is happening, so that they can fully support the evaluation at any and/or all of its stages.

> *The evaluation should be carried out by the body in charge of the PA through its technical, administrative and operative personnel with the active participation of key actors from the communities surrounding the PA.*

Active participation by key community actors is essential to the protective area management evaluation process.

5.3 Collection of Secondary and Primary Information

This includes all available information in texts, books, newspapers and unpublished papers, as well as laws, regulations or other publications that refer to the management of the PA under evaluation. Management plans are valuable instruments that contain a great deal of information about the PA. Field information should be concise and practical. Observations about the presence, behavior and appearance of the personnel, work materials, quality of infrastructure and, quantity and quality of equipment should be also recorded.

In this phase, institutions relevant to the evaluation should be visited as well as key actors from the PA's neighboring communities, who participate with the administration in discussion processes or in direct resource management and use.

Appropriate forms, such as the example shown in Appendix 1, should be prepared beforehand to compile field information.

5.4 Selection of Indicators: Variables, Subvariables and their Placement in Fields

The indicators (fields, variables and subvariables) presented in Table 1 have been validated in different evaluation exercises in several areas of Latin America. Those areas include Guayabo National Monument and Carara Biological Reserve in Costa Rica, 1993; Galapagos National Park in Ecuador, 1995; Osa Conservation Area in Costa Rica, 1997; Rio Dulce National Park, Sierra de las Minas Biosphere Reserve, Quirigua Cultural Monument, and the Mario Dary Rivera Biotope in Guatemala, 1997. Indicators used in these areas are considered essential to rating management effectiveness. The evaluation procedure is open to include, eliminate or modify indicators according to the intrinsic characteristics of each protected area.

Fields are indicators of the highest level that reflect broad management activities, characteristics, context, or uses of a Protected Area. **Variables** are indicators that describe the actions, activities or situations relative to a determined field. **Subvariables** are indicators of certain specificity, focused on one action or situation relative to a determined variable. **Parameters** are the lowest indicators in the hierarchy and therefore are the most specific in the system, relative to a subvariable and its respective variable.

The **variables proposed** in this manual have previously been identified as critical to evaluate protected area management.

Nevertheless, depending on the case study and the available information, the evaluating team will probably define other variables, subvariables and/or specific parameters for the PA that is to be evaluated. The placement of variables in fields can follow the pattern established in this manual or variables can be relocated into other fields. This does not affect the evaluation's validity since, as previously stated, the standardization of the rating scale and its final interpretation make it possible to evaluate the management as an integral whole.

Taken together, the fields give a referential framework to PA management. The field definitions established by Mackinnon *et al*. (1990) were partially adopted and are as follows:

Administrative field:
Includes aspects that make it possible to measure the institutional management capacity, regardless of the management regime. Includes conditions for good internal organization, personnel management, financial management and functional infrastructure; all oriented to comply with the short and long-term goals and objectives proposed by the administration.

Political field:

Corresponds to the existence of and compliance with the guidelines that support PA management. Evaluates congruency of intra and inter-institutional actions that reflect, to a certain extent, the existence of general policies directed to conserve the PA's natural resources. The external support is reflected in the scope and stability of the advising for sound resource management. Intra-institutional support is reflected in the clarity of conservation and PA management policies; and efficient inter-institutional support is reflected in a jurisdictional clarity with a good amount of coordination and exchange of information and experiences to carry out important conservation projects.

Legal field:

Legislation is a tool that guides institutional jurisprudence on PA and the actions necessary to conserve their resources. This field comprises general or specific laws or regulations that help management and guarantee the long-term permanence of the area. Knowledge about the legal aspects reinforces management activities, when and if the current regulations are enforced in a correct, timely and rapid fashion.

Planning field:

The objectives proposed can be achieved with adequate planning. The latter is defined as a continuous process of formulating, revising and approving the objectives put forth. The evaluation team analyses aspects of follow-up, zoning, existence and execution of management and operative plans or other planning instruments.

Knowledge field:

The knowledge generated about the determined elements of the system are key to their management. The greatest availability of information would make it possible for administrators to best meet management challenges, over all the topics where the ecological systems are very complex. In general, the available bio-ecological, physical and cultural information and knowledge is identified. The knowledge about research carried out in the PA and how often it is carried out together give a good idea of the quantity of information generated and managed in the PA.

Management Program Field:

Refers to the combination of actions grouped into programs within the management and/or operational plans that permit the PA's objectives to be accomplished. This field is evaluated through those aspects that are essential for its implementation; program design, co-ordination with other programs, and planned implementation should be adequately monitored and evaluated.

Current Illegal Uses Field:

Takes into consideration all those activities that are counter to management objectives, PA regulations, undertaken in a way that exceeds legal limits, are being practiced outside designated areas or are causing negative effects in the PA. By evaluating these illegal uses, specific management responses can be developed.

Current Legal Uses Field:

Involves activities that are compatible with the PA management objectives; that are permitted and undertaken appropriately, thus guaranteeing that they do not exceed the resource's use capacity.

Bio-geographic Characteristics Field:

Includes factors that influence and can be determinant in fulfilling the management objectives. The size and the form of a PA can hinder or facilitate conservation efforts. The isolation of the area is related to a PA's connectivity, representativeness, viability, resilience and permanence.

Threat Field:

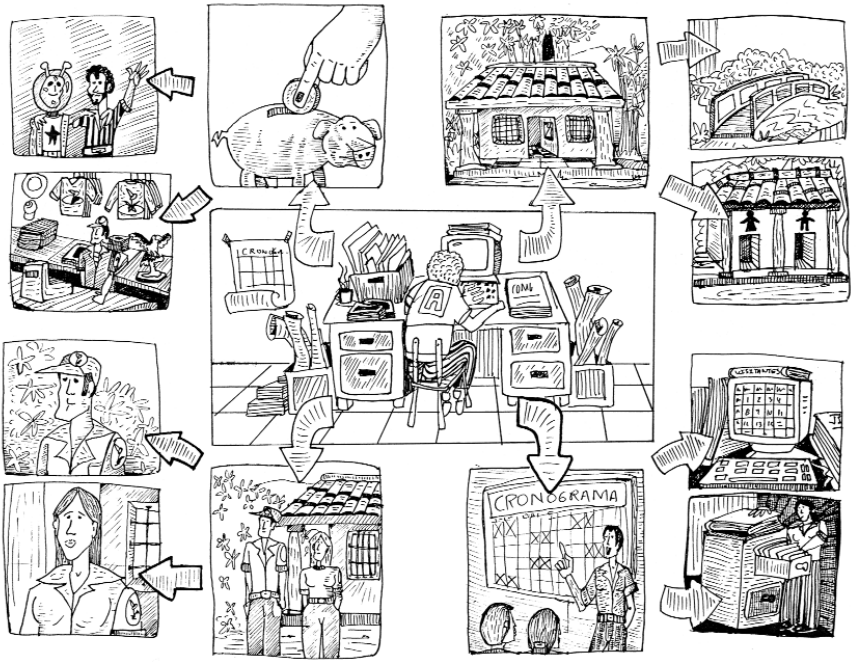
Encompasses those factors that destabilize the ecosystems. They are natural or human factors that affect the stability of the environment, and therefore whether or not the management objectives are reached. The higher the incidence of the factor, the lower the value assigned.

Table 1. Basic indicators to evaluate the effective management of protected areas

FIELD	VARIABLE	SUBVARIABLE
ADMINISTRATIVE	• Personnel	• Administrator • Technical Personnel • Administrative Personnel • Operative Personnel • Capacity for additional contracting
	• Finances	• Operational budget • Regularity of budget preparation and delivery • Extraordinary and/or special funding • Capacity to manage own resources • Financial-accounting system (parameters in document)
	• Organization	• Files • Organizational chart • Internal communication • Structuring of activities
	• Infrastructure	• Equipment and tools • Facilities for basic management • Facilities for specific management • Condition of facilities • Security of facilities • Boundary demarcation • Access
POLICY	• Community support and participation	
	• Intra-institutional support	• Mother institution • PA system administration
	• Inter-institutional support • External support	
LEGAL	• Land tenure	• Domain/Possession • Conflicts
	• Set of general laws and regulations	• Clarity • Application
	• Law creating the PA	
PLANNING	• PA management plan	• Plans exist and are up-to-date • Characteristics of the planning team • Plan implementation
	• Compatibility of management plan with other plans and organizations	
	• Annual Operational Plan	• Plans exist and are up-to-date • Plan implementation
	• Level of Planning • Zoning • Boundaries	

Table 1. Continued

FIELD	VARIABLE	SUBVARIABLE
KNOWLEDGE	• Socio-economic information • Biophysical information • Cartographic information • Legal information • Research • Monitoring and feedback • Traditional knowledge	Subvariables for each variable could be defined depending on the level of available information (see example in Table 2)
MANAGEMENT PROGRAMS	• Research • Environmental education • Environmental interpretation • Protection • Maintenance • Outreach to the community	Each program is evaluated according to the following variables: • Design • Implementation • Co-ordination • Follow-up and evaluation
ILLEGAL USES	• Timber extraction • Extraction of nonrenewable natural resources • Extraction of flora and fauna • Vandalism of cultural resources • Squatting • Poaching • Agriculture and cattle ranching • Fishing • Recreation and tourism • Building of infrastructure	
LEGAL USES	• Timber extraction • Extraction of mineral resources • Extraction of flora and fauna • Hunting • Agriculture and cattle ranching • Fishing • Recreation and tourism • Education • Building construction	
BIOGEOGRAPHICAL CHARACTERISTICS	• Form • Size • Isolation • Vulnerability	
THREATS	• Visitor impact	
	• Pollution	• Water: marine and/or freshwater • Land • Air
	• Fires • Advance of human settlements • Migration • Exotic organisms • Natural disasters • Development infrastructure • Subversive politicalmovements or violent conflicts • Drug trafficking and related activities	



Evaluation criteria organized in fields permit a systematic and better organized management evaluation.

5.5 Applying the Evaluation Procedure

5.5.1 General Rating and Weighting Scale

The rating scale adopted for the procedure has five rating levels (0-4) associated with a percentage weighting that expresses the level of management from unsatisfactory to very satisfactory (Table 2).

The percentage weighting is adapted from the ISO 1004 standard, tested in the evaluation of quality of services offered by private and public enterprise (UCR, 1992)

Table 2. Rating and weighting scale

RATING	% OF OPTIMUM	SIGNIFICANCE
0	< 35	Unsatisfactory
1	36-50	Minimally satisfactory
2	51-75	Moderately satisfactory
3	76-90	Satisfactory
4	91-100	Very satisfactory

5.5.2 Definition of Scenarios

To evaluate variables, subvariables and parameters, an optimum management scenario must be defined for the PA. This optimum scenario will be compared to the current situation in order to rate PA functions. The optimum scenario refers to the optimum conditions for a protected area to develop its activities and achieve its management objectives. The current scenario is an "image" of the situation at the time of the evaluation.

The optimum scenario can be determined from the information contained in the management plan and other existing planning instruments. Because the plans frequently do not reflect reality, it is essential that the propositions contained in these documents be reviewed and complemented with information provided by those who know the PA being evaluated. This ensures that the optimum scenario is an accurate reflection of the best feasible management.

5.5.3 Rating of Variables, Subvariables and Parameters

The rating is carried out by means of specific matrices for each field, using the five rating levels (0-4). In some cases, the values are assigned by simple percentage ratios comparing the existing situation and the optimum and in other cases by specific qualitative criteria or combinations of criteria.

The numerical optimum for each field results from multiplying the maximum value on the rating scale by the number of variables analyzed. For example, if the field has 6 variables its numerical optimum would be 24 since each variable can have a maximum rating of 4. The real value of the field corresponds to the sum of the points each variable receives (see Table 3).

To analyze the general management of an area, a matrix combining all the fields is used. The points given to each field are entered into the matrix (see Table 4).

5.5.4 Evaluating the Administrative Field

The *variables* to be measured are: personnel, funding, organization and infrastructure.

a) **Personnel:** This variable evaluates four subvariables: *director or administrator, technical personnel, administrative personnel, operational personnel and capacity for additional contracting*. The administrator is responsible for directing area management. Technical and administrative personnel are all those with a university degree or specialized technical training, that are generally in charge of administrative decision-making and policies. Operational personnel include park rangers, administrative support staff, maintenance crews and others. The optimal conditions and the set of conditions measured by each indicator can be changed and adjusted according to the PA management regime.

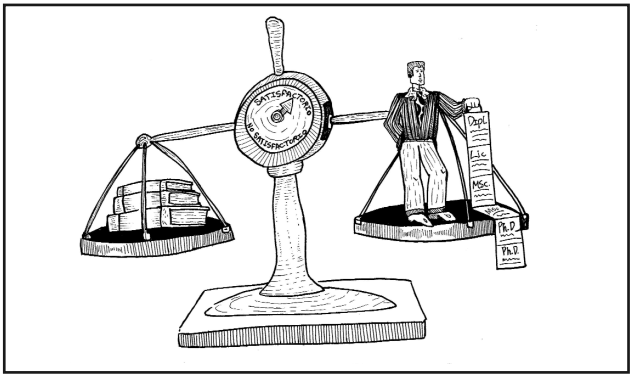
The subvariables are evaluated through parameters: *quality, quantity, motivation, effective time dedicated to the PA, incentives for personnel and staff attitude.*

QUALITY: For the PA director or administrator, technical and administrative personnel, the following criteria are used:

EDUCATION	INITIATIVE	EXPERIENCE
Graduate school (Post)	High	High (>10 years)
University (U)	Moderate	Moderate (5-10 years)
Technician (T)	Low	Low (2-5 years)
Specialized courses (Ce)	Very Low	No experience (< 2 years)

Combination of criteria and conditions:

U or Post + Ce;	high initiative;	high experience	4
U + Ce;	moderate initiative;	high experience	3
T and/or U ;	moderate initiative;	moderate experience	2
T; little initiative;	little experience		1
T; very little initiative;	no experience		0
T + Ce; high initiative;	high experience		3
U or Post; little initiative;	no experience		1



Highly qualified personnel is need to deal with protected areas management challenges.

QUALITY: for operative personnel the rating criteria are: *education, experience* in their field and in protected areas; skills to meet various demands; and *training* in protected area management:

LEVEL OF EDUCATION	EXPERIENCE	SKILLS	TRAINING
High school diploma or higher (H)	High (>10 years)	Has skills in various fields such as mechanics, carpentry, field equipment, electronics etc. that make him/her able to do many tasks (Many)	More than 3 specific training events and general orientations to develop his/her abilities (High)
Completed elementary school but incomplete high school education (M)	Moderate (5-10 years)	Has some skills that enable him/her to do certain tasks (Some)	2 courses or training events (Moderate)
Elementary school complete or incomplete (L)	Low (2-5 years)	Has a few necessary skills to perform specific few tasks (Few)	1 training course or event (Low)
	No experience (< 2 years)	Has no reliable skills (No)	No training or orientation (No)

Combination of criteria or conditions:

H Education;	High Experience;	Many skills;	High training	4
H Education;	Moderate Experience;	Some skills;	High training	4
M Education;	High Experience;	Many skills;	Moderate training	3
L Education;	High Experience;	Many skills;	High training	3
M Education;	Low Experience;	Some skills;	Low training	2
M Education;	No Experience;	Some skills;	Low training	1
L Education;	Low Experience;	Some skills;	No training	0

QUANTITY: Compares the optimum quantity of personnel with the number of existing personnel that are based permanently in the area, regardless of type of contract (government, agreements with NGOs, etc.). The area administrator or director is given a value of 4 if present and 0 if not. For technical, administrative and operative personnel, the percentage reached corresponds to the following rating scale:

Percentage of existing personnel	Value
≥ 90	4
76 – 89	3
51 – 75	2
36 – 50	1
35	0

MOTIVATION: Evaluates an individual's enthusiasm about their work and their satisfaction with the work conditions.

Very high motivation: staffs respond to their jobs with enthusiasm and are satisfied with their work conditions.	4
High motivation: staffs know and feel the importance of their jobs and are dedicated, but feel that some work conditions are lacking. These conditions could be easily rectified/provided.	3
Moderate motivation: jobs are done adequately, but with a general feeling of dissatisfaction with the working conditions.	2
Low motivation: workers have little enthusiasm or motivation and feel abandoned by the institution.	1
No motivation: staffs show no enthusiasm toward their job and the work conditions are unsatisfactory.	0

EFFECTIVE TIME DEDICATED TO PA: All personnel are evaluated according to the effective time dedicated to the protected area. The time over one year is counted, including any time that the worker spends developing activities that benefit the protected area, whether or not they are physically stationed there. The following criteria apply:

> 11 MONTHS/year	4
9-11 MONTHS/year	3
6-8 MONTHS/year	2
3-5 MONTHS/year	1
< 3 MONTHS/year	0

PERSONNEL INCENTIVES: All levels of personnel are evaluated using two criteria: quality and existence of promotion plans and support for employee-improvement initiatives.

Well-designed promotion plans and clear support for employee improvement initiatives.	4
Promotion plan not attuned to reality. Support for employee improvement on supervisory levels.	3
No promotion plan; real incentives exist. Support to supervisory employees is sporadic and selective.	2
No promotion plan; incentives are sporadic. Irregular support to supervisory level employees.	1
No promotion plan; no incentives; no support.	0

EMPLOYEE ATTITUDE: evaluates the response and attention of PA staff toward their responsibilities and their attitude and behavior:

Staffs are always attentive and respond positively to the requests of users and their colleagues (superiors and subordinates).	4
In general, staffs are polite and respectful to users and colleagues.	3
There are isolated cases of disrespect or rudeness toward those who use the area or to colleagues.	2
Behavior patterns toward users and/or colleagues is inappropriate.	1
Attitudes toward users is almost one of rejection and bad relationships exist among workers.	0

CAPACITY FOR ADDITIONAL CONTRACTING: refers to the capacity of the PA administration to contract additional personnel:

The PA has efficient mechanisms to contract additional personnel in a timely manner.	4
The PA has mechanisms that, though not so efficient, make contracting additional personnel possible, usually in a timely manner.	3
The PA has inefficient mechanisms for contracting additional personnel, making it difficult to do, and rarely in a timely manner.	2
The PA has very inefficient mechanisms that make it difficult or impossible to contract additional personnel.	1
The PA has no mechanisms to contract additional personnel.	0

b) **Funding**: this variable evaluates four subvariables: *annual operational budget, regularity of fund transference, extraordinary funding, capacity to generate own resources and financial/ accounting system*.

OPERATING BUDGET: is evaluated by the amounts received in a determined period, usually during the last three years, compared to the optimum reported by the area's directors or the annual operational plan. The percentage reached determines the corresponding weight as follows:

Percentage of budget received	Value
≥ 90	4
76 – 89	3
51 – 75	2
36 – 50	1
≤ 35	0

REGULARITY OF TRANSFER OF FUNDS: considers *transfers or capacity to cover budget items* by the deadlines established in the financial plans or regular deadlines used by the institutional financial system during the last year. Evaluation uses the following criteria and conditions:

Transfers always arrive within the set deadline.	4
Transfers are carried out by the set deadline, with small occasional variations.	3
Transfers are carried out regularly with predictable variations.	2
Transfers are very irregular, which makes it difficult to carry out plans.	1
Transfers are totally irregular.	0

EXTRAORDINARY FINANCING: refers to the *institutional capacity*, or the source of financing, *to cover unpredictable and emergency expenses*. The following criteria and conditions are evaluated.

There is a large capacity for covering unpredictable and/or emergency expenses and they are always taken care of quickly.	4
The institution maintains a slush fund that is used to cover emergencies without problem.	3
There is moderate institutional capacity to meet financial and administrative demands; though speed is somewhat encumbered by bureaucratic red tape.	2
Emergency situations are dealt with but the time needed for administrative operations is lengthy and discouraging.	1
The area does not have this type of help, and there are no possibilities of achieving it.	0

CAPACITY FOR GENERATING OWN RESOURCES: refers to the PA's *legal, administrative and financial capacity to generate its own economic resources*, to be reinvested in the PA.

PA has a legal mechanism to raise its own funds, which can be directly reinvested in the PA through an established administrative and financial structure.	4
PA has a legal mechanism to raise its own funds that are used directly, although the administrative and financial systems are not adequately structured.	3
PA has a legal mechanism to raise its own funds but the administrative and financial structure prevent it from being used directly by the area.	2
PA does not have the legal mechanism to raise its own funds, in spite of the fact that the administrative and financial structure would facilitate their direct use in the area.	1
PA does not have the legal mechanism to raise its own funds and does not have the administrative and financial systems that would permit it to do so.	0

FINANCIAL/ACCOUNTING SYSTEMS: evaluates the financial capacity and operations of the PA administration through four parameters: *management capacity, institutional capacity, budget management, spending capacity and control and auditing mechanisms*.

Management Capacity: is evaluated taking into consideration the *ability to establish links and maintain good contacts with funding sources* to obtaining long-term financial and technical support. The following criteria and conditions are evaluated:

Demonstrated capacity to establish links with potential funding sources and to maintain good relationships with them.	4
Relatively good capacity to establish links with potential funding sources and to maintain good relationships with them.	3
Moderate capacity to establish links with potential funding sources. The relationships are not always the best, which hampers the possibilities of permanent financial support.	2
Low capacity to establish links with potential funding sources; relationships are rare and indirect. The possibilities of financial support are scarce.	1
There are no direct or indirect links with possible funding sources.	0

Institutional Capacity: Refers to the *capacity of the PA administration to manage its financial resources*. The following criteria and conditions are evaluated:

The financial management personnel are well trained in financial matters; they have a defined and functional accounting system and appropriate financial planning.	4
The financial management personnel have some knowledge of finance and there is an acceptable, defined accounting scheme. The financial planning is acceptable.	3
The personnel have basic knowledge of finance. There is a referential accounting framework that has functional deficiencies. The financial planning is deficient.	2
The personnel have elementary financial/accounting skills. Minimal accounting systems are used. There is no real financial planning.	1
The personnel have no knowledge of finance. There is no accounting system. There is no financial planning.	0

Budget Management: refers to the *capacity of the PA administration to prepare adequate budgets and effectively manage program expenditures*. The following criteria and conditions are evaluated:

Adequate budgets are prepared and spending programe are defined according to need.	4
Budget preparation is acceptable. The spending programs are not well defined.	3
Budgets fall short of sufficient structure; the spending programs are deficient or undefined.	2
Budgets are not structured; spending is uncontrolled.	1
There is no real budget nor is there a spending plan.	0

Spending Capacity: refers to the PA's spending capacity. The following criteria and conditions are evaluated.

Spending is timely and programmed. Budget spending reports are prepared regularly.	4
Expenditure is not always timely in spite of being programmed. Budget spending reports are not regularly prepared.	3
Expenditures are often delayed and programming is weak. Budget spending reports are prepared sporadically.	2
Expenditure, while sometimes made on time, does not obey any prioritization. Budget spending reports are insufficient.	1
Expenditures are not made on time and no budget spending reports are prepared.	0

Control and auditing mechanisms: evaluates *accounting systems and the regularity of financial controls*. The following criteria and conditions are evaluated:

The accounting management is sufficiently flexible and independent and carried out under accepted accounting standards. Periodic regular audits are conducted.	4
The accounting management is acceptable and sufficiently independent, carried out under accepted accounting standards. Audits are conducted on request.	3
The accounting management has deficiencies and is subject to internal bureaucratic red tape. Management fails to meet some accounting standards. Audits are conducted sporadically.	2
The accounting management is elementary and does not meet accepted accounting standards. Audits are practically non-existent.	1
There is no accounting management and no audits are conducted.	0

c) **Organization**: This variable considers those aspects that are essential to general administration and human resource management. It is evaluated using the following subvariables: *files, institutional structure, internal communication, rules and procedures.*

FILES: Evaluates the *existence, organization, usefulness and information availability*, with respect to financial and administrative movements. The following criteria and conditions are evaluated:

There is a complex, relatively well organized filing system with a great deal of useful information.	4
The filing system is simple but sufficiently complete to offer good administrative support.	3
The files are incomplete and disorganized making it difficult to access and use them.	2
There are files, but they are poorly prepared, incomplete or disorganized.	1
There are no document files.	0

INSTITUTIONAL STRUCTURE: The organic and functional structure of the management structures are evaluated by taking into account the following criteria and conditions:

The organizational chart is clearly defined, encompasses all the PA management objectives, shows sufficient internal decision-making autonomy, and adequate flow of communication at all levels and among all positions.	4
The organizational chart is clear and corresponds well to the PA's programmed activities with a sufficient level of autonomy and acceptable communication flow among the various levels and positions.	3
The organizational chart is defined according to the activities developed in the PA but there is occasional overlap of responsibilities due to lack of clarity in the structure. Communication flow is deficient.	2
The organizational chart has significant structural flaws with regard to the area's objectives and little practical follow-up is seen. Communication flow is almost non-existent.	1
Chart doesn't exist or is unclear.	0

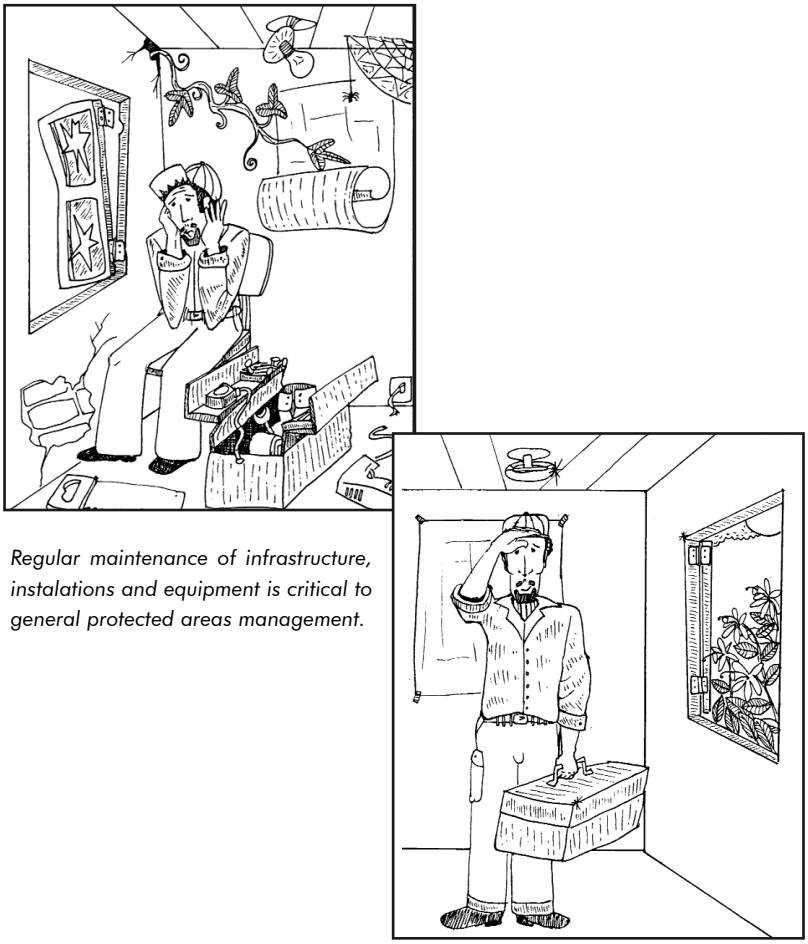
INTERNAL COMMUNICATION: refers to the way *information and decisions are transmitted* with regard to planning and carrying out of activities in the area. The following criteria and conditions are evaluated:

There is an adequate flow of information between directors and staff through means that have been developed or adopted for this purpose This makes it possible for a greater number of employees to participate in area management.	4
Communication between directors and personnel is satisfactory and informal means of communication have been developed.	3
Communication between directors and personnel workers is relatively haphazard but there is still a certain level of harmony..	2
Little communication between directors and some personnel causes internal conflicts and low productivity.	1
There is no contact between the directors and personnel, which impedes the reasonable development of planned or assigned activities.	0

RULES AND PROCEDURES: refers to the *existence of procedures and standards that guide administrative efforts* (purchases, contracting of personnel and services, delivery of documents). The following criteria and conditions are evaluated:

There are unified, modern and flexible rules and procedures that make it possible for the administration to run and control all the activities in the area.	4
Rules and procedures do not encompass all activities in the area, but are adequately flexible and allow for sufficient control of the main administrative activities.	3
There is some regulation of activities, but there is a need to integrate and clarify the existing structures to improve control.	2
Few activities in the area are regulated and there is no structure to ensure those regulations are controlled.	1
The administration is trying to create a system to regulate activities.	0

d) **Infrastructure**: To evaluate this variable the following subvariables are considered: *equipment and tools, facilities for basic management (administration and protection); facilities to develop specific programs; condition of the facilities* to met human needs in the work place (heating, ventilation, humidity, insects, cleanliness, etc.); *building safety; basic services* (fresh water, lights, sewage) *accessibility and boundary demarcation*.



Regular maintenance of infrastructure, instalations and equipment is critical to general protected areas management.

EQUIPMENT AND TOOLS: Includes all equipment (mechanical, electrical, electronic, vehicles, motors, boats, computers, typewriters etc.) and tools used for repairs or fieldwork (polishers, planes, battery chargers, hand tools etc.) The following criteria of *quantity, quality and maneuverability* are evaluated:

QUANTITY	QUALITY	MANEUVERABILITY
Sufficient (S): Meets all needs.	Very good (VG): brand name equipment, with parts and service guarantee.	Very operative (VO): equipment is easy to use and meets needs.
Insufficient (I): Meets some needs.	Good (G): not very well-known brands, problems obtaining parts and service	Operative (Op): equipment requires some training for its use and can only be operated by qualified personnel. Meets needs.
Non-existent (Nex): Not available because equipment does not exist or does not work.	Bad (B): unknown brand; serious problems obtaining parts and service.	Not Very Operative (NO): equipment is complicated to use which limits its use to trained personnel.

Rating is based on the following conditions:

Quantity (S);	Quality (VG);	Maneuverability (VO)	4
Quantity (S);	Quality (VG);	Maneuverability (Op)	4
Quantity (S);	Quality (G);	Maneuverability (Op)	3
Quantity (I);	Quality(VG);	Maneuverability (Op)	3
Quantity (I);	Quality (G);	Maneuverability (VO)	2
Quantity (I);	Quality (G);	Maneuverability (Op)	2
Quantity (I);	Quality (B);	Maneuverability (NO)	1
Quantity (Nex)			0

FACILITIES: This aspect is evaluated through two subvariables: *basic management facilities* (offices, housing facilities, storage facilities, docks etc.); and *facilities to develop specific programs* (visitor centers, museums, laboratories, dry or refrigerated storage cases, bridges, trail railings, rest areas, etc.). For these two subvariables, the following criteria and conditions are used:

Existing facilities are sufficient in quantity and quality to support the PA's activities. They are placed strategically to meet most needs.	4
There are not enough facilities but they are of good quality. and make it possible to carry out most of the PA's activities	3
There are not enough facilities. They are not of the best. quality but are strategically located to develop key activities.	2
There are not enough facilities and they are of poor quality. Their location does not allow for the many of the PA's needs to be met.	1
There are no facilities and/or they are so badly deteriorated. that they can not be used.	0

CONDITIONS OF THE FACILITIES: refers to the *hygiene* and *healthiness* of the physical buildings in general, to create an appropriate working environment. The following criteria and conditions are evaluated:

The existing facilities are very clean; there are appropriate hygiene mechanisms that guarantee a healthy working environment.	4
The existing facilities are clean and there are necessary hygiene mechanisms; but they must be regularly inspected to guarantee a healthy work environment.	3
The existing facilities have cleanliness problems; the hygiene mechanisms are irregular and create problems with the healthiness of the work environment.	2
The facilities have serious problems with cleanliness; the hygiene mechanisms are few and the work environment is in a state of disarray.	1
The facilities are dirty, there are no hygiene mechanisms and the environment is unhealthy.	0

SAFETY: refers to the *safety of the physical structures* for administration, management, protection and user services. Evaluation is *based on the quality of building materials and adequate maintenance*. The following criteria and conditions are evaluated:

The existing buildings are very safe; they are made with appropriate materials and receive proper maintenance.	4
The existing buildings are safe. Although the building materials used are not of top quality, the buildings are well-maintained.	3
The existing buildings are moderately safe, but they are made with poor quality materials and maintenance is irregular.	2
The buildings are unsafe. They are made with poor quality materials and maintained irregularly.	1
The structures are unsafe. They are made with very poor quality materials and maintained sporadically, if ever.	0

BASIC SERVICES: Evaluates the *combination of basic services* that make it possible to carry out regular activities and attend to user needs, such as: availability of fresh water, lights, telephone or other means of communication, health services. Evaluation is made according to the following criteria and conditions:

Access to basic services is permanent and without interruption.	4
Access to basic services is permanent and there are only infrequent interruptions.	3
Basic services are provided but there are problems with the supply	2
Not all basic services are available and those that are, are available irregularly.	1
The majority of basic services are unavailable.	0

ACCESSIBILITY: Refers to the routes of access that permit the PA personnel to arrive at strategic points to ensure good management. Evaluation is based on the following criteria and conditions:

The PA has enough access routes open to vehicles and people year-round, making it possible to maintain control of activities in the area.	4
The PA has sufficient access routes open to people and vehicles most of the year allowing for adequate control of activities in the area.	3
The PA has several access routes that are open more than half the year. Employees use these routes to take in equipment and have good control of the area.	2
The PA has one or several access routes that the employees use to enter and leave the area and take in equipment. Routes allow for limited control and protection of the area and become entrance routes for illegal activities. They are open less than half the year.	1
The PA has no access routes that employees can use to take in equipment or to enter the area for protection, management, research or control activities.	0

BOUNDARY DEMARCATION: refers to the *location and marking of the PA boundaries*. The evaluation is based on the percentage of the perimeter that is marked, according to the following general scale:

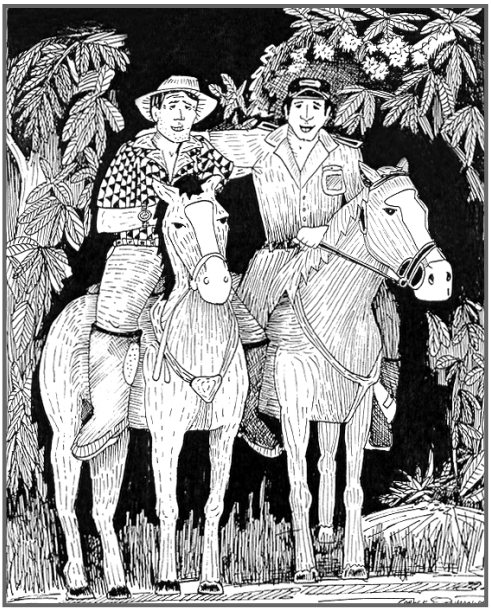
Percentage of PA boundaries marked	Value
≥ 90	4
76 – 89	3
51 – 75	2
36 – 50	1
≤ 35	0

5.5.5 Evaluating the Political Field

The variables to be measured are: *community support and participation, inter-institutional support, external support and intra-institutional support.*

a) **Community support and participation**: is defined by the existence of a positive relationship between the community and the PA, and on the understanding that both the PA and the community benefit from this type of relationship. Evaluation is based on the following criteria and conditions:

There are formal mechanisms for community participation (local committees, associations, clubs, etc.) and neighbors support of the area is unquestionable. There are high direct benefits to the communities.	4
There are no formal mechanisms to guarantee community participation, but there is informal participation by community leaders in the area management. There are moderate to high benefits to the community.	3
There is moderately cordial co-operation and mutual aid between the administration and the community but the latter does not participate in area planning and management, while it supports the area's permanence. Benefits to the community are moderate.	2
There is no co-operation between the administration and the community but the neighbors are somewhat aware of the intrinsic value of the area. There are few perceptible benefits to the community.	1
There is no community co-operation, recognition or support of the area. The direct quantifiable or perceptible benefits toward the community are few or non-existent.	0



Close relationships with communities and their active participation in conservation activities are important elements for the permanence of any protected area.

b) **Intra-institutional support**: refers to the support or assistance provided by the national institution in charge of protected area system policies and management. Two subvariables are identified: *mother institution and national protected area system administration.*

MOTHER INSTITUTION: refers to the rating of the *highest body in the system hierarchy (ministry, national institute, NGO headquarters, community organization, etc.)* and evaluates the following criteria and conditions:

The PA's conservation policies are clearly defined by the mother institution and translated into strong political support on all levels.	4
The PA's conservation policies are defined by the mother institution, but they are misinterpreted to focus on aspects with little relevance to PA management. Support to the area is moderate.	3
Although there are general guidelines for PA actions laid out by the mother institution, support is sporadic and limited.	2
PA conservation policies laid out by the mother institution are outlined in a general context, but are not translated into concrete support.	1
Discussions in the mother institution about the PA's do not coincide with the PA's long-term management needs. There is no support.	0

CENTRAL ADMINISTRATION OF THE PROTECTED AREA SYSTEM: Evaluates the *executive division (regional or district directors or national division) for the PA system* based on the following criteria and conditions:

The system's central administration offers efficient technical, financial, political and human resources support to PAs. All the support is within the context of an "integrated" national system.	4
The system's central administration frequently offers technical, financial, political, and human resources support to PAs; though the support does not correspond to a vision of an "integrated" national system.	3
The system's central administration concentrates most of its efforts on outlining general conservation policy which results in a certain amount of support for PAs; but there is a weak focus on an "integrated" national system.	2
The system's central administration offers no clear support to PAs, leaving them to manage their own policies and support with no vision of an "integrated" system (regional or national).	1
The PAs do not receive support from the system's central administration, nor is there any focus on "integrated" system management.	0

c) **Inter-institutional support**: refers to the area's relationships with other governmental, private or community institutions or organizations to solve management problems and participate in the sustainable development of the region. The following criteria are evaluated:

JURISDICTION	COORDINATION	EXCHANGE	PROJECTS / ACTIONS
Jurisdiction and institutional roles are clearly defined for the PA administration. There are no conflicts. (J4)	The different institutions coordinate activities efficiently to solve common problems. (C4)	There is permanent exchange and supply of information, experience and resources to implement actions. (E4)	Joint projects or initiatives are compatible with the PA's original objectives. (A4)
Although jurisdiction and institutional roles are clear, there are some conflicts of interest. (J3)	There is coordination of activities to solve common problems but there is some delay in response. (C3)	Information, experience and resources are exchanged depending on need. Frequency of exchange varies. (E3)	Projects/ initiatives contradict inter-institutional objectives to some degree. (A3)
Jurisdiction is unclear and overlaps. This creates serious conflicts that affect PA management. (J2)	Co-ordination is deficient. The problems are made more serious by lack of joint attention. (C2)	The exchange of information experience and resources is practically non-existent. (E2)	Projects/initiativ es are contradictory and threaten the permanence of the PA. (A2)

The following conditions are established:

J4 + C4 + E4 + E3 + A4	4
J4 + C3 + E4 + A4	4
J3 + C4 + E4 + A3	3
J3 + C3 + E3 + A3	2
J3 + C2 + E3 + A3	2
J3 + C2 + E2 + A2	1
J3 + C2 + E2 + A3	1
J2 + C2 + I2 + A2	0

d) **External support**: refers to the support from local, national or international non-governmental organizations. The following criteria are evaluated:

Range:

HIGH: When the technical, financial, or political support solves problems or fills specific high priority gaps for the management of the PA.	MODERATE: When the support represents a small improvement in the given situation.	LOW: When there is modest support to resolve a specific situation or problem.

Stability:

HIGH: when the support is maintained for more than 3 years with the possibility of renewal.	MODERATE: when the support is maintained for 1 to 3 years and/or with few possibilities of renewal.	CIRCUMSTANTIAL: when the support is for less than 1 year with no possibility of renewal.

The combination of criteria generate the following conditions:

High Range and High Stability	4
High Range and Moderate Stability	3
High Range and Circumstantial Stability	3
Moderate Range and High Stability	2
Moderate Range and Moderate Stability	2
Moderate Range and Circumstantial Stability	1
Low Range and Circumstantial Stability	1
No evidence of support of any kind	0

5.5.6 Evaluating the Legal Field

The following variables are evaluated: *Land tenure, legal framework and general regulations and law creating the protected area.*

a) **Land tenure**: is understood to mean the *recognized and accepted possession* by the individual or organization responsible for administrating the area, whether that be a private or public body. The subvariables evaluated are *possession* and *conflicts* that exist when land possession is not clear.

POSSESSION OR DOMAIN: The rating is based on the percentage of the area that has *recognized* and *accepted possession or domain* using the following scale:

% of area with recognized and accepted possession or domain	Value
≥ 90	4
76-89	3
51-75	2
36-50	1
≤ 35	0

CONFLICTS: The rating is based on the existence and extent of conflicts over land ownership.

% of the area with conflicts over possession or domain	Value
≥ 76	0
51-75	1
36-50	2
≤ 35	3
There are no conflicts	4

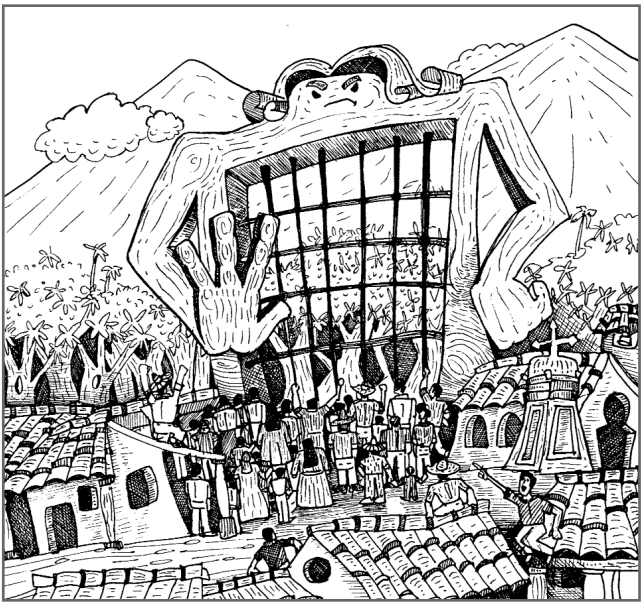
b) **Set of laws and general regulations:** refers to the existence of laws, decrees, agreements, regulations and other normative instruments that make it possible for the government or any body in charge to have jurisprudence over the management of natural resources and therefore of the area. *Clarity* and *application* are the *subvariables* considered.

CLARITY: refers to the *jurisprudence and jurisdiction dictated by the existing laws/regulations* that permit their clear understanding and application. The evaluation is based on the following criteria:

The laws and regulations are very clear and encompasses every level of the jurisprudence over natural resources, protected or not, guaranteeing their sustainable use as well as good PA management.	4
There are laws and regulations as indicated above and they do not overlap, and although there are gaps in coverage this does not seriously affect PA management.	3
The laws and regulations on natural resource use have some gaps and overlaps that impair or hinder PA management.	2
There are some laws and regulations that promote natural resource conservation, but there are marked contradictions among them, which impede or prevent good PA management.	1
There are no general laws or regulations that standardize natural resource use.	0

APPLICATION: refers to *the compliance to laws/regulations* by the PA users and the efforts by PA personnel to enforce these.

The laws/regulations relating to the PA are always complied to by users and the PA staff make great efforts to publicize and enforce them.	4
The laws/regulations are complied to by the majority of users. PA staffs publicize and enforce them.	3
PA users comply with laws/regulations, though reluctantly in spite of PA staff's efforts to publicize and enforce them.	2
PA users comply with laws/regulations though very reluctantly; PA staffs perform limited control actions and sporadic efforts to publicize and enforce them.	1
Law/regulations are rarely complied to by PA users; employees make no efforts at publicizing or enforcing them.	0



Protected areas are not entities closed to human needs and expectations but essential elements for sustainable developments

c) **Law creating the PA:** refers to the specific legal declaration that guarantees the PA's inalienable and permanent status. The following criteria and conditions are evaluated:

The legal instrument creating the PA is from the highest legal level; it is up-dated and regulated to conform to the PA's needs.	4
The legal instrument creating the PA is on a satisfactory level and regulated, but it needs up dating in terms of policies and the current social environment.	3
The legal instrument has moderate strength on a national level. Its application on the local and regional levels is complicated by being out-of-date with respect to current political and social trends.	2
The legal instrument creating the PA is inadequate because of its limited legal power. In the long term, it presents a potential threat to the permanence of the PA.	1
The PA has no legal instrument to support it.	0

5.5.7 Evaluating the Planning Field

The following variables are evaluated: *the management plan, compatibility of other plans with the management plan, operational plan, level of planning, zoning and boundaries.*

a) **The management plan**: this variable is measured by means of the following subvariables: *existence of the plan and how up-to-date it is, characteristics of the planning team; plan implementation.*

EXISTENCE AND AGE OF PLAN: is evaluated according to the following criteria and conditions:

There is a management plan prepared or revised less than 5 years ago, which is implemented by the PA administration.	4
The PA is in the process of preparing or revising an out-of-date plan (>5 years old).	3
There is a management plan that has not been revised for more than 5 years. There are no studies or other planning instruments that guide PA activities.	2
There is a very out-of-date management plan (>10-years-old) that the PA administration no longer uses. Nothing is being done to revise it.	1
There is no management plan nor are there any plans to prepare one.	0

PLANNING TEAM CHARACTERISTICS: refer to the makeup of the team in charge of preparing or revising the management plan. It is evaluated according to the following criteria and conditions:

Multidisciplinary team + community	4
Multidisciplinary team	3
Specific technical group + community	3
Specific technical group	2
Individual planning by a specialist	1
No planning team	0

PLAN IMPLEMENTATION: is evaluated according to the following criteria and conditions:

≥ 90% of planned and proposed activities carried out.	4
76-89% of planned activities carried out	3
51-75% of planned activities carried out	2
Only 36-50% of planned activities carried out	1
Less than 35% of planned activities carried out	0

b) **Compatibility of Management Plan with other plans:** Measures how integrated and compatible the area's management plan is with other regional plans, especially with regard to zoning and definition of institutional responsibilities. The following criteria and conditions are evaluated:

All plans are compatible.	4
There are some minor discrepancies among the plans, but they do not have significant effects on the implementation of the PA Management Plan.	3
There are substantial discrepancies among the plans, which has a negative effect on the implementation of the PA Management Plan.	2
There are serious discrepancies among the plans that prevent the implementation of the PA Management Plan.	1
The other plans are not compatible with the PA Management Plan.	0

c) **Operational Plan**: Similar to the management plan, an operational plan is evaluated through the following subvariables: *existence of the Plan and how up-to-date it is and plan implementation*, with slight changes in criteria and conditions:

EXISTENCE AND AGE OF PLAN:

There is a prepared and/or revised operational plan, which is implemented by the PA administration.	4
The PA is in the process of preparing or revising the operational plan.	3
There is an out-of-date operational plan or other planning instrument that guide PA management activities.	2
There is a very out-of-date operational plan (>2 years old) that the administration no longer uses. There are no plans to revise it.	1
There is no operational plan, nor any plan to prepare one.	0

PLAN IMPLEMENTATION: is evaluated according to the following criteria and conditions:

> 90% of the planned activities are carried out.	4
76-89% of planned activities is carried out.	3
51-75% of planned activities are carried out.	2
Only 36-50% of the planned activities are carried out.	1
Less than 35% of the planned activities are carried out.	0

d) **Level of planning**: measures the complexity of the planning process and the use of instruments such as specific plans (research plans, environmental education plans, protection plans, site development plans, etc.) to support management. It is evaluated according to the following criteria and conditions:

All the programs or activities developed at the site have specific individual plans that fit within the overall plan; the specific plans are compiled into the PA's annual operational plans.	4
The PA has management and operational plans but not all the programs or activities have specific plans. There is broad probability to improve the use of planning instruments.	3
The PA has management and operational plans, and some documents that can be considered as outlines for some activities. There is some intention to improve planning in the long-term.	2
The PA has only an operational plan. Technical staff needs to learn more about planning as an instrument for PA management.	1
There is a total lack of planning instruments in the PA.	0

e) **Zoning:** is evaluated on the following criteria and conditions:

There is defined zoning. Its design incorporates scientific knowledge and up- dated technical concepts. There are established regulations and the PA staff are familiar with the specific regulations applied to all the zones.	4
The above-indicated conditions exist, but the zoning regulations are not known or taken into consideration by all the PA staff.	3
The existing zoning has been implemented for some time and needs to be revised due to changing factors and circumstances that affect its management.	2
The zoning proposed for the PA does not fit with reality and few PA staff members recognize or accept it. Specific zoning regulations are not adequate for current activities.	1
There is no zoning in the PA.	0

f) **Limits**: evaluates the recognition and respect for the PA's boundaries and considers the following criteria and conditions:

Boundaries are legally defined, recognized in the field and respected.	4
Boundaries are legally defined, recognized in the field but generally ignored.	3
Boundaries are legally defined, but neither recognized nor respected.	2
Boundaries are not legally defined, but are recognized and respected	1
Boundaries are not legally defined, nor are they recognized nor respected in the field.	0

5.5.8 Evaluating the Knowledge Field

The following variables are evaluated: *socioeconomic information, biophysical information, cartographic information, legal information, research, monitoring and feedback and traditional knowledge.*

a) **Socioeconomic, biophysical and cartographic information:** evaluates the availability of the information and how up-to-date it is, in relation to both the protected area in particular and to the zone of influence. The three variables are evaluated in the same manner, where current information is less than 5-years-old; somewhat current information between 5 and 10 years-old; and out-of-date information that is more than 10 years old. It is measured according to the following criteria and conditions:

Current information available in the area	4
Current information but not available in the area	3
Somewhat old information available in the area	3
Somewhat old information not available in the area	2
Out-of-date information available in the area	2
Out-of-date information not available in the area	1
No information	0

b) **Legal information**: refers to the availability of and knowledge about laws, regulations and procedures relative to protected area management. This is evaluated using the following criteria and conditions:

High availability and dissemination of legal information in the area	4
High availability and moderate dissemination of legal information in the area	3
Moderate availability and little dissemination in the area	2
Little availability and little dissemination in the area	1
Legal information is not available in the area	0

c) **Research**: looks at the research that is being conducted with the PA's management needs, and how the information generated is applied. The following criteria and conditions are used to evaluate this variable:

Scientific research related to the use and knowledge of the natural resources is continuous and permanent, and the results are given to the PA administration.	4
Research is conducted without considering its importance in the integrated management of the PA and the natural resources within and outside the area. The results are given to the PA.	3
Research is done sporadically and without any care for the needs of the PA and its surroundings, however, results are given to the PA.	2
Knowledge of the research conducted is scarce and access to the results is made difficult by lack of a follow-up system.	1
There is no knowledge of research conducted.	0

d) **Monitoring and feedback**: refers to the capacity of the protected area to design and use monitoring systems to identify changes in the systems being managed and to make appropriate decisions to deal with these changes. The following criteria and conditions are used to evaluate this variable:

The area has efficient mechanisms to adequately monitor activities and feedback results into management.	4
The area uses tools to monitor activities and has instruments for basic feedback.	3
The area has some monitoring and feedback instruments that partially meet the PA's basic needs.	2
There are some mechanisms for monitoring and feedback, but they are neither formally nor systematically applied.	1
There are no monitoring or feedback mechanisms in the area.	0

e) **Traditional knowledge**: The understanding and use of traditional community knowledge would aid better PA management. System for this are evaluated using the following criteria and conditions:

PA staff is fully familiar with the traditional knowledge gleaned from neighboring communities. This knowledge is documented and used for PA management.	4
Although the traditional knowledge from neighboring communities is not documented, the majorities of PA employees are quite familiar with it and use it in PA management.	3
The traditional knowledge from neighboring communities is documented, but few PA staff is familiar with it and its use in PA management is limited.	2
The traditional knowledge from neighboring communities is partially documented, but few PA personnel are familiar with it and for all practical purposes it is not used in PA management.	1
The traditional knowledge from the neighboring communities is not documented and PA personnel are not at all familiar with it.	0

5.5.9 Evaluating the Management Program Field

Refers to the PA's basic management programs. The following management programs are considered to be the main variables: *Research, Environmental education and interpretation, Protection, Maintenance and Community Outreach*. All the programs are evaluated using the following subvariables: *design, implementation of planned activities, coordination, follow-up and evaluation.*

DESIGN: refers to the way that the management programs have been defined and structured. The following criteria and conditions are taken into consideration:

The program has a coherent design and structure based on objectives.	4
The program is designed and structured, but while the most important activities are included, it does not encompass all the activities proposed.	3
The program is poorly designed and partially structured; the activities proposed are often improvised.	2
The program lacks design and is poorly structured. Activities are improvised.	1
There is no program.	0

IMPLEMENTATION OF PLANNED ACTIVITIES: refers to implementation of the management programs as defined in the management or operational plan. Evaluation is carried out through following criteria and conditions:

≥ 90% of the planned activities carried out.	4
76-89% of the planned activities carried out.	3
51-75% of the planned activities carried out.	2
36-50% of the planned activities carried out.	1
≤ 35% of the planned activities carried out.	0

COORDINATION: evaluates the way in which all the programs and actions work together coherently to fulfil the PA's goals and objectives. The following criteria and conditions are taken into consideration:

The activities are co-ordinated with other programs regularly and there are efficient systems for information exchange.	4
The activities are co-ordinated with other programs as needed. There is some exchange of information that occasionally breaks down.	3
Activities are not co-ordinated between programs, which results in it being difficult to carry out activities. Exchange of information is deficient.	2
Activities are co-ordinated with a great deal of difficulty and information exchange is practically non-existent.	1
There is no co-ordination and no information exchange.	0

FOLLOW-UP AND EVALUATION: uses the following criteria and conditions:

Follow-up of activities is carried out regularly using a structured system. The program is periodically evaluated.	4
Follow-up of activities is moderately structured but only carried out periodically. The program is evaluated according to need.	3
Follow-up of activities are poorly structured and carried out sporadically. The program is evaluated irregularly.	2
Follow-up of activities is not structured and is carried out spontaneously. The program is rarely evaluated.	1
No follow-up of activities are conducted. The program is not evaluated.	0

5.5.10 Evaluating Illegal Uses Field.

Illegal uses are evaluated according to the management category of the area, the characteristics of the area and the impact on the resources. The illegal uses variables include, but are not limited to: *lumber extraction, non-renewable resource extraction, extraction of flora and fauna, plundering of cultural resources, squatting, poaching, agriculture and cattle ranching, fishing, recreation and tourism and construction of buildings.*

All the variables are evaluated according to the following criteria and conditions:

No activity.	4
Activity present, but with no noticeable impact.	3
Activity present, with negative impact on non-threatened species and/or natural communities.	2
Activity present, with negative impact on threatened or endangered species and/or natural communities.	1
Activity present, causing destruction of the area.	0

5.5.11 Evaluating Legal Uses Field

Legal uses are also evaluated taking into consideration the management category, the characteristics of the protected area and the impact on resources. Some examples of these variables are: *logging, mineral extraction, extraction of flora and fauna, hunting, farming and cattle ranching, fishing, recreation and tourism, education and building of infrastructure*.

All these variables are evaluated according to the following criteria and conditions:

The activity is compatible with the PA's management objectives; is done in accordance with land use capacity, adheres to legal regulations and there is good technical and administrative management.	4
The activity is compatible with the PA's management objectives; it is acceptable with regard to land use capacity. Supporting legal regulations have some gaps. Technical and administrative management is acceptable.	3
The activity is compatible with the PA's objectives; it is acceptable with regard to land use capacity. Supporting legal regulations are deficient. Technical and administrative management has weaknesses.	2
The activity is compatible with the PA's objectives; it is acceptable with regard to land use capacity. There are no legal regulations to support it; there is no technical or administrative management.	1
The activity is not compatible with the PA's objectives; the resource is being over-exploited, and there are no regulations or sound management.	0

5.5.12 Evaluating the Biogeographic Characteristics Field

This field is measured using four variables: *size, form, connectivity and vulnerability.*

a) **Size**: This variable compares the *minimum area necessary* to sustain a viable population of predators with the biggest home range, and/or by evaluating the range of endangered species. The following criteria and conditions are evaluated.

The area has the optimum size or larger	4
The area is between 90 and 99% of the optimum size	3
The area is between 76 and 89% of the optimum size	2
The area is between 51 and 75% of the optimum size	1
The area is < 50% of the total optimum size	0

b) **Form**: refers to the approximate shape of the area and its fragmentation. The following criteria and conditions are evaluated:

Whole circular or ovoid shape	4
Fragmented circular or ovoid shape	3
Whole square or rectangular shape	2
Fragmented square or rectangular shape	1
Whole irregular shape	1
Fragmented irregular shape	0
Fragmented or whole long, thin shape	0

c) **Connectivity**: the distance (great or small) between one protected area and another influences the flow and survival of the protected populations it contains, as well as the preservation of vital ecological processes. The following criteria and conditions are evaluated:

More than 90% of the PA perimeter is physically connected to other areas where genetic and biological resources and ecological processes occur and help sustain the PA.	4
76% of the PA perimeter is directly connected to other sources of biodiversity resources.	3
>50% of the PA perimeter is directly connected. There are some areas connected to biological corridors.	2
The PA is practically isolated. There are some biological corridors to connect it. Some border effects are evident.	1
The PA is totally isolated with no connection to biological corridors; exchange of genetic material may be difficult. Border effects are evident.	0

d) **Vulnerability**: rates the vulnerability of species to biological invasions or disturbances and the level of impact that these have. *Note*: when the level of impact is less, the rating is higher. The following criteria and conditions are evaluated:

Very resistant to biological invasions and/or disturbances. Very low impact.	4
Resistant to biological invasions and/or disturbances. Low impact.	3
Moderately resistant to biological invasions and/or disturbances. Moderate impact.	2
Little resistance to biological invasions and/or disturbances: High impact.	1
No resistance to disturbances or biological invasion of some species (some species have become extinct). Very high impact.	0

5.5.13 Evaluating the Threat Field

This field covers natural and human factors that affect the protected environment's stability and the fulfillment of the management objectives. The following examples of variables found in protected areas are taken into consideration: *impact by tourism, pollution (land and water), fires, encroachment of human settlements, migration, exotic organisms, natural disasters, infrastructure for development, subversive political movements and or violent conflict and drug trafficking and related activities.*

The following criteria and conditions are considered for all the variables:

This factor is not present in the area.	4
The factor has little effect on the protected environment.	3
Factor has serious effects but they are manageable, avoidable or easily reversible.	2
Factor has possibly violent effects but they could be reversed in the medium or long-term.	1
Factor's effects are extremely serious and irreversible.	0

5.6 Interpretation and Evaluation of Management

The basic units (indicators) used for the evaluation are the variables. Rating using lower indicators (subvariables and parameters) provides greater detail and precision in the evaluation; but the final evaluation is based on the variables.

The rating results obtained are compiled into evaluation matrices. Matrices are prepared for each field to compile the results of each field's respective indicators.

If one subvariable is rated through several parameters, the value of the subvariable will be the average of the rating values for all the parameters that comprise it. And if a variable has several subvariables, the value of the variable will be the average of the rating given to the subvariables. The value of the field is equal to the sum of the value of all the variables that comprise it.

The total values obtained for each variable are compared with the total optimum possible and expressed as a percentage. The percentages reflect the level of management effectiveness for each of the fields.

Table 3 gives an example of an evaluation matrix for a management field. Note that in this example, the variable, *Biophysical Information*, has been divided into two subvariables: *bio-ecological information* and *physical information*. These subvariables are not listed in Table 1 but show the flexibility of the method to include indicators that contribute to the precision of the evaluation according to the availability of information and the technical capacity of the PA administration.

There are some variables that are not directly controlled by the PA administrator and that can be determinant in the overall rating. This is the case, for example, of the isolation affecting the area, or threats by natural phenomena. Although the low values of these variables would suggest the need for management decision-making, the interpretation of the total values should take those cases into consideration in order to make adequate adjustments for them.

The values obtained should be related to each other to achieve a dynamic interpretation of reality. If the total value determines that an area has a "very-satisfactory" level of management (> 90 - 100%), this does not necessarily mean that all the management elements are at the same level. All the individual matrices for the different indicators must be reviewed to find the low values that identify the management weaknesses and the reason for these weaknesses.

An *overall evaluation matrix by fields* would contain the rating for each field whose sum would give the total reached by the PA. This overall matrix would give a kind of overview of how effectively each field contributes to the overall PA management (see Table 4).

The overall total reached, compared to the overall optimal and converted to a percentage, shows the level of management effectiveness for the entire protected area.

Table 3. *Evaluation of the "Knowledge" field in Corcovado National Park, Costa Rica*

KEY: 0 = UNSATISFACTORY 1 = MINIMALLY SATISFAC. 2 = MODERATELY SATISFAC. 3 = SATISFACTORY 4 = VERY SATISFACTORY	Biophysical Information			Research		Legal Context			Cartographic Information		Socio-economic Information		Other	Total reached	OPTIMUM TOTAL	% OF OPTIMUM
	Bio-ecological	Physical	Average			Law and general regulations	PA laws	Average								
CORCOVADO N.P.	2	3	2.5	2.8		2.9	3.2	3.0	2.6		1			11.9	20	**59.50**
OPTIMUM TOTAL	4	4	4	4		4	4	4	4		4					
% OF OPTIMUM	**50**	**75**	**62.5**	**70**		**72.5**	**80**	**75**	**65**		**25**					

Modified from Izurieta, 1997

Table 4: *Evaluation of the overall management of Corcovado National Park, Costa Rica*

KEY: **<=35% - UNSATISFACTORY** **36=50% - MINIMALLY SATISFAC.** **51-75% - MODERATELY SATISFA.** **76-89% - SATISFACTORY** **>=90% - VERY SATISFACTORY**	THREATS	MANAGEMENT PROGRAMMES	BIOGRAPHICAL CHARACTERISTICS	CURRENT ILLEGAL USES	CURRENT LEGAL USES	KNOWLEDGE	ADMNISTRATION	PLANNING	LEGAL	OTHER	TOTAL REACHED	OPTIMUM TOTAL	**% OF OPTIMUM**
CORCOVADO N.P.	14.8	7.02	15.2	17	10.6	11.9	10.9	8.05	6.05		102.46	184	**56**
OPTIMUM TOTAL	24	16	20	32	20	20	20	24	8				
% OF OPTIMUM	**62**	**44**	**76**	**53**	**53**	**59.5**	**55**	**35.4**	**76**				

Modified from Izurieta, 1997

According to the example in Table 4, the area's management received a rating of 56% of the optimum. That means the management effectiveness of the area was "moderately satisfactory". This rating is interpreted according to the five levels determined by De Faria (1993) outlined as follows:

LEVEL 1: Unsatisfactory Management (<35%)
A total rating of less than or equal to 35% of the optimum indicates that the area lacks the minimal resources necessary for basic management and thus there is no guarantee of its long-term permanence. The area's objectives can not be reached under these circumstances.

LEVEL 2: Minimally satisfactory management (36-50%)
A rating within this range indicates that the PA has some resources and tools that are important for its management, but that many elements necessary to reach a minimum acceptable level are absent. Such characteristics make the area highly vulnerable to external or internal factors and consequently there is no guarantee for its long-term permanence.

LEVEL 3: Moderately satisfactory management (51-75%)
The area has the minimal elements necessary for its management, but there are essential deficiencies that make it impossible to establish a solid base so that the management may be effective. There is an imbalance among the fields that influence management. Resource integrity is not guaranteed and the objectives may be only partially accomplished, with some of the secondary objectives being particularly neglected.

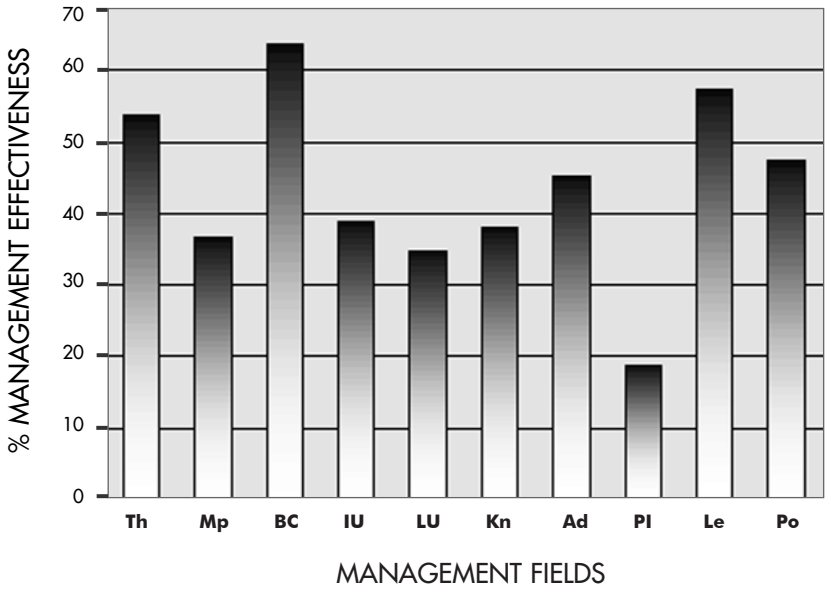
LEVEL 4: Satisfactory management (76-89%)
The factors and means that make management possible are being adequately attended to. The necessary activities are being developed normally and with good results. The area's permanence is guaranteed because there is a dynamic equilibrium among all the management fields, which means that the management objectives are generally accomplished.

LEVEL 5: Very satisfactory management (>90%)
The area has all the elements for efficient management in accordance with current needs. The PA can meet most future demands without compromising the conservation of its resources. Accomplishment of the area's objectives is guaranteed.

The reading and interpretation of the values obtained must be carried out from the highest indicator in the hierarchy to the lowest: starting with the fields and moving on through the variables, subvariables and finally the parameters (if included). Following this order, it is possible to find, for example, a field that has obtained a rating of 80% of the optimum (satisfactory management), but that one or several of the variables have serious management problems. Reviewing the subvariables and parameters of each variable, we can find the factors/problems and in so doing, effectively direct the corresponding corrective actions.

The value given to each indicator indicates strength or weaknesses in certain management aspects. The low values are a clear indicator that there are elements that need to be corrected. With the primary and secondary information obtained during the evaluation process, problems can be identified and prioritized. Consequently, actions to confront the problems can be proposed and implemented to reach the desired optimal management condition.

Final results can also be presented and interpreted using a bar chart. This is an extremely useful tool to present the general picture and identify were the unbalances in management are. Values of the Corcovado National Park overall management, Costa Rica, contained in Table 4, are represented in the figure 2. In this example it is obvious that planning (Pl) is the most critical field followed by management programs (Mp) and legal uses (LU). Urgent actions focus to solve problems in those fields should be needed to better balance the integrated management of the specific area under evaluation. Special attention is also demanded to illegal uses (IU), knowledge (Kn) and administration (Ad).



Th = Threats
MP = Management Programs
BC = Biogeographic Characteristics
IU = Illegal Uses
LU = Legal Uses
Kn = Knowledge
Ad = Administrative
Pl = Planning
Le = Legal
Po = Policy

Figure 2. *Overall management effectiveness of the Corcovado National Park, Costa Rica*

6. EXTENDING THE SYSTEM

6.1 Evaluating the Management Effectiveness of Protected Area Systems

The evaluation procedure presented in this manual can be used to evaluate a system or subsystem of protected areas and to interpret the management of both the individual areas and the system.

The indicators proposed have been developed to make them suitable to measure management regardless of the management category. The indicators that do not apply to a determinate management category should not be added to calculate the optimum value in the rating table's averages and totals.

The core team that evaluates each protected area within a system should include: technical personnel from the PA, one professional that is familiar with the entire PA system, one person that knows the evaluation methodology, and representatives of institutions and communities that are key to the PAs.

Table 5 is an example of the overall matrix of the results of an evaluation of a subsystem of protected areas. This matrix can be read and interpreted horizontally and vertically. The rows show the overall management effectiveness of each area (last column on the right) and also identify the management fields that require greater attention. The columns indicate the state of the whole system of PAs evaluated with respect to each field (bottom row).

The total reached, both in rows and columns, is the sum of values that make up the matrix for each field (rows) and for each protected area (columns).

The optimum total of the rows is the sum of the optimum values of all the fields in each protected area and in the case of the columns is the sum of the optimums for each field in all the areas evaluated.

The box at the bottom right-hand-side (matrix vertex) contains the percentage value that express the overall management of the system, which in this specific example is 40.28%. This means that the overall management of the system of protected areas evaluated is "minimally satisfactory".

6.2 Evaluating Outreach to the Zones of Influence

The procedure can also evaluate the group of actions and elements related to the activities that the PA administration carries out to foster community participation in the protected area's management decision-making process. In other words, it evaluates the *PA outreach to its zones of influence (ZI)*.

The core team and key representatives from the PA's neighboring communities should carry out the selection of indicators to measure outreach to the ZI. They should be described and placed in fields.

Izurieta (1997) identified indicators applicable to the ZI of a subsystem of protected areas in Costa Rica (the OSA Conservation Area). These indicators and their corresponding rating criteria are recommended for the procedure presented in this manual.

Table 5: *Management Evaluation of a Protected Area subsystem in OSA Conservation Area, Costa Rica*

KEY: <=35% - **UNSATISFACTORY** 36=50% - **MINIMALLY SATISFACT.** 51-75% - **MODERATELY SATISFA.** 76-89% - **SATISFACTORY** >=90% - **VERY SATISFACTORY**	THREATS	MANAGEMENT PROGRAMS	BIOGRAPHICAL CHARACTERISTICS	CURRENT ILLEGAL USES	CURRENT LEGAL USES	KNOWLEDGE	ADMINISTRATION	PLANNING	LEGAL	OTHER	TOTAL REACHED	OPTIMUM TOTAL	**% OF OPTIMUM**
CORCOVADO N.P.	14.8	7.02	15.2	17	10.6	11.9	10.9	8.5	6.05		101.9	184	55.42
BALLENA NATIONAL MARINE P.	10.4	4.65	9.3	13	4.8	2.8	5.62	1.5	5.4		57.47	176	32.65
PIEDRAS BLANCAS N.P.	13.42	6.25	9.8	5.67	4.8	7.03	7.5	2.6	3.6		60.67	188	32.27
CAÑO ISLAND BIOLOGICAL RES.	18.95	7.34	13.7	17	8.3	9.67	9.9	6.5	6.6		97.96	172	56.95
GOLFO DULCE FOREST RES.	7.1	5.3	7.6	2	8.5	9.7	9.58	5.3	2.85		57.93	188	30.81
GOLFITO WILDLIFE REFUGE	11.9	5.28	11.4	11.67	9	8.37	6.71	2.1	4.7		71.13	188	37.84
SIERPE-TERRABA WETLAND	10.2	5.6	8.4	4.33	6.25	8.07	8.19	8.1	3.5		62.64	188	33.32
PEJEPERRO-PEJEPERRITO WETLAND	16.7	5.33	13.4	21	4	3.3	5.16	1.3	6.5		76.69	172	44.59
TOTAL REACHED	103.5	46.77	88.8	91.67	56.85	60.84	79.6	35.9	39.2		**586.5**		
OPTIMUM TOTAL	192	128	140	236	164	160	176	200	76			**1456**	
% OF OPTIMUM	53.9	36.54	63.43	38.84	34.66	38.03	45.23	17.95	51.58				40.28

Source: Izurieta, 1997

The fields related to the zones of influence are described as follows:

Administrative field:

Evaluates the ability of the PA's administration to implement the programs and activities that would allow for a greater community participation in the use and management of the natural resources. Two variables are evaluated: *Administrative Organization and co-ordination and Communication.*

a) **Administrative Organization:** rates the aspects of *administrative organization and preparation* for efficient outreach to the zones of influence. The following criteria and conditions are used:

There is sufficient staff with specific responsibilities that encourages community integration and participation. The required support systems as well as the necessary administrative elements are in place.	4
Staff capacity is insufficient, however specific responsibilities are defined. Outreach needs are met and the participation and integration of the civil society are acceptable. Infrastructure is the minimum necessary; and the administrative elements are acceptable.	3
Personnel is limited, specific out reach responsibilities are not defined, and it is difficult for them to perform adequate outreach activities. The available infrastructure is acceptable; however, the administrative elements are not necessarily the most appropriate.	2
There is limited personnel and they do not cover the basic outreach needs to encourage the integration and participation of civil society. Both the infrastructure and the administrative elements are deficient.	1
There are no personnel specifically assigned to perform outreach activities to and encourage the participation and integration of civil society. There is no assigned infrastructure for the purpose and the majority of administrative elements are lacking.	0

b) **Coordination and communication:** refers to the definition of *mechanisms for coordination and communication with the leaders and key actors from the community* to foster participation and outreach. The following criteria and conditions are evaluated:

Coordination and communication mechanisms are well defined. The exchange of information is permanent, and communication and personal contacts are frequent.	4
Coordination and communication mechanisms are defined; the exchange of information is acceptable. Communication and personal contacts are moderately frequent.	3
Coordination and communication mechanisms are not well defined. The exchange of information is low in spite of frequent communication. Personal contacts are not regular.	2
Coordination and communication mechanisms are not defined. The exchange of information and the frequency of communication is low. Personal contacts are irregular.	1
There is no communication and no coordination. The exchange of information is almost non-existent. Personal contacts are casual.	0

Legal Field:

Is related to the framework that supports local and regional decision-making about the natural resource management of the PA and its surroundings. The legal framework must be sufficiently clear to facilitate the integration and participation of civil society in the decision-making process about resource use. Only one variable is evaluated: *legal framework*

a) **Legal framework**: is evaluated using the following criteria and conditions:

The legal framework is clear and consistent; and allows for the integration and participation of civil society in PA management and conservation; it is adjusted to the conditions and specific needs of the communities associated with the PA.	4
The legal framework is sufficiently clear, and though it has a few deficiencies, allows for the integration and participation of civil society. It is difficult however to tailor framework to the conditions and needs of the communities associated with the PA.	3
The legal framework is not very clear and has deficiencies that make integration and participation difficult. The communities associated with the PA have conditions and specific needs do not coherently fit within the legal framework.	2
The legal framework is not clear and has serious deficiencies and contradictions that seriously hinder integration and participation.	1
Excess of legal regulations cannot be tailored to the conditions and specific needs of the communities.	1
There is no legal framework.	0

Political Field:

Is related to the intra and inter-institutional political vision that makes it possible for civil society to participate in the discussions and decisions about use and protection of the PA's natural resources. To achieve this there must be a clear and appropriate concept of the participation and integration of civil society into PA management. It identifies one variable: *political support*, within which 6 subvariables are identified: *Base organizations, Socio-productive sectors, Projects, Local and Regional sub-committees, Municipalities* and *Inter-institutional*.

a) **Political Support**: evaluates how far the institutions have *integrated community participation in their decision-making process*. All the subvariables are evaluated using these criteria and conditions:

Criteria for community participation are clearly integrated into decisions about natural resource management in the PA. There is permanent interest in having collaboration in the process.	4
Criteria for community participation have not been well integrated into the decisions about natural resource management in the PA but there is strong interest in doing so.	3
Criteria for community participation are poorly integrated and there is little interest in strengthening it.	2
Criteria for community participation are poorly integrated and there is no interest in strengthening it.	1
Criteria for community participation are not integrated at all into management decisions.	0

Technical Assessment Field:

The management of a system of PA's, like that of an individual PA, cannot neglect the responsibility of offering technical assistance to neighboring communities. To achieve efficient results, the assessment should have specific programs that are permanent and receptive to the needs of the community. These assistance programs should be well- designed, in accordance with the natural and social characteristics, and realities of the surrounding area, to ensure that the society gets better access to the resources and in return protects them. Two variables are evaluated: *Advising the communities and Strategies*.

a) **Advising the Communities**: this variable is evaluated through 8 subvariables (advising programs) that are directly related to the PA's protection, management and environmental education activities. The subvariables are: *Environmental Education, Protection and Control, Community Participation, Research and Information, Tourism, Territorial Ordinance and Fostering and Forestry.*

Join efforts and mutual support will produce better benefits for both communities and protected areas.

All the subvariables are evaluated using the following criteria and conditions:

The assessment offered is permanent, sequential, systematic and timely. The community is very receptive.	4
The assessment offered is systematic, and sequential but is only given when there is need. The community is receptive.	3
The assessment offered is not sequential or systematic but it is timely. There are some problems with the community's acceptance of the PA.	2
Assessment is sporadic. It does not meet the community's needs and expectations. There are serious problems with the community's acceptance.	1
There is no assessment of any kind.	0

b) **Strategies**: this variable refers to the methods and strategies that the administration of the PA has to reach the communities and foster their participation in each of the programs of action. All the programs can be evaluated together, however it is recommended that they assessed individually using the following subvariables: *Environmental Education, Protection and Control, Community Participation, Research and Information, Tourism, Territorial Regulation, Fostering* and *Forestry.*

All the subvariables are evaluated with the following criteria and conditions:

The methods and strategies used to reach the communities and ensure their integration and participation are well-tailored to natural and social characteristics and realities; the program is successfully developed.	4
The methods and strategies are not quite tailored to natural and social realities and characteristics, but the program is quite well developed.	3
The methods and strategies are only moderately tailored to natural and social realities and characteristics of the communities, which causes flaws and difficulties in program development, and shows no visible success.	2
The methods and strategies are not tailored to natural and social realities and characteristics; there are serious problems in the development of the program and almost no success.	1
No methods or strategies are applied to reach the communities and foster their participation.	0

Financial Field:

This field evaluates how well the financial system works for sustainable development activities, within which the civil society participates actively through its delegates. This system should allow for a good management of economic resources, measured through the variables: *PA management capacity, spending capacity and control and auditing mechanisms.*

These variables correspond to the parameters that are used to evaluate the financial/accounting system subvariable (financing variable, administration field) of the protected area itself (pages 41-42) but in this case refers to the community.

a) **Management Capacity**: evaluates the capacity of the PA to establish and maintain ties with funding sources to promote financial and technical actions that involve the community. It is evaluated using the following criteria and conditions:

There is clear capacity for making ties with potential funding sources and maintaining good relationships with them so that funds can be acquired for joint activities between communities and the PA.	4
There is relatively good capacity for making ties with potential funding sources and maintaining good relationships with them, such that some contact is maintained and can be used for future financial support.	3
There is moderate capacity for making ties with potential funding sources. However, the relationships are not always the best, which complicates the possibility of future financial support.	2
There is little capacity for making ties with potential funding sources; the relationships are few and indirect. The possibilities for financial support under these conditions are few.	1
No direct or indirect ties with potential funding sources exist.	0

b) **Organizational Capacity:** refers to the financial management capacity of the community. The following conditions and criteria are evaluated:

Staff are trained in administrating financial matters; there is a defined and functional accounting system and adequate financial planning.	4
Personnel have some knowledge of financial matters, and there is a defined, acceptably functional accounting system. Financial planning is acceptable.	3
Personnel have basic knowledge of financial matters. There is a referential framework for accounting support but it has flaws. Financial planning is deficient.	2
Personnel have some elemental knowledge of financial matters. Minimal and limited accounting schemes are used. There is no real financial planning.	1
There is no knowledge of financial matters. There is no accounting system. There is no financial planning.	0

c) **Spending capacity:** refers to the *PA's spending capacity to foster and strengthen the participation of the community leaders in the management and use of the PA's natural resources*. The following criteria and conditions are evaluated:

Adequate proposals are prepared with defined spending programs to meet the required needs. The payments are timely and programmed.	4
Budget preparation is acceptable. The spending programs can be affected by lack of definition. The payments are not always made on time in spite of their being programmed.	3
The budgets lack adequate structure; the spending programs are deficient and undefined. The payments are late and programming weak.	2
Budgets are not structured; expenditures are made without programming and payments, although sometimes made on time, are made without prioritizing.	1
There is no real budget. The payments are made late or not at all.	0

d) **Control and auditing Mechanisms:** evaluates *the accounting management capacity of the community in issues linked to the management of the PA*. The following criteria and conditions are evaluated:

Accounting management is sufficient and carried out using accepted standards for accounting and finance. Regular budget management reports are prepared as well as periodic auditing analysis.	4
Accounting management is acceptable and carried out under accepted standards for accounting and finance. Budget management reports are not prepared regularly and the auditing is made only on request.	3
Accounting management is deficient. It is lacking in some of the required standards for accounting and finance. Both budget management reports and audits are completed sporadically.	2
The accounting management is very basic with serious limitations for fulfilling the standards of accounting and finance. The budget management reports are inappropriate and audits are practically non-existent.	1
There is no accounting management; no budget management reports are prepared and no audits are carried out.	0

7. SOME RECOMMENDATIONS FOR APPLYING THE SYSTEM

7.1 For Selecting Indicators: Fields, Variables, Subvariables, and Parameters

It is recommended that the **evaluating** team start with the indicators proposed in this manual (fields, variables, subvariables, parameters), and consider the necessity and possibility of including other indicators that are relevant to the management of the area(s) to be evaluated. Definition and inclusion of new indicators should be dependent on the characteristics of the area(s), available knowledge and the capacity of the team. If a new field has been identified, its meaning and scope should be described to establish the referential framework within which it is being evaluated.

7.2 Evaluation Criteria and Structure of Conditions

Criteria to evaluate management using different indicators are the of the evaluation system. It is suggested that the criteria presented in this manual be used. If the evaluating team identifies new indicators, the criteria for evaluating these new indicators should be discussed and decided upon beforehand and by consensus of the team members and the other staff and actors invited to participate in the process. The core team should also agree on the values assigned to the structured conditions based on criteria. A set of at least 5 conditions should be outlined for each indicator. It is recommended that the optimum condition be structured first (value of 4), followed by each of the other values in descending order to the least (value of 0). The optimum scenario is the combination of most appropriate conditions (or of greatest value) to guarantee effective and efficient management.

7.3 Rating Scale

The entire evaluation process should be conducted using a tested and proven rating scale. In this case the scale to be utilized has 5 levels (0 to 4) which means there should be at least 5 conditions that can be assigned a value between 0 and 4. At the same time if there are conditions structured by percentage, these should relate to the percentage values of the rating scale given by the methodology when they are assigned a value.

7.4 Preparing Data Collection Sheets

Appendix 1 of this manual includes a sample format for collecting the primary and secondary data related to each of the proposed indicators. This makes it easier to evaluate the current situation and makes it possible to identify the origin of the data that backs up the evaluation, i.e. a "data verifier".

7.5 Management Effectiveness Measurement

Management effectiveness measurement is a tool that can be used to establish a monitoring system, if it is adopted as a routine, sequential practice. The first measurement compares the current situation with the optimum scenario. Further evaluations illustrate the progress toward improving the management of the protected area, when and if these evaluations are conducted using the same criteria and conditions created during the first evaluation exercise. This is the only way to ensure an accurate comparison of evaluation results. Based on these evaluations it can be inferred how effective and efficient the efforts have been to improve and optimize the management of the PA and how to ensure the accomplishment of the PA's objectives.

8. GLOSSARY

Field: Highest indicator in the hierarchy that offers a broad perception of the overall management issues.

Protected Area (PA): Geographic area with relevant biophysical components (fauna, flora, landscape, ecosystems, cultural resources) with a defined legal and institutional framework, that guarantees the conservation of said components.

Rating: Process of assigning value to a variable, subvariable or parameter of a current management situation.

Rating Criteria: Elements or factors that occur in management situations and comprise evaluation conditions.

Evaluation Conditions: Group or combination of criteria that describe a determinate situation. They are assigned a rating value.

Management effectiveness: Series of actions, (whether they bepolitical, legal, administrative, research, planning, protection, coordination, communication, interpretation, educational etc.) that result in a better use of resources and the permanence of the PA, there by fulfilling its objectives (broadened from Cifuentes, 1983).

Rating Scale: Group of standardized, scaled values that evaluate level of satisfaction.

Optimum Scenario: The best set of conditions that can be given to each of the management elements with the goal of effective PA management.

Parameter: Indicator below subvariable in the hierarchy. They are specific to the subvariables and therefore to the variables (Izurieta, 1997).

Subvariable: Indicator below variable in the hierarchy. They describe a specific activity or situation relative to the variable to which they belong.

Variable: Indicator below field in the hierarchy. They are the system's basic evaluation unit and describe the scope of the field to which they belong.

Zone of Influence (ZI): Area in which the PA administration carries out outreach activities with the goal of fostering civil society's participation in the decision-making process about the management of the PA (Izurieta, 1997).

9. LITERATURE

AMADOR *et al*. 1996. Plan de Manejo del Parque Nacional Galápagos. INEFAN. Quito, Ecuador, 146 p.

CAYOT, L.J., CRUZ, F. 1998. Manual para la Evaluación de la Eficiencia de Manejo del Parque Nacional Galápagos. Servicio Parque Nacional Galápagos, Instituto Ecuatoriano Forestal y de Areas Naturales y Vida Silvestre. Puerto Ayora, Islas Galápagos, Ecuador. 63 p.

CIFUENTES, M. 1983. Reservas de Biosfera: Clarificación de su marco conceptual y diseño y aplicación de una metodología para la planificación estratégica de un subsistema nacional. Tesis Mag. Scientiae. Universidad de Costa Rica y CATIE. 109 p.

De FARIA, H. 1993. Elaboración de un Procedimiento para medir la efectividad de manejo de áreas silvestres protegidas y su aplicación en dos áreas protegidas de Costa Rica. Tesis Mag. Scientiae. CATIE, Turrialba, Costa Rica. 91 p.

GODOY, J.C., UGALDE, A. 1992. Areas Protegidas de Centroamérica. Informe al IV Congreso Mundial de Parques Nacionales y Areas Protegidas. UICN/CNPPA. San José, Costa Rica. Guatemala, Guatemala. 101 p.

HOCKINGS, M. 1998. Evaluating Management Effectiveness: A framework for evaluating Management of Protected Areas. UICN / WCPA. Documento Borrador para Discusión.

IMBACH, A. y GODOY, J.C. 1992. Las Zonas de Amortiguamiento en el Trópico Americano: Propuestas para Incrementar la Influencia de las Areas Protegidas. En: Parques. Vol 3 No.1, Enero 1992. UICN, Gland, Suiza. 61 p.

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION, 1998. Assessing Management Effectiveness of Wildlife Protected Areas in India. Ed. Shekhar Singh. New Delhi, India.

IZURIETA, A. 1997. Evaluación de la Eficiencia del Manejo de Areas Protegidas: Validación de una Metodología Aplicada a un Subsistema de Areas Protegidas y sus Zonas de Influencia, en el Area de Conservación OSA, Costa Rica. Tesis Mag. Scientiae. CATIE, Turrialba, Costa Rica.

McCARTHY, R y SALAS, A. 1998. Las Áreas Protegidas de Centroamérica. Área de Conservación de Bosques y Áreas Protegidas, UICN/ORMA. 16 pp.

McNEELY, J.A. HARRISON, J. and DINGWALL, P. (eds) 1994, Protecting Nature; Regional Reviews of Protected Areas. UICN, Gland, Suiza y Cambridge, UK. VIII + 402 p.

McNEELY, J (eds) 1995. Expanding Partnerships in conservation., Island Press. UICN, Gland, Suiza. 303 p.

MORALES, R. y CIFUENTES, M. (Eds) 1989. Sistema Regional de Areas Silvestres Protegidas de América Central; Plan de Acción 1989–2000. CATIE, Turrialba, Costa Rica. 122 p.

COURRAU, J. 1997. Estrategia de Monitoreo de Areas Protegidas de Centro América. PROARCA/CAPAS. Resultados del Primer Taller de Monitoreo de Areas Protegidas de Centroamérica, Tegucigalpa, Honduras. 51 p.

RIVERO, C. y GABALDON, M. 1992. Evaluación de Sistemas de Areas Naturales Protegidas: una Metodología Numérica. En: PARQUES, Vol 3 No. 1, Enero 1992. UICN, Gland, Suiza. 61 p.

SEMARNAP. 1996. Programa de Areas Naturales Protegidas de México 1995-2000. México. 138 p.

SOTO, 1998. Validación del procedimiento para medir la efectividad del manejo de áreas protegidas, aplicada en áreas protegidas de Guatemala. Tesis de Licenciatura en Ingeniería Forestal. Universidad de San Carlos, Guatemala.

UCR, 1992. El perfil de calidad de las áreas de conservación de Costa Rica. Informe de consulta. San José, Costa Rica. Anexos 1,2,3.

UICN, BID. 1993. Parques y Progreso. Ed: Valerie Barzetti, UICN, Cambridge, UK.258 p.

UICN / PNUMA. 1990. Manejo de Areas Protegidas en los Trópicos. UICN, Gland, Suiza. 315 p.

Appendix

DATA COLLECTION AND RATING FORM

NOTE: *This is a sample of a data collection form for each of the indicators evaluated. It does not include all the possible indicators in the methodological procedure. The evaluation team should prepare these forms, tailored to the specific circumstances of the areas to be evaluated and the selected or additional indicators.*

ADMINISTRATIVE FIELD
Variable **PERSONNEL**
Subvariable ADMINISTRATOR (PA Director), TECHNICAL PERSONNEL, ADMINISTRATIVE PERSONNEL, OPERATIONAL PERSONNEL
Parameter QUALITY

Level	EVIDENCE EXAMINED	COMMENTS/NOTES
Education _____		
Initiative _____		
Experience _____		
RATING ( )		

Evidence: interviews with supervisors and subordinates observation.

ADMINISTRATIVE FIELD
Variable **PERSONNEL**
Subvariable ADMINISTRATOR
Parameter QUANTITY

Exists_____ _____	Does not exist_____	Evidence Examined	Comments/Note
RATING ( )			

Evidence: the official duty assignment papers could be examined; consultation with supervisors.

ADMINISTRATIVE FIELD
Variable **PERSONNEL**
Subvariable TECHNICAL PERSONNEL, ADMINSTRATIVE PERSONNEL, OPERATIONAL PERSONNEL
Parameter QUANTITY

Optimum Number	Current number of personnel	% of Optimum	Evidence Examined	Comments / Notes
RATING ( )				

Evidence: personnel activities should be reviewed; human resources files.

ADMINISTRATIVE FIELD
Variable **PERSONNEL**
Subvariable ADMINISTRATOR, TECHNICAL PERSONNEL, ADMINSTRATIVE PERSONNEL, OPERATIONAL PERSONNEL.
Parameter MOTIVATION

Motivation:	Evidence Examined	Comments / Notes
Very high _____ High _____ Moderate _____ Low motivation _____ No motivation _____		
RATING ( )		

Evidence: interview superiors and subordinates; observations.

ADMINSTRATIVE FIELD
Variable **PERSONNEL**
Subvariable ADMINISTRATOR (PA Director), TECHNICAL PERSONNEL, ADMINISTRATIVE PERSONNEL, OPERATIONAL PERSONNEL.
Parameter EFFECTIVE TIME DEDICATED TO PA

Effective time dedicated to PA; months/year _____	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: personal file from human resources/service commissions/vacations/leaves of absence for personal; reasons could be reviewed.

ADMINISTRATIVE FIELD
Variable **PERSONNEL**
Subvariable ADMINISTRATOR (PA Director), TECHNICAL PERSONNEL, ADMINISTRATIVE PERSONNEL, OPERATIONAL PERSONNEL.
Parameter STAFF INCENTIVES

Information about plan for promotions _____	Evidence Examined	Comments / Notes
Information about support to professional development initiatives		
RATING ( )		

Evidence: institutional human resource policies should be reviewed; applications for promotions; staff interviews or surveys about support for professional development initiatives, etc.

ADMINISTRATIVE FIELD
Variable **PERSONNEL**
Subvariable CAPACITY FOR CONTRACTING ADDITIONAL STAFF

Types of Mechanisms	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: rules and procedures could be reviewed; contracts made with additional personnel and how they relate to the timing for planned activities.

ADMINISTRATIVE FIELD
Variable **FUNDING**
Subvariable ANNUAL OPERATING BUDGET

Total budget for the last 3 years	% of the approved budget received in the last 3 years	Evidence Examined	Comments/ Notes
RATING ( )			

Evidence: the approved annual budgets could be examined and compared with allocations.

ADMINISTRATIVE FIELD
Variable **FUNDING**
Subvariable REGULARITY OF BUDGET PREPARATION

Days late in paying out budget allocations	Evidence Examined	Comments/Notes
RATING ( )		

Evidence: review of transfer dates throughout the year for the last three years is suggested.

ADMINISTRATIVE FIELD
Variable **FUNDING**
Subvariable EXTRAORDINARY FUNDING

Number of occasions and amounts of extra-budgetary spending (in the last three years)	Evidence Examined	Comments/Notes
RATING ( )		

Evidence: number of official extraordinary budget requests to cover emergency situations should be reviewed as well as the number of extra-budgetary transactions (withdrawals, deposits etc.)

ADMINISTRATIVE FIELD
Variable **FUNDING**
Subvariable CAPACITY TO GENERATE OWN FUNDS

Existing mechanisms	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: existing legal mechanisms for contracting could be reviewed; existence and functioning of administrative, accounting and financial mechanisms.

ADMINISTRATIVE FIELD
Variable **ORGANIZATION**
Subvariable FILES

Observations on the existence, orderliness, usability and availability of files that contain information on administrative, financial and technical management	Evidence Examined	Comments/Notes
RATING ( )		

Evidence: filing cabinets and their contents could be examined; orderliness, usability and coverage of information on administrative, financial and technical aspects. Use of files and general file management.

ADMINISTRATIVE FIELD
Variable **ORGANIZATION**
Subvariable INSTITUTIONAL STRUCTURE

Observations about organizational chart	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: official documents should be reviewed that show the chain of command, identify individual responsibilities and the PA's administrative and technical needs; observation of employees' level of autonomy.

ADMINISTRATIVE FIELD
Variable **ORGANIZATION**
Subvariable INTERNAL COMMUNICATION

Observations about internal communication	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: the following mechanisms should be examined: memorandums, announcements on bulletin boards, frequency of meetings at different levels, informal communications, etc.

ADMINISTRATIVE FIELD
Variable **ORGANIZATION**
Subvariable REGULATION OF ACTIVITIES

Observations about the regulation of activities	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: procedures and regulations (preferably written) should be reviewed, that guide administrative activities in such aspects as: purchasing, contracts, delivery of documents, etc.

ADMINISTRATIVE FIELD
Variable **INFRASTRUCTURE**
Subvariable EQUIPMENT AND TOOLS

Observations	Evidence Examined	Comments/Notes
Quantity _____		
Quality _____		
Maneuverability _____		
RATING ( )		

Evidence: inventories of tools and necessary equipment should be reviewed and compared with the optimum (the optimum in quantity can be in the management plan or can be constructed by the team with the help of the people that are familiar with the PA's needs); consultation with personnel that use the equipment.

ADMINISTRATIVE FIELD
Variable **INFRASTRUCTURE**
Subvariable CONDITIONS OF FACILITIES

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: the facilities should be examined; ask about established hygiene practices (daily/weekly cleaning, etc.); consultations with personnel that frequently use the various facilities.

ADMINISTRATIVE FIELD
Variable **INFRASTRUCTURE**
Subvariable SAFETY

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: examine the facilities; ask about the type of materials and frequency of maintenance; consult with personnel that frequently use the various facilities; accident records, etc.

ADMINISTRATIVE FIELD
Variable **INFRASTRUCTURE**
Subvariable BASIC SERVICES

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: examine the availability of services such as: water, electricity, telephone or other means of communication, closest medical attention facility; interviews with employees.

ADMINISTRATIVE FIELD
Variable **INFRASTRUCTURE**
Subvariable ACCESSIBILITY

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: examine the access routes and roads to the PA's interior. Locate them on maps. Travel along roads; type of road surface and period of use throughout the year.

ADMINISTRATIVE FIELD
Variable **INFRASTRUCTURE**
Subvariable MARKED BOUNDARIES

% of boundaries marked	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review works reports for marking boundaries; measure marked boundaries using maps of the area, field inspections.

POLITICAL FIELD
Variable **COMMUNITY SUPPORT AND PARTICIPATION**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: identify clubs, associations, groups, etc. that have links to the area; interviews or surveys of representatives of organized groups and community representatives; letters of appreciation from community groups.

POLITICAL FIELD
Variable **INTER-INSTITUTIONAL SUPPORT**
Subvariable MOTHER INSTITUTION

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review national policies about protected areas and conservation of biodiversity; number of visits by high level officials with decision-making power; support for PA's administration.

POLITICAL FIELD
Variable **INTER-INSTITUTIONAL SUPPORT**
Subvariable NATIONAL ADMINSTRATION OF THE SYSTEM

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: examine the capacity for technical assistance offered to the PA; number of technical workers in the system and number of visits to provide technical assistance to various activities; existence and implementation of planning and management actions oriented to the PA system; interviews with the PA director/administrator and other high level officials.

POLITICAL FIELD
Variable **INTER-INSTITUTIONAL SUPPORT**

Observations _____	Evidence Examined	Comments/Notes
Jurisdiction _____		
coordination _____		
Exchange of information and experience _____		
Joint projects and actions _____		
RATING ( )		

Evidence: inter-institutional conflicts/actions; exchange of letters; exchange of personnel or assistance to specific actions; joint planning.

POLITICAL FIELD
Variable **EXTERNAL SUPPORT**

Observations	Evidence Examined	Comments / Notes
Scope _____		
Stability _____		
RATING ( )		

Evidence: review the administrative reports on results (scope) of support; direct observation of scope of support; official letters of progress. Forecasts and/or planning of activities and their timeframes.

LEGAL FIELD
Variable **LAND TENURE**

Percentage of area with clear tenancy	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: examine land registers; files on legal processes, maps, community documents, etc.

LEGAL FIELD
Variable **GROUP OF GENERAL LAWS**
Subvarible CLARITY

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review the legal instruments that encompass fauna, flora, forests, pollution, biodiversity, fishing, mining, tourism, etc.

LEGAL FIELD
Variable **GROUP OF GENERAL LAWS**
Subvariable APPLICATION

Observation	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review field reports; suits filed; formats, user registration sheets, payments of patents and concessions, notifications of breach of contract; letters of complaint from users; enforcement by staff

LEGAL FIELD
Variable **PROTECTED AREA CHARTER**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review the legal instruments (laws, decrees, agreements, regulations, etc.) that guarantee the permanence of the area.

PLANNING FIELD
Variable **MANAGEMENT PLAN**
Subvariable EXISTENCE AND DATE OF PLAN

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review the management plan if one exists; observe the application of the plan; other directive planning instruments.

PLANNING FIELD
Variable **MANAGEMENT PLAN**
Subvariable CHARACTERISTICS OF PLANNING TEAM

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: interview PA administrator and other staff; interview people from the community; review credits for plan preparation.

PLANNING FIELD
Variable **MANAGEMENT PLAN**
Subvariable PLAN IMPLEMENTATION

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: examine the management Plan; review annual and semester reports; review Operative Plan.

PLANNING FIELD
Variable **COMPATIBILITY OF OTHER PLANS WITH PA's MANAGEMENT PLAN**

Observations	Evidence Examined	Comments/Notes
RATING ( )		

Evidence: review other regional plans (municipal; provincial; from other institutions involved in the administration of natural resources, etc.).

PLANNING FIELD
Variable **OPERATIVE PLAN**
Subvariable EXISTENCE OF AND CURRENTNESS OF PLAN

Observations	Evidence Examined	Comments/Notes
RATING ( )		

Evidence: review the last Operative Plan; review weekly, monthly, trimester or semester planning.

PLANNING FIELD
Variable **OPERATIVE PLAN**
Subvariable LEVEL OF EXECUTION

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review the Plan; review annual and semester reports; review the Operative Plan.

PLANNING FIELD
Variable **LEVEL OF PLANNING**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review the specific plans (tourism, research, protection, environmental education, maintenance, etc.); programs and activities based on specific plans.

PLANNING FIELD
Variable **ZONING**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review zoning (management plan; area zoning maps, etc.); written rules/regulations on use.

PLANNING FIELD
Variable **BOUNDARIES**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review legal documents; field observations; trespassing reports; interviews with operational personnel, etc.

KNOWLEDGE FIELD
Variables **BIOPHYSICAL INFORMATION, CARTOGRAPHIC INFORMATION, SOCIO-ECONOMIC INFORMATION, TRADITIONAL KNOWLEDGE**

Observations	Evidence Examined	Comments / Notes
How up-to-date is the knowledge:		
< 5 years _____		
5-10 years _____		
> 10 years _____		
Availability: _____		
RATING ( )		

Evidence: review documented information; statistics, publications, interviews with staff, researchers, etc.

KNOWLEDGE FIELDS
Variable **LEGAL ASPECTS**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review available legal documents; mechanisms for disseminating legal information.

KNOWLEDGE FIELDS.
Variable **RESEARCH**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review mechanisms for collecting scientific data; existence of specific files or library; interview personnel.

KNOWLEDGE FIELD
Variable **MONITORING AND FEEDBACK**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review amongst other things, reports, documentation for data collection; information used in programs, activities, etc.

MANAGEMENT PROGRAMME FIELD
Variables **RESEARCH, ENVIRONMENTAL EDUCATION AND INTERPRETATION, PROTECTION, MAINTENANCE, OUTREACH TO COMMUNITY,**
Subvariable DESIGN

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review management plan, operative plan, and management objectives.

MANAGEMENT PROGRAMME FIELD
Variables **RESEARCH, ENVIRONMENTAL EDUCATION AND INTERPRETATION, PROTECTION, MAINTENANCE, OUTREACH TO COMMUNITY.**
Subvariable EXECUTION OF PLANNED ACTIVITIES

% of planned activities carried out	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review the operative plan; monthly, trimester and semester planning.

MANAGEMENT PROGRAMME FIELD

Variables **RESEARCH, ENVIRONMENTAL EDUCATION AND INTERPRETATION, PROTECTION, MAINTENANCE, OUTREACH TO COMMUNITY.**

Subvariable COORDINATION WITH OTHER PROGRAMMES

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: heads of programs should be interviewed, as well as other staff; review monthly, trimester and semester reports etc.

MANAGEMENT PROGRAMME FIELD

Variables **RESEARCH, ENVIRONMENTAL EDUCATION AND INTERPRETATION, PROTECTION, MAINTENANCE, OUTREACH TO COMMUNITY.**

Subvariable MONITORING AND EVALUATION

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: heads of programs should be interviewed, as well as other staff; review monthly, trimester and semester reports etc.

ILEGAL USES FIELD

Variables **LOGGING, EXTRACTION OF FLORA AND FAUNA, POACHING, SQUATTING, FARMING AND RANCHING, FISHING, RECREATION AND TOURISM, CONSTRUCTION OF BUILDINGS, VANDALISM AND/OR PLUNDERING OF CULTURAL RESOURCES.**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review area reports, police reports, legal processes, interview the PA personnel.

LEGAL USES FIELD

Variables **LOGGING, EXTRACTION OF NON-RENEWABLE RESOURCES, EXTRACTION OF FLORA AND FAUNA, HUNTING, FARMING AND RANCHING, FISHING, RECREATION AND TOURISM, CONSTRUCTION OF BUILDINGS AND FACILITIES.**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review use regulations, reports by program heads, field observations, interviews with area personnel.

BIOGEOGRAPHICAL CHARACTERISTICS FIELD
Variable **SIZE**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review information on biodiversity (species, ecosystems) and their home range; vegetation maps; base map of the protected area.

BIOGEOGRAPHICAL CHARACTERISTICS FIELD
Variable **SHAPE**

Observations on shape of PA	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review map of PA.

BIOGEOGRAPHICAL CHARACTERISTICS FIELD
Variable **CONNECTIVITY/ISOLATION**

Observations on form of PA	Evidence Examined	Comments/Notes
RATING ( )		

Evidence: review topic maps of the region (current uses, vegetation etc.); location of other PAs

BIOGEOGRAPHICAL CHARACTERISTICS FIELD
Variable **VULNERABILITY**

Observations on form of PA	Evidence Examined	Comments/Notes
RATING ( )		

Evidence: examine records of exotic species; evidence of deterioration of populations or habitats; field observations.

THREAT FIELD

Variables **IMPACT BY VISITORS, POLLUTION (LAND AND WATER), FIRES, EXOTIC SPECIES, ADVANCEMENT OF HUMAN SETTLEMENTS, NATURAL DISASTERS, FACILITIES FOR DEVELOPMENT, SUBVERSIVE POLITICAL MOVEMENTS, DRUG TRAFFICKING.**

Observations	Evidence Examined	Comments / Notes
RATING ( )		

Evidence: review aerial photographs or satellite images for several years; field observations; management program reports; interviews with personnel from the area and people from the community, field reports, frequency of police raids in the area, etc.

WWF's mission is to achieve the conservation of nature and ecological processes by:

- Preserving genetic, species, and ecosystem diversity;
- Ensuring that the use of renewable natural resources is sustainable both now and in the longer term, for the benefit of all life on Earth;
- Promoting actions to reduce, to a minimum, pollution and the wasteful exploitation and consumption of resources and energy.

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