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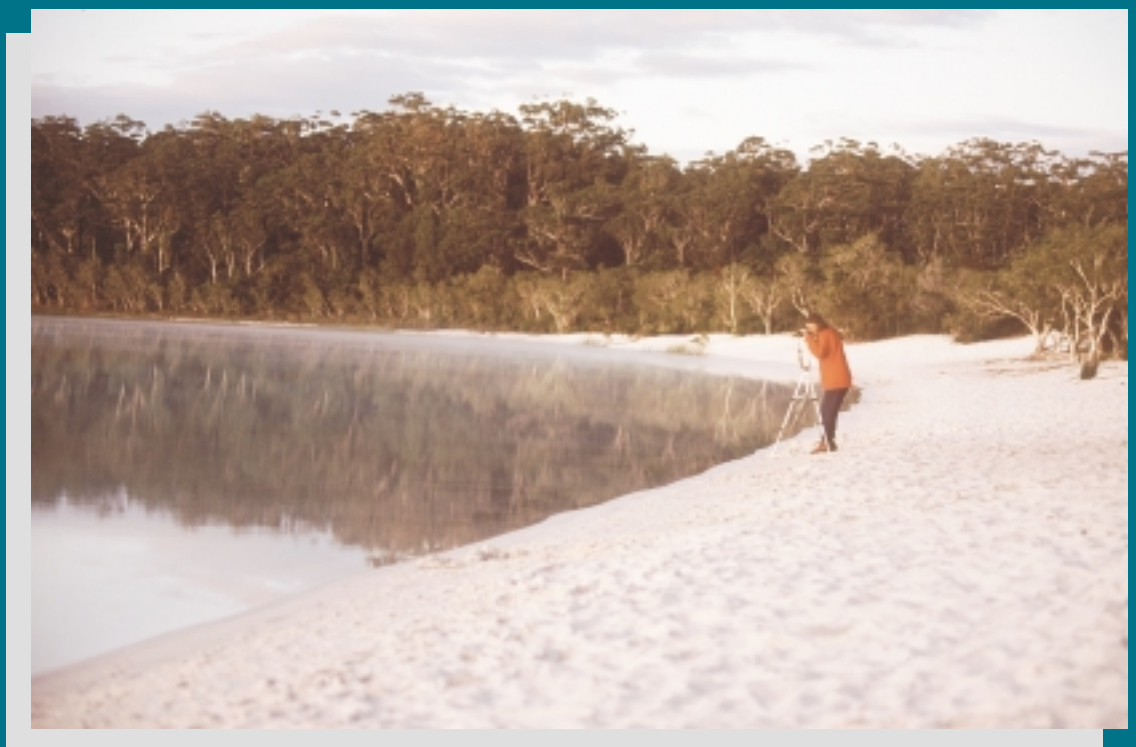
World Commission on Protected Areas (WCPA)

Evaluating Effectiveness

A Framework for Assessing the Management of Protected Areas

Marc Hockings (WCPA Management Effectiveness Task Force) with Sue Stolton and Nigel Dudley (WWF/IUCN Forest Innovations Project)

Adrian Phillips, Series Editor



Best Practice Protected Area Guidelines Series No. 6

CARDIFF UNIVERSITY

IUCN
The World Conservation Union

These Guidelines are one of the Best Practice Protected Area Guidelines series. The Series Editor is Prof. Adrian Phillips.

Other publications in the series are as follows:

National System Planning for Protected Areas. No. 1. Adrian G. Davey, 1998, x + 71pp.

Economic Values of Protected Areas: Guidelines for Protected Area Managers. No. 2. Task Force on Economic Benefits of Protected Areas for the World Commission on Protected Areas (WCPA) IUCN in collaboration with the Economics Service Unit of IUCN, 1998, xii + 52pp.

Guidelines for Marine Protected Areas. No. 3. Graeme Kelleher, 1999, xxiv + 107pp.

Indigenous and Traditional Peoples and Protected Areas: Principles, Guidelines and Case Studies. No. 4. Javier Beltrán, 2000, xi + 133pp.

Financing Protected Areas: Guidelines for Protected Area Managers. No. 5. Financing Protected Areas Task Force of the World Commission on Protected Areas (WCPA) of IUCN, 2000, viii + 58pp.

Evaluating Effectiveness

A Framework for Assessing the Management of Protected Areas

IUCN – The World Conservation Union

Founded in 1948, The World Conservation Union brings together States, government agencies and a diverse range of non-governmental organizations in a unique world partnership: over 900 members in all, spread across some 138 countries.

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Evaluating Effectiveness

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Preparation of this document has been supported by
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World Commission on Protected Areas

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Preface

As we enter the 21st century, almost a tenth of the world's land surface is in some form of protected area – national parks, nature reserves, landscape protected areas and wilderness – and there is an extensive and growing network of marine protected areas. This is a remarkable achievement for the world's governments and conservation organisations and a demonstration of the importance accorded to biodiversity protection, maintenance of environmental services, protection of cultural values and aesthetic and ethical considerations.

It is therefore all the more remarkable to realise how little we know about the status of many of these protected areas – far less than we usually know, for example, about the health of agricultural land, the rate of growth in commercial forests and the viability of fish stocks. This is more than just of academic interest. What little we do know suggests that many protected areas are not in particularly good shape, suffering from a variety of impacts and in some cases in danger of losing the very values for which they were set aside in the first place. Others exist in name only – the so-called "paper parks" that are present as lines on the map but have never actually been implemented.

We clearly need to put as much effort into achieving sound and effective management of protected areas as into setting up new areas. As a result, interest is growing in ways in which we can monitor and evaluate the effectiveness of protected areas and apply the findings to progressively improve on-going management. This is not as easy as it sounds. "Protection" encompasses many values and has numerous facets. Loss of quality in protected areas can occur in many different forms. Effectiveness needs to be measured from various points of view, ranging from the status of the area and the way in which a protected area is designed through to the outcomes of management actions and the overall state of conservation of the area. Evaluation is needed at many different levels, from quick assessments to detailed monitoring studies undertaken to inform adaptive management.

The World Commission on Protected Areas (WCPA) of IUCN set up a Management Effectiveness Task Force to look into these issues and prepare strategies for addressing them. This report is the culmination of three years' effort by specialists around the world. It is based on initial work by Marc Hockings from the University of Queensland carried out while based at the World Conservation Monitoring Centre in Cambridge, UK. This was then enriched by the output of a series of experts' workshops around the world, held in association with the IUCN/WWF Forest Innovations project, WWF Netherlands, WWF Forests for Life Campaign, WWF/World Bank Alliance and the World Heritage Convention. The editors have therefore been able to draw on much expertise.

The report proposes a framework for assessing management effectiveness. This is not presented as a straitjacket into which every assessment system should fall – **we recognise the need for a variety of responses depending on needs and resources**. The framework also includes suggested tools which can be used as the basis for developing an assessment methodology. We hope therefore that this report will lead to more

effective management of protected areas by helping professionals and others who wish to assess management of protected areas to develop the most appropriate evaluation and monitoring system for their circumstances. It will also be easier for comparison between sites, sharing lessons learned and maximising the benefits of evaluations if there is some consistency in approach and adherence to some basic operational guidelines.

Part A of the guidelines sets out the theoretical and methodological aspects of the suggested framework. While conceptually the system has potential universal application, it is intended for adaptation to a wide range of circumstances, from those in wealthy countries with access to sophisticated systems of recording and accounting, to those in much poorer countries where simpler approaches are necessary.

Part B contains six case studies that demonstrate the practical application of a range of evaluative approaches in management of protected areas in Australia, the Congo Basin, and Central America and South America.

Acknowledgements

This guide is a publication of IUCN – The World Conservation Union. It has been prepared by Marc Hockings, Sue Stolton and Nigel Dudley with significant comments and input from members of the Management Effectiveness Task Force of the IUCN World Commission on Protected Areas (Protected Area Management sub-group). It has been developed from an initial document prepared by Marc Hockings in 1997 which has been the subject of workshop discussions and pilot studies conducted by the Task Force and other partners over the past three years. The many contributors to this development and review process are thanked for their input, ideas, constructive criticisms and suggestions.

The Management Effectiveness Task Force comprises representatives from 17 countries, all of whom have extensive experience in protected areas and their management. The members are:

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Natarajan Ishwaran (Co-chair)

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Arlin Hackman			

The work of the Management Effectiveness Task Force has been unfailingly supported by the Chair of the World Commission on Protected Areas, Professor Adrian Phillips, the WCPA Vice-Chair for Australia, Lee Thomas and the staff of the Protected Areas Programme at IUCN, especially David Sheppard and Pedro Rosabal.

The Task Force would not have been able to achieve its work programme, including the review and preparation of these guidelines, without the interest, collaboration and support of many institutions around the world who have contributed to this work. The

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Marc Hockings, University of Queensland
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PART A

The framework and guidelines

1. An introduction to "management effectiveness"

The purpose of this document is to provide a framework and guidelines for evaluating the management effectiveness of protected areas using currently available best practices (see Box 1.1 for a discussion of terminology). The framework and the component assessment tools outlined in this document can be used to build an evaluation methodology at the level of an individual protected area or for a system of related protected areas.

Box 1.1 Terminology – evaluation, assessment and monitoring

Sanders (1994) in *The Program Evaluation Standards* defines *evaluation* as the "systematic investigation of the worth or merit of an object (eg. program or project)" and *assessment* as "the act of determining the standing of an object on some variable of interest". Thorsell (1982) defines *evaluation*, in a protected area management context, as the process of making reasonable judgements about programme effort, effectiveness, efficiency and adequacy with the objective of using these judgements to improve the effectiveness of management.

In this document the terms *evaluation* and *assessment* are used interchangeably. We have defined *evaluation* as "the judgement or assessment of achievement against some predetermined criteria (usually a set of standards or objectives); in this case including the objectives for which the protected areas were established." Information on which such assessments can be based could come from many sources, but monitoring has a particularly important contribution to make in providing the basic data that should underpin the evaluation.

Monitoring is the process of repeated observation, for specified purposes, of one or more elements of the environment, according to prearranged schedules in space and time and using comparable data collection methods (Meijers, 1986). It can be used to assess change in environmental parameters over time. In the context of this document, it is important to note that monitoring need not only address the state of the external physical and social environment, but can also focus on the activities and processes of management.

(See also Glossary)

1.1 What is management effectiveness?

In general, the term *management effectiveness* includes three main components:

- design issues relating to both individual sites and to protected area systems;
- appropriateness of management systems and processes; and
- delivery of protected area objectives.

Box 1.2 Components of management effectiveness

Design: covering both the design of individual protected areas and of protected area systems. Important elements include: size and shape of individual protected areas; the existence and management of buffer zones and links between protected areas; ecological representation; and the appropriateness of protected areas to achieve their stated function. Design failures can, for example, lead to problems of protected areas that are too small to be effective, fragmentation and isolation, protecting disproportionate amounts of one habitat at the expense of others and failure to leave room for adaptation to environmental change. Techniques such as gap analysis are needed to help assess design success.

Appropriateness: looking at how management is conducted and how well management is responding to challenges, including, for example, aspects of planning, training, capacity building, social relations and implementation. This component looks both at whether there is enough management and at whether management processes and actions are appropriate. Management *failures* therefore range from complete lack of implementation (so-called "paper parks") through to strategic errors about where to focus effort or how management is conducted. Management *successes* are particularly important in terms of communicating lessons learned.

Delivery: assessing whether protected areas are achieving their stated aims. Measures include both biological elements (such as whether key species are surviving, recovering or declining) and social aspects (such as recreational use or the attitudes of local human communities towards the protected area). A well designed protected area with plenty of trained and dedicated staff will still not be achieving its objectives if, for example, poachers are depleting species or air pollution is damaging sensitive plants and animals.

The assessment of management effectiveness needs to be put into context. Important background information includes the biological and cultural significance of the protected area, the threats it faces and its vulnerability to these threats.

1.2 Why is the evaluation of protected area management important?

Evaluation is necessary because protected areas face many threats. However, evaluation is not simply a way of looking for problems; it is as important to identify when things are going well. Assessment of management effectiveness should include both issues within and/or beyond the control of individual managers. The approach facilitates a range of responses to threats and deficiencies in management, from site-based actions to broad political and policy review.

There are many reasons why people want to assess management effectiveness. Whilst each is valid, they may require different techniques and varying degrees of detail. Funders, policy makers and conservation lobbyists may use the results to highlight problems and to set priorities; or to promote better management policies and practices by management agencies. Managers may wish to use evaluation results to improve their performance or to report on achievements to senior managers, the government or

external stakeholders. Local communities and other stakeholders, including civil society, need to establish how far their interests are being taken into account.

Three common uses of evaluation are:

- promoting adaptive management;
- improving project planning; and
- promoting accountability.

In practice, evaluation results are usually used in more than one way. Information used by managers to improve their own performance (adaptive management) can also be used for reporting (accountability) or lessons learnt can be used by others to improve future planning (project planning).

Whatever purposes it may serve, evaluation should be seen primarily as a tool to assist managers in their work, not as a system for watching and punishing managers for inadequate performance. Evaluation must be used positively to support managers and be seen as a normal part of the process of management. Nonetheless, funding agencies, NGOs and others have a legitimate right to know whether or not a protected area is achieving its stated objects and it should be recognised that assessment findings will inevitably also be used for advocacy.

Adaptive management: First and foremost, evaluation should be seen as a normal part of the process of management. Adaptive management is based on a circular – rather than a linear – management process, which allows information concerning the past to feed back into and improve the way management is conducted in future. Evaluation helps management to adapt and improve through a learning process.

Evaluation consists of reviewing the results of actions taken and assessing whether these actions have produced the desired results. It is something that all good managers already do where the link between actions and consequences can be simply observed; for example, in assessing whether site hardening has been effective in reducing the level of some localised environmental impact.

But the link between action and outcome is often not so obvious. Faced with the daily demands of their job, many protected area managers are not able to monitor systematically and review the results of their efforts. In the absence of such reviews, however, money and other resources can be wasted on programmes that do not achieve their objectives.

In a climate of ever greater attention to performance and value for money, protected area managers must expect to come under greater pressure to introduce systems of monitoring and evaluation, at both the programme and project level, which will:

- promote and enable an adaptive approach to management where managers strive to learn from their own and others' successes and failures; and
- keep track of the consequent changes in management objectives and practices so that people can understand how and why management is being undertaken in this way.

Improve programme planning: Evaluation studies can also be used to improve programme/project planning – either at the time of initial design or as a review of previous programmes where the lessons learnt will be applied to programmes that

follow. Where common problems are being addressed in different ways in a number of protected areas, evaluation data can be used to compare results and allow managers to select the best approach. Evaluation, in the form of broad programme review, can be used as a basis for deciding whether programmes should be continued or resources transferred to competing areas of operation.

Promote accountability: Accountability for performance is being increasingly demanded across all sectors of society and conservation management is no exception. Traditionally, concerns for accountability focused on issues of financial and managerial probity but this has now expanded to include concerns for management effectiveness. Viewed in this light, accountability is not so much about "checking up" on managers to see where they are failing, as about developing a professional approach to management. Governments and other funding or regulatory bodies are requiring information on management effectiveness that will allow them to assess whether results are being achieved that are commensurate with the effort and resources being expended and in line with policy and management objectives.

Managers are likely to experience greater support and trust when they provide information about what they are doing and what they are achieving and when management is therefore seen to be open and accountable. Managers can also use the results of evaluations of management effectiveness in developing requests/proposals for additional resources. Such proposals are more likely to win support when they can be justified on the basis of evaluation results.

1.3 Who is interested in management effectiveness and what do they want to know?

International involvement in protected area management has grown as conservation of natural resources has become an important issue of global concern. The international community expresses its interest through global and regional conventions, the efforts of international NGOs and other initiatives concerned with protected areas. Such initiatives include support for international biodiversity conservation programmes (such as the Global Environment Facility – GEF) and development assistance programmes, many of which support activities relating to protected areas. All need to know where to prioritise their investments (Green *et al*., 1997), and are therefore concerned with the effectiveness of management at the site level, and cumulatively at national and international levels.

Site level assessment has generally been met through project evaluations, usually undertaken by external review teams during the life of the project, or more commonly at its conclusion. In common with general developments in programme evaluation (see O'Faircheallaigh and Ryan, 1992), there has been recognition that the focus of such assessments should shift from questions about what resources have been devoted to a project, how the project was carried out, and what was done, towards answering the more fundamental question **"did the project achieve its objectives?"**

Embedded in such an apparently simple question are further challenging issues that require resolution:

- who defines the objectives?
- are there multiple and conflicting objectives, and which ones should be given attention?

- what time scale is appropriate for assessing achievement?
- who should make the assessment? and
- what constitutes success?

Managers, local people and other stakeholders may have very different perspectives on these questions.

Though some form of evaluation is now undertaken for almost all programmes funded through international agencies, experience suggests that such questions are often difficult to answer if these issues were never explicitly addressed at the planning stage. Indeed, one of the benefits of evaluations is that they focus attention on project objectives. Moreover, evaluation exercises themselves must have clearly defined objectives and involve a broad range of stakeholders, including local and indigenous communities living in or adjacent to protected areas, in the assessment process.

Nationally, a monitoring and evaluation system should be incorporated into the national protected area system plan called for under Article 8 of the Convention on Biological Diversity (CBD). Advice on preparing such a system plan has been published by IUCN (Davey, 1998). The principal stakeholder in the evaluation of protected area management effectiveness at the national level will usually be the protected area planning and/or management agency. It needs to know both whether individual sites are being effectively managed and whether national policies and legislation on protected areas are being effectively implemented. Often, the agency is accountable to other sectors in government and needs to be able to demonstrate the adequacy of resources to manage the protected area network effectively. Donors in the private or non-governmental sectors also have an interest in such information. The significance of protected areas to tourism, sub-national levels of government, and conservation NGOs has increased in many countries as the size and diversity of the protected area network have grown. It is necessary to take account of the interests and concerns of all such stakeholders if they are to accept changed management priorities that emerge as a result of the evaluation.

1.4 Recent trends in monitoring protected area management effectiveness

Though there have been several calls for comprehensive protected area evaluation systems (e.g. Silsbee and Peterson, 1991; Chrome, 1995; Briggs *et al*., 1996; Davey, 1998), few protected area management agencies have implemented such systems. In the UK, the Countryside Council for Wales has developed an approach to monitoring their Sites of Special Scientific Interest that is closely tied to planning and management systems (Alexander and Rowell, 1999). In Australia, the Great Barrier Reef Marine Park Authority and the Australian Institute of Marine Science have established a programme of long-term monitoring for the Great Barrier Reef (Sweatman, 1997). Both initiatives, however, concentrate on biological conditions and cannot be regarded as comprehensive assessments of management effectiveness. Efforts at addressing management effectiveness more broadly have generally focused on relatively few, selected areas and have often depended on staff from educational or research institutions working with managers (e.g. Thorsell, 1982; Hockings, 1998; Cifuentes and Izurieta, 1999; Jones, 2000).

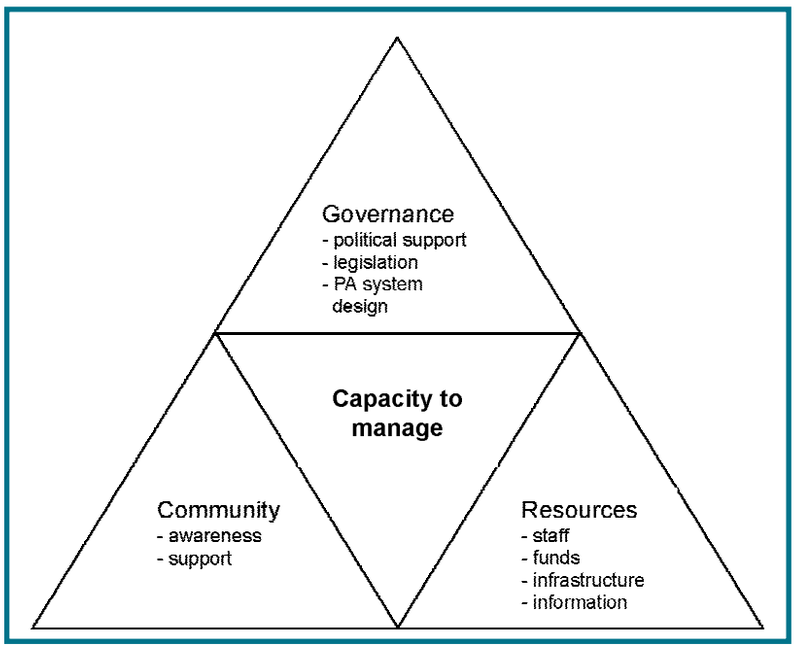
One-off evaluations of a management agency or one of its programmes are more common (e.g. Kothari *et al*., 1989; Edwards, 1991; Countryside Commission, 1991; WWF and the Department of Environment and Conservation, 1992; Environment and Development Group, 1997). Monitoring programmes looking at particular aspects of management, or the status of particular resources, are also relatively common, although they do not often provide a reliable guide to overall management effectiveness. However, monitoring programmes of this kind, targeted at resources of special value or concern, should be an integral part of any comprehensive evaluation system.

Less attention has been paid to the state of protected area management at regional and global scales. There has been no generally accepted methodology that can be applied and no organisation with direct responsibility to collect or collate such information. The most active institutions have been the WCPA (formerly the Commission on National Parks and Protected Areas - CNPPA) and the World Conservation Monitoring Centre (WCMC), now part of UNEP. They work closely together to compile and maintain a global protected areas database. This database, which currently holds over 30,000 records (Green and Paine 1997), has concentrated on basic descriptive information about the name, location, designation, IUCN protected area management category, size and year of establishment of each protected area. It forms the foundation for the periodic United Nations List of Protected Areas (IUCN 1998). While at present only limited information on aspects such as budgets and staffing is held in the database (James 1999), WCMC intends to expand this to encompass other measures of management effectiveness as indicators are developed and data become available (Green and Paine, 1997).

The decennial World Parks Congresses provide a means of updating and improving information of this kind. Following the last congress in Caracas 1992, a review of protected areas was published under the title *Protecting Nature: Regional Reviews of Protected Areas* (McNeely *et al*., 1994). While this represents the most comprehensive review of protected areas ever undertaken, it necessarily took a broad-brush approach. More detailed studies have also been undertaken for IUCN, for example in the Indo-Malayan realm, but these are also limited in scope and are inevitably quite superficial (MacKinnon and MacKinnon, 1986). It is expected that the next congress, to be held in South Africa in 2002, will be used to secure a significant improvement in the quality of global data relating to protected areas and the effectiveness of their management.

Non-governmental organisations are also increasingly undertaking assessments of protected area effectiveness, both on a national or regional scale. For example, studies have been undertaken by The Nature Conservancy in Latin America and WWF in Brazil, Colombia, Pakistan and Peru,. There have also been continent-wide or global-scale studies undertaken by WWF in Europe and by WWF and the World Bank in key forest countries (Carey *et al*. 2000). The key questions that are of interest at this global and systemic level are whether the responsible authorities have the capacity to manage their protected areas effectively and whether this management is being delivered on the ground. Capacity to manage has many components and cannot be summarised in a single measure: the principal dimensions are the system of governance, level of resourcing and community support (Figure 1.1). The measurement of these dimensions is contextual. What is effective legislation in one country may be entirely inappropriate in another with different legal and social systems. Similarly, it is only possible to assess the adequacy of resourcing for management in the context of some estimation of management needs.

Figure 1.1 The dimensions of 'capacity to manage'



Source: Adapted from Hockings and Phillips, 1999

Beyond such questions relating to the way in which protected areas are managed, the international community is even more interested in the outcomes of such management, i.e. the impact "on the ground". Issues such as the impact of protected areas on the conservation of biodiversity, and on other natural and cultural heritage resources, are of great concern. So too are the implications of protected areas for other sectors of public policy, such as social justice and sustainable development. Protected area evaluation programmes should be designed to throw light on such topics.

2. A framework for evaluating management effectiveness

The following chapter sets out a simple framework for assessing management effectiveness, based around the issues of **design**, **appropriateness** *and* **delivery** *discussed in Chapter 1. This present section summarises the key areas for assessment, and explains what they should contain and why they are important.*

2.1 The management cycle and evaluation

Management consists of several linked, iterative phases:

- planning
- resource allocation
- implementation
- monitoring and evaluation
- feedback

Management is usually influenced by contextual issues; in the case of a protected area by its significance and uniqueness, and the threats and opportunities that it faces. Evaluation must therefore look at all aspects of the management cycle, including the context within which management takes place. The results of evaluation can be fed back into different parts of the management cycle.

In practice, monitoring and evaluation of protected areas management require that a series of questions be asked relating to:

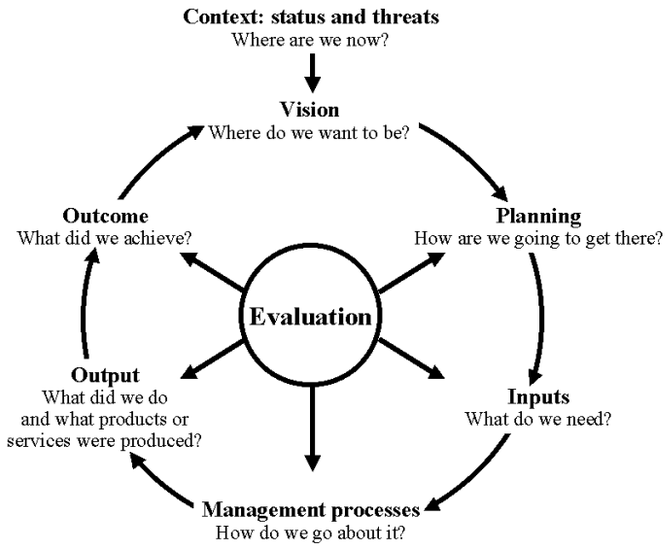
- design issues – i.e. context and planning;
- appropriateness of management systems and processes – i.e. input and process;
- delivery of protected area objectives – i.e. outputs and outcomes.

These concepts are basic to the advice given in the guidelines. They are shown diagrammatically in Figure 2.1, summarised in the following text and Box 2.1; and developed in subsequent chapters.

Design issues

Context *– Where are we now?*
This question looks at the conservation and other values of the protected area, its current status and the particular threats and opportunities that are affecting it, including the broad policy environment. This is not an analysis of management, but provides information that helps put management decisions into context. Where assessment is being

Figure 2.1 The management cycle and evaluation



used to identify management priorities within a protected area network, or to decide on the time and resources to devote to a particular protected area, this may be the main task required. It also helps to provide information about management focus. For example, if poaching is a major problem and there are no anti-poaching measures in place, then an important discrepancy has been identified; conversely the existence of extensive anti-poaching brigades when the poachers have moved on elsewhere may be a waste of resources.

Planning *– Where do we want to be and how are we going to get there?*
This question focuses on the intended outcomes for the protected area system or the individual protected area: the vision for which the system or site is being planned. Assessment may consider the appropriateness of national protected area legislation and policies, plans for protected area systems, the design of individual protected areas and plans for their management. It may consider the design of a protected area in relation to the integrity and status of the resource. The selected indicators for evaluation will depend on the purpose of assessment and particularly whether it is looking at a **system** of reserves or at an **individual** protected area. With systems, issues of ecological representativeness and connectivity will be particularly important; the focus of assessment of individual protected areas will be on the shape, size, location and detailed management objectives and plans. System assessments should consider, for example, if protected area systems omit or under-represent certain habitat types: and site assessments ask questions like whether the protected area is too small to protect biodiversity over the long term.

Box 2.1 Framework for assessing management effectiveness of protected areas and protected area systems

Elements of evaluation	Context	Planning	Input	Process	Output	Outcome
Explanation	*Where are we now?* Assessment of importance, threats and policy environment	*Where do we want to be?* Assessment of PA design and planning	*What do we need?* Assessment of resources needed to carry out management	*How do we go about it?* Assessment of the way in which management is conducted	*What were the results?* Assessment of the implementation of management programmes and actions; delivery of products and services	*What did we achieve?* Assessment of the outcomes and the extent to which they achieved objectives
Criteria that are assessed	Significance Threats Vulnerability National context	Protected area legislation and policy Protected area system design Reserve design Management planning	Resourcing of agency Resourcing of site Partners	Suitability of management processes	Results of management actions Services and products	Impacts: effects of management in relation to objectives
Focus of evaluation	Status	Appropriateness	Resources	Efficiency Appropriateness	Effectiveness	Effectiveness Appropriateness

Appropriateness of management systems and processes

Inputs *– what do we need?*
This question addresses the adequacy of resources in relation to the management objectives for a system or a site, based primarily on measure of staff, funds, equipment and facilities required at either agency or site level, along with consideration of the importance of partners.

Process *– how do we go about it?*
This question is about the adequacy of management processes and systems in relation to the management objectives for a system or a site. Assessment will involve a variety of indicators, such as issues of day-to-day maintenance or the adequacy of approaches to local communities and various types of natural and cultural resource management.

Delivery of protected area objectives

Outputs *– What did we do and what products or services were produced?*
Questions about output evaluation consider what has been done by management, and examine the extent to which targets, work programmes or plans have been implemented. Targets may be set through management plans or a process of annual work programming. The focus of output monitoring is not so much on whether these actions have achieved their desired objectives (this is the province of outcome evaluation) but on whether the activities have been carried out as scheduled and what progress is being made in implementing long-term management plans.

Outcomes *– What did we achieve?*
This question assesses whether management has been successful with respect to the objectives in a management plan, national plans and ultimately the aims of the IUCN category of the protected area. Outcome evaluation is most meaningful where concrete objectives for management have been specified in national legislation, policies, or site-specific management plans. Approaches to outcome evaluation involve long-term monitoring of the condition of the biological and cultural resources of the system/site, socio-economic aspects of use, and the impacts of the management of the system/site on local communities. **In the final analysis, outcome evaluation is the true test of management effectiveness.** But the monitoring required is significant, especially since little attention has been given to this aspect of protected area management in the past. Thus, the selection of indicators to be monitored is critical.

2.2 Evaluating management effectiveness using the WCPA framework

Ideally, systems for assessing management effectiveness of protected areas will incorporate components that cover each of the elements of evaluation outlined above. Because each type of evaluation has a different focus, they are complementary rather than alternative approaches to evaluating management effectiveness. Time series data for both inputs and outputs within a protected area or system can be particularly valuable in assessing changes in the efficiency of management and may enable a judgement to be made about the effectiveness of a change in management practice or policy.

However, assessments will be driven by particular needs and a partial evaluation can still provide very useful information (see following section). Except in the case of planning for the selection of sites for inclusion in a protected areas system, which is dealt

with only in an introductory form in these guidelines, the effort required to collect the relevant monitoring data increases from left to right across the model in Box 2.1. But so, too, does the value of the information collected. In Chapter 4, the indicators used for assessment are defined and elaborated.

2.3 Process guidelines for evaluating management effectiveness of protected areas

While the management effectiveness evaluation framework outlined here is designed to be flexible and accommodate the different needs and circumstances that apply around the world, there are general principles that apply to the way in which all evaluations of protected area management effectiveness should be conducted. This advice, which relates principally to the processes used in designing and conducting evaluations, is outlined in Box 2.2.

Box 2.2 General advice for evaluating management effectiveness of protected areas

The main objective of protected area evaluation is:

To improve conservation and management effectiveness of protected areas – both for protected area systems and individual protected sites.

The findings of evaluation can be used to help managers improve ongoing management of protected areas through adaptive management; to influence policy to improve protected area systems and management arrangements; and to provide accountability to, and raise awareness of, civil society.

Guidelines

The following ***general guidelines*** are suggested as a basis for assessment systems:

- Assessment systems should aim to be participatory at all stages of the process and should seek to involve all relevant organisations and individuals that may have a genuine and demonstrated interest in the management and/or use of a site.
- Assessment should be based upon a well-founded, transparent and comprehensible system. The findings should be readily accessible to all interested parties in a way that is appropriate to their needs.
- The management objectives and the criteria for judging management performance must be clearly defined and understood by the managers and assessors.
- Assessments of management effectiveness should focus on the most important issues –including threats and opportunities – affecting, or potentially affecting, the achievement of management objectives.
- Consideration of a range of factors (context, design, inputs, processes, outputs and outcomes) can all contribute to an assessment system.
- Performance indicators should relate to social, environmental and management issues, including the relationship between the protected area and its surroundings.

(Cont.)

Box 2.2 General advice for evaluating management effectiveness of protected areas (cont.)

- Limitations of the evaluation should be clearly identified in the assessment report.
- The system should be capable of showing change over time through periodic assessments.
- In reporting on assessment, strengths and weaknesses should be identified and issues should be divided between those that are within and outside the manager's control.
- Assessment should allow prioritisation of conservation effort.
- Clear recommendations for improving management performance should be included in all assessments. Management processes should ensure that the findings and recommendations of evaluation feed back into on-going decision- making so as to improve management performance.
- The methodology for evaluation should be progressively verified and refined as necessary.
- Assessments should be based on sound and appropriate environmental and social science.
- Assessment is likely to include both quantitative and qualitative information that should be supported by measurement or other evidence.

3. Applying the framework – a toolkit

This section explains how the framework can be applied in practice to help develop assessment systems suited for particular needs and circumstances. It considers the following issues:

- *what level of assessment is needed?*
- *how should the assessment be reported and presented?*
- *what indicators are needed?*
- *applying the framework at site and system scale; and*
- *who should carry out the assessment?*

Assessments can be applied both to individual protected areas and to protected area systems or agencies. The following section applies to both alternatives.

3.1 What type of evaluation is needed?

The framework can be applied at different levels depending on circumstances, resources and needs. Three broad levels of monitoring and evaluation are proposed (Figure 3). Establishing the purpose of the evaluation is important as a first step, together with a decision on how much time and effort can be committed to the evaluation.

As noted, evaluation of management outcomes provides the most meaningful measure of management effectiveness. Assessment of management outcomes in relation to objectives should be included in the evaluation system whenever possible. However, other elements of the evaluation framework are also important. Assessments of the adequacy of management inputs, processes and outputs may be of particular interest to the agency responsible for management.

Managers will need to decide at what level the evaluation is to be conducted. The three possible levels of evaluation outlined below represent three general approaches that may be adopted: a decision should be made at the outset as to which is the most appropriate in the circumstances. The levels are **not** intended to be a sequential process, with a Level 1 evaluation leading to a Level 2 evaluation and so on. They do however represent a shift in the focus of the evaluation, from an assessment of context, inputs and processes towards a concentration on outputs and outcomes (Figure 3.1).

- Level 1 requires little or no additional data collection but uses readily available data to assess the *context* of the protected area network, or individual site, along with the appropriateness of *planning, inputs* and *processes* of management. Assessment of management processes is often judged against generic criteria that are applicable across a wide variety of protected areas but are not adapted to directly match local circumstances. It may include limited assessment of outputs and outcomes. Assessment relies largely on literature research and the informed opinions of site or system managers and/or independent assessors.

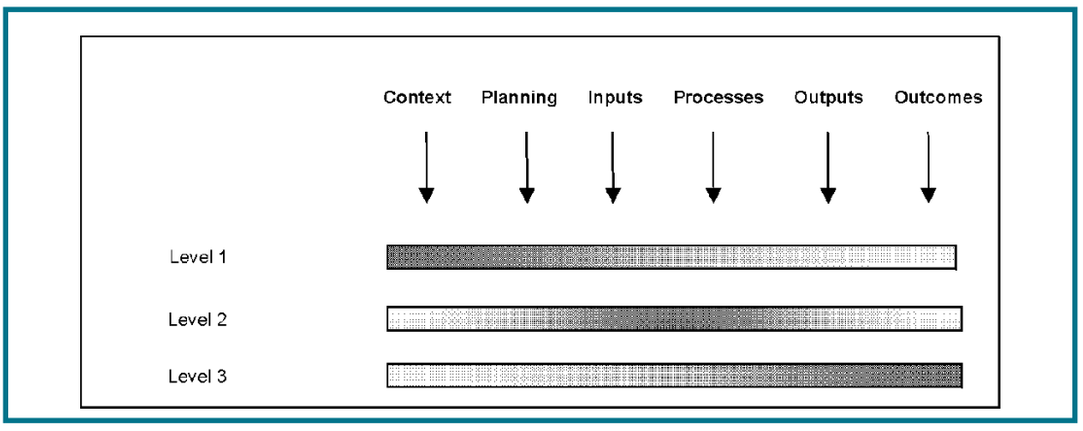
- Level 2 combines the approach taken in Level 1 with some additional monitoring of *outputs* and *outcomes* of management. In addition, the indicators used in making assessments may be adapted to suit local or site specific management standards or circumstances.
- Level 3 places greatest emphasis on monitoring the achievement of management objectives by focussing on *outputs* and *outcomes* while retaining measures of management *context, planning, inputs* and *processes* used in Levels 1 and 2. Level 3 evaluations are directed mainly at the site level.

As a general guide the following attributes apply to the different levels of evaluation (level 2 is usually intermediate between levels 1 and 3 in relation to these attributes):

Time:	Level 1 can usually be undertaken rapidly; level 3 may take significant time with requirements for on-going monitoring of outcome indicators;
Cost:	Level 1 is likely to involve a lower cost; level 3 a higher cost;
Audience:	Level 1 is primarily for policy makers; level 3 for field managers and other local stakeholders;
Actors:	Level 1 often utilises outside consultants; level 3 uses primarily internal staff and other local stakeholders;
Depth of enquiry:	Level 1 is often shallow but wide; level 3 is more often narrow but deep;
Purpose:	Level 1 is primarily for prioritisation and broad comparison; level 3 for tracking improvement and adaptive management;
Cycle:	Level 1 usually occurs at a specific point in time, during times of policy decision making; level 3 is more likely to be part of an ongoing system of monitoring and evaluation.

A project's objectives will often determine the level at which the framework is applied. For example, an NGO reviewing a national protected area system for advocacy purposes is more likely to use a level 1 evaluation, whereas, if funding is available, protected area authorities trying to establish the effectiveness of individual sites would usually be better served by a level 3 evaluation.

Figure 3.1 Levels of monitoring and evaluation



Guidance on the appropriate level of monitoring and evaluation can also draw on an initial assessment of *context* (See Chapter 4 for a more detailed discussion of indicators which can be used to determine this). In relation to sites, choice of the appropriate level of evaluation may not be clear. Some key issues to take into consideration in making this decision are listed below:

- **National and/or global significance**
  Sites of high conservation value warrant considerable monitoring effort so that impacts and emerging threats can be addressed. Less significant sites may not warrant intensive monitoring.

- **Vulnerability of site's resources**
  Issues relating to the vulnerability of a system or a site can range from an insecure legal status to physical impacts that undermine individual sites. Heavily used sites, for example, are more likely to be subject to anthropogenic changes than sites that receive little use. The nature of use is also significant, with more extensive monitoring required where extractive uses are involved. Some habitat types are also likely to be particularly vulnerable to disturbance.

- **Extent and severity of known threat and impacts to site values**
  In some cases, particular threats to the values of one or more sites can justify specialised monitoring of both the extent of threat and the effectiveness of management response.

- **National context**
  The capacity of countries to support protected area management is dependent, amongst other things, on national wealth. Wealthy countries should be able to provide greater resources for management and consequently to put more effort into monitoring and evaluation. GNP can be used as a convenient indicator. However lack of resources does not necessarily mean that evaluation should be regarded as low priority: it may in fact help to secure additional resources through grants or other external support.

These criteria can be assessed qualitatively, and a scoring system derived (see Box 3.1) In many cases, however, this will not be necessary; assessment is expensive and care should be taken to maximise efficiency and minimise waste. This qualitative assessment is only a guide and other factors may influence the decision about the required level of monitoring and evaluation.

Box 3.1 Criteria for selecting the appropriate level for evaluating management effectiveness for individual sites

Criterion	Condition	Score
Significance	System/site is globally important (i.e. contains high levels of endemism, or globally endangered biomes/species)	3
	System/site is regionally but not globally important	2
	Other sites/systems	1
Vulnerability	System/site is highly vulnerable to impact from legal or illegal use	3
	System/site is moderately vulnerable	2
	System/site is not particularly vulnerable	1
Extent of threat	Significant threats to system/site values are known to exist	3
	Threats to system/site values are suspected or are likely to occur but their extent and significance are not known	2
	Significant threats to system/site values are not suspected	1
National context in relation to GNP per capita*	National economy classified as high income (GNP > $9361)	3
	National economy classified as upper middle income ($3031>GNP<$9360)	2
	National economy classified as low-lower middle income (GNP < $3030)	1

* Using the World Bank classification – current figures are given in 1998 US$

The recommended level of evaluation is based on the sum of scores as follows:

Total score	Level of evaluation
4–6	Level 1
7–9	Level 2
10–12	Level 3

Some practical examples of how to select the level of assessment are given in Box 3.2.

Box 3.2 Some examples of selection of the appropriate level to assess management effectiveness

Site:	**Kerinci Seblat National Park, Indonesia**		
Significance:	3		
Reason for rating:	Endemic threatened species, largest reserve in Sumatra, very high biodiversity		
Vulnerability:	3		
Reason for rating:	Moderate levels of extractive use, low but increasing levels of tourism		
Threats:	3		
Reason for rating:	Encroachment around Kerinci enclave common, lowland forestry operations threaten lowland forests with significant biodiversity values		
National context:	1		
Per capita GNP (1998 US$):	$640		
Total score:	**10**	**Level of evaluation:**	Level 3
Site:	**Bokor National Park, Cambodia**[1]		
Significance:	2		
Reason for rating:	High tourist value, threatened endemic species but these are also present in other reserves, extensive forest on elevated plateau		
Vulnerability:	3		
Reason for rating:	High levels of exploitative use (poaching, logging and forest clearance are all major problems), no management framework or staffing in place		
Threats:	3		
Reason for rating:	Extensive illegal logging and agricultural encroachment, poaching		
National context:	1		
Per capita GNP (1998 US$):	$260		
Total score:	**9**	**Level of evaluation**:	Level 2
Site:	**Acacia Island National Park, Australia**		
Significance:	1		
Reason for rating:	Small island off the central Queensland coast; many larger island protected areas exist in the same area.		
Vulnerability:	1		
Reason for rating:	Island is remote and little visited		
Threats:	1		
Reason for rating:	No known threats; low level of use, and small size suggest threats are not likely		
National context:	3		
Per capita GNP (1998 US$):	$20640		
Total score:	**6**	**Level of evaluation:**	Level 1
Site:	**Fraser Island World Heritage Area, Australia**		
Significance:	3		
Reason for rating:	World Heritage listing		
Vulnerability:	3		
Reason for rating:	Site is used extensively for passive recreation, little exploitative use (fishing)		
Threats:	2		
Reason for rating:	Some evidence of recreational impacts on coastal zone and water quality		
National context:	3		
Per capita GNP (1998 US$):	$20640		
Total score:	**11**	**Level of evaluation:**	Level 3

[1]Jeremy Carew-Reid, personal communication

In practice, users choose both the level of assessment and the range of issues that are to be assessed. Box 3.3 illustrates where some existing systems fit in terms of both the level of detail and the range of assessment (see the case studies in Part B for a more detailed analysis of some of the systems listed below).

Box 3.3 Applying the framework – some examples

Level of detail	Context	Planning	Input	Process	Output	Outcome
Quick & broad	Forest Innovations Africa[1] WWF Brazil		World Bank Paper parks[2] Fraser Is[3] TNC PROARCA CAPAS[4]	Fraser Is	World Bank Paper parks	World Bank Paper parks WWF Brazil WWF/CATIE
Mid-range	WWF/CATIE[5]		WWF Brazil[6] WWF/CATIE	TNC PROARCA CAPAS Forest Innovations Africa	WWF/CATIE	Forest Innovations Africa
Focused & detailed				WWF/CATIE	Fraser Is	Fraser Is

[1]Hakaziamuambi (2000) [2]Dudley and Stolton (1999) [3]Hockings (1998) and Hockings and Hobson (2000)
[4]Courrau (1999b) [5]Cifuentes and Izurieta (1999) [6]Ferreira *et al.*, (1999)

3.2 How should the assessment be reported and presented?

Assessments are undertaken to help protected area managers and others to improve protected areas. The ways in which assessments are presented and used should therefore be tailored to particular needs rather than necessarily following a set pattern.

A key decision is whether the assessment should be "scored" – usually by a single or a series of numerical scores or attainment of set standards – or whether it should be presented in terms of written or verbal reports. Scores are attractive from the point of view of policy-makers and NGOs. They give an instant overview of relative success and a way of comparing protected areas. However, on their own they may provide little information about why a protected area is "good" or "bad" and they risk over-simplifying complex issues. Protected area managers generally look for more detailed reporting, with quantitative data and analysis.

A balance must therefore be sought between the richness of the information and the speed at which it can be assimilated: a combination of both approaches is possible and often desirable. Some options for the presentation of results are summarised below:

- **Verbal report**: the simplest presentation is a verbal report from the assessor to protected area staff or managers, or others who have commissioned an assessment. Such an approach is seldom enough in itself – some more permanent record usually being required – but is a valuable component of presentation in that it allows immediate questions and feedback.
- **Written report**: most assessments should be preserved in some permanent way in electronic or paper form to allow later comparison and to allow lessons learned to be shared between protected areas. Written reports can vary from brief overview of major conclusions to detailed documents containing large amounts of primary data.
- **SWOT analysis**: one way of presenting results is in the terms of an assessment of strengths, weaknesses, opportunities and threats (SWOT), perhaps as an adjunct to a more detailed report or as a summary document. This approach provides a very quick overview of key policy points requiring decisions.
- **Standards:** an intermediate step between written assessment and scoring is the measurement of success against agreed standards, which might vary from numerical targets to descriptive conditions. Attainment of standards is seldom clear-cut and requires some measure of value judgements by assessors or inspectors; thus such approaches will require input from trained people.
- **Scoring**: various options for scoring exist, again either through reaching numerical targets or by reference to varying standards. Scoring is particularly useful for assessing management processes or other components of management where clear and relatively stable standards can be established in advance. Scores can be set for each of the indicators or summed together to provide scores for each of the criteria or for the protected area system or site as a whole. A number of methodologies, such as those developed by WWF/CATIE (Cifuentes and Izurieta 1999) and The Nature Conservancy (Courrau, 1999a) have successfully applied a scoring approach to all aspects of assessment.
- **Monitoring and evaluation**: where funding for assessment is more secure, longer term monitoring may be possible, allowing changes to be measured over time. Major evaluations of this sort are critical to building up long-term information

about management techniques but are by their nature often expensive. Therefore the information is likely to be used within many protected areas and should be widely accessible, for example on a web site. (Not all monitoring and evaluation is expensive; amateur naturalists provide some of the most useful information about long-term reserve quality by, for example, regular counts of birds.)

3.3 What indicators are needed?

As it is not practical to measure directly all the attributes that relate to protected area management (either the condition of the environment itself or aspects of management action), a limited number of representative indicators need to be selected. The selection of priority issues – and hence indicators – for monitoring should be guided by the natural, cultural and social values of the area, which, in turn, can be guided by an assessment of the *context* within which the site or system is operating (see for example, Box 3.4).

Box 3.4 Approaching the selection of performance indicators

In developing the evaluation system for the Tasmanian Wilderness World Heritage Area, project staff have found it useful to prioritise the selection of performance indicators on the basis of their ability to provide:

- information about the extent to which key management objectives are being achieved;
- information about the condition of the most significant conservation values (especially those perceived as being at risk);
- information about the level or extent of perceived threats, pressures or risks to significant values;
- information that can help resolve important, complex or controversial management issues (including social issues);
- information that can be particularly useful in guiding ongoing decision-making (especially management direction and priorities);
- information that can provide feedback about the outcomes of big expenditure management items or programmes.

Source: Glenys Jones (pers. comm., May 2000).

The selection of indicators is not a simple process and calls for judgement on the part of the programme designers. Suggested criteria are set out in Box 3.5.

It is important that data collection programmes for the selected indicators can be sustained in terms of budgets and staff skills. Simple indicators are generally preferable to complex ones. For example, Hockings and Twyford (1997) showed that a simple indicator of camping impacts in the Fraser Island World Heritage Area could be developed from monitoring of aerial photographs. This provided sufficient reliable information to guide decision-making at a fraction of the effort and cost required by on-ground survey methods and indicators. If assessments are to be reported widely, the

Box 3.5 Criteria for selecting indicators

Indicators to measure management effectiveness should:

- have an unambiguous, predictable and verifiable relationship to the attribute being assessed;
- be sensitive to change in the attribute being assessed;
- integrate environmental effects over time and space (i.e. reflect enduring change rather than short-term or localised fluctuations in conditions);
- reflect changes and processes of significance to management (including biophysical, social, cultural, economic, political and managerial attributes);
- reflect changes at spatial and temporal scales of relevance to management;
- be cost-effective in terms of data collection, analysis and interpretation;
- be simple to measure and interpret;
- be able to be collected, analysed and reported on in a timely fashion.

Source: Centre for Coastal Management, 1993; Briggs *et al*., 1996 and Abbot and Guijt, 1998.

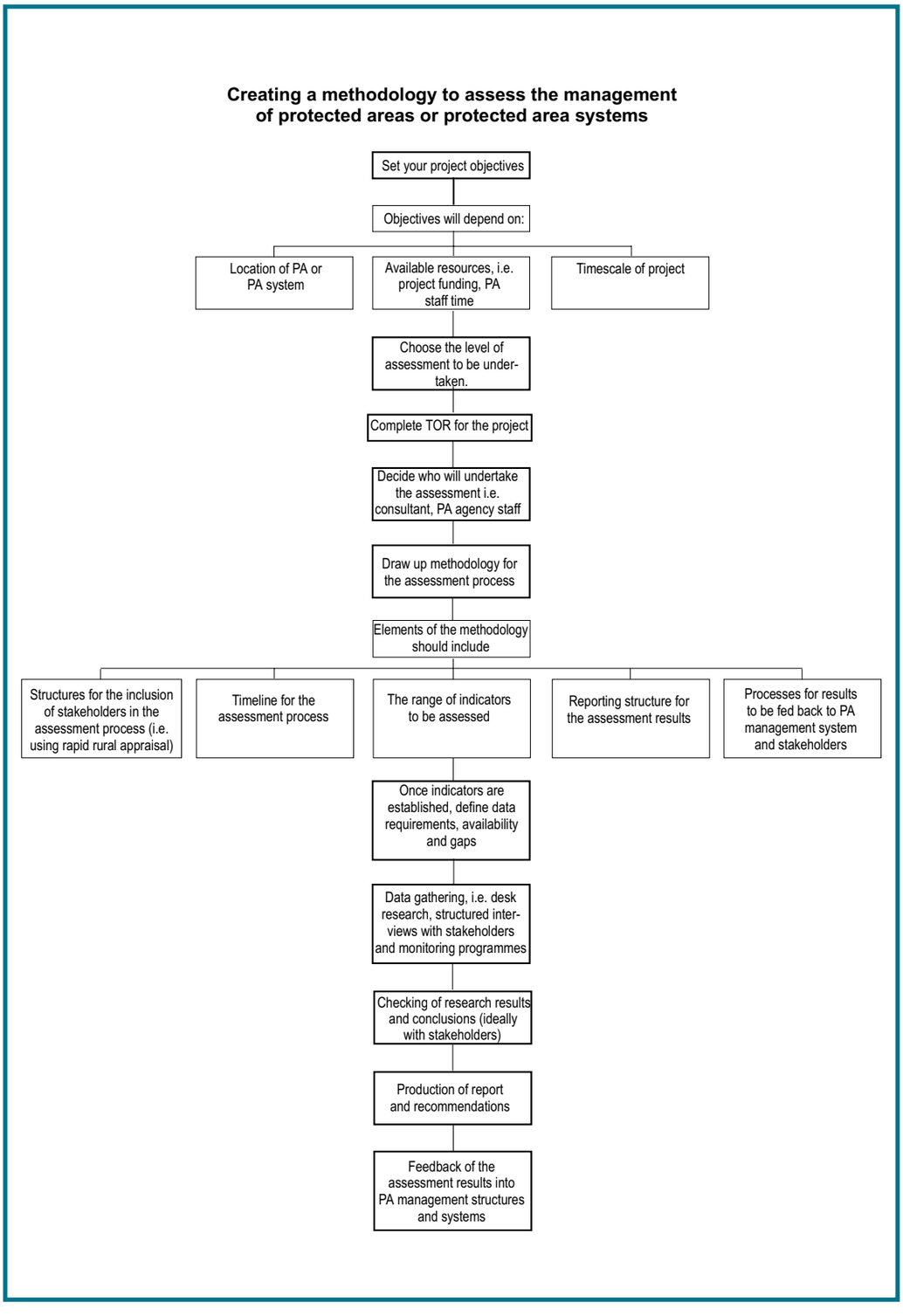
extent to which indicators are understandable by the non-specialist is also a consideration.

Because indicators should measure the achievement of management objectives, a common set of indicators for several protected areas in different locations can be developed only where these areas share common objectives. For example, general objectives specified in the IUCN Guidelines for Protected Area Management Categories (IUCN, 1994) could provide the basis for a common set of indicators (see Appendix 1). These could be modified for regional differences in legislation or agency policy, and fine-tuned to match the particular environmental, social and managerial characteristics of an individual protected area or system.

3.4 Developing an evaluation system

The WCPA Management Effectiveness Evaluation Framework provides a structure within which an evaluation system for a protected area system or site can be designed. A process for developing such a system is outlined in Figure 3.2. To use this framework indicators will be needed for each element of evaluation. Box 3.6 provides a list of possible indicators, and this is followed in Chapter 4 by a discussion of each element and ways in which indicators can be defined and elaborated to assess these.

Figure 3.2 Flowchart for developing an evaluation system



Box 3.6 List of some potential indicators within the framework

<table>
<tr><th>Context
Where are we now?</th><th>Planning
Where do we want to be?</th><th>Input
What do we need?</th><th>Process
How do we go about it?</th><th>Output
What were the results?</th><th>Outcome
What did we achieve?</th></tr>
<tr><td>Significance
Cultural
Biological
Environmental services
Economic
Uniqueness
Aesthetic</td><td>PA Legislation and Policy
Adequacy of PA legislation
Adequacy of PA policy</td><td>Resourcing of Agency
Staff
Funds
Equipment
Infrastructure</td><td rowspan="4">Implementation of management processes
Planning
Maintenance
Facility development
Patrol and enforcement
Communication
Education and advocacy
Training
Research
Monitoring and evaluation
Reporting
Natural resource management
Cultural resource management
Visitor management
Management of resource use by humans (extractive, tourism)
Participation
Conflict resolution
Personnel management
Budget and financial control</td><td>Achievement of planned work programme
Extent of implementation of:
– management plan
– annual work programmes
– annual budget expenditure</td><td rowspan="4">Impacts – effects of management with regard to objectives
Qualitative or quantitative assessment of achievement of objectives in relation to:
1. management plans or other relevant plans or documents;
2. specific threats; and
3. generic PA objective of biodiversity conservation
4. specific objectives relevant to each IUCN PA category</td></tr>
<tr><td>Threats
Inappropriate general resource policy
External threats (e.g. pollution)
Internal impacts (e.g. agriculture, poaching)
Resource extracts (e.g. logging mining)</td><td>PA system design
Comprehensive
Adequate
Representative
Connectivity
Viability</td><td>Resourcing of site management
Staff
Funds
Equipment
Infrastructure</td><td>Services and products
Quantitative measures of services and products arising from management processes</td></tr>
<tr><td>Vulnerability
Legal status
Boundary demarcation
Fragility
Susceptibility to environmental impacts (e.g. natural disasters, climate change)
Current resource condition
Extent and nature of use</td><td>Reserve design
Viability
Boundaries
Connectivity
Tenure
Customary use
Scale
Buffer zone</td><td>Partners
Engaging right partners</td></tr>
<tr><td>National context
National wealth
Consideration of conservation needs in national policies</td><td>Management planning
Existence of clear objectives and management plan
Identification of resource needs</td></tr>
</table>

4. Detailed description of the indicators

This Chapter looks at each of the indicators in turn, sub-divided between the six main elements:

- *context;*
- *planning;*
- *input;*
- *process;*
- *output; and*
- *outcome.*

It considers the criteria to be assessed within each element of the evaluation framework and discusses some of the factors that should be taken into account in developing performance indicators for these criteria.

4.1 Element 1: Context: *Where are we now?*

Putting individual protected areas or protected area systems into context can help determine the level of detail that an assessment should take and provides a background against which subsequent evaluation and monitoring can be interpreted. Context is therefore often the first element to consider and sometimes needs to be undertaken before the main assessment in order to determine the level and direction of this evaluation.

Four main criteria have been identified which can help provide the context within which the assessment is made:

1. *Significance*, from a biological and cultural perspective, including the environmental services a site or system provides.
2. *Threats* to protected areas through inappropriate resource use and extraction, including external as well as internal threats.
3. *Vulnerability*, whether due to the lack of a clearly defined legal status or boundaries, or fragility due to the extent of use.
4. *National context*, including the wealth of a country and the resources provided for protection, and whether the policy environment is supportive to conservation in general and protected areas in particular.

Assessing significance

The designation of an area under international conventions or other legal instruments is a clear indication of global significance. The principal global designations of relevance are World Heritage sites (natural, mixed natural/cultural sites, and some cultural landscapes), and Ramsar wetlands, but there are other international designations of regional relevance (e.g. ASEAN Heritage sites, or Natura 2000 sites in Europe under the EC Birds and Habitats Directives).

Sites of international significance may also be identified through recognised international programmes such as biosphere reserves designated under the UNESCO Man and the Biosphere Programme. BirdLife International's globally and regionally Important Bird Areas is another excellent programme (e.g. Grimmett and Jones, 1989; Heath and Evans, 2000) as is their related Endemic Bird Areas of the World (Stattersfield *et al.*, 1998). WWF's Global 200 eco-regions analysis, which identifies critically important habitats for biodiversity conservation, is a further indicator of significance (Olson and Dinerstein, 1997).

WCMC (1996) provides a basis for assessing priorities for selection of sites for inclusion in protected areas that can be adapted to help identify globally and nationally significant sites. Globally significant sites are likely to contain:

- endemic threatened species;
- globally threatened species for which the country holds a significant part of the world population;
- other globally threatened species;
- ecosystems unique to the country; and/or
- ecosystems for which the country holds a significant part of the world total.

Nationally significant sites are likely to contain:

- nationally threatened populations of globally non-threatened species;
- endemic non-threatened species; and/or
- species-rich ecosystems.

At a site level, a rough guide is that sites that are large, by national standards, can be regarded as being at least of national significance. Sites of only essentially local significance are likely to be relatively small and contain habitats and species that are well represented in other larger protected areas within the country.

Sites can also be significant for their uniqueness of form in terms of geology and for their aesthetic beauty. Although this latter indicator is difficult to judge, the significance of an area could be reflected, for example, by whether a site or sites are a particular focus of artistic interpretation.

Protected areas are also increasingly being recognised for their role in providing social and economic benefits and for the environmental services that they provide. Many of them are the homelands of indigenous people and other local communities and may contain significant human populations, provide the natural resource capital needed to maintain livelihoods, and are of spiritual, cultural or historical importance. The populations living in, and/or reliant upon the protected area should be identified. Sites of spiritual, cultural or historical significance should be identified and classified.

For a proportion of the world's population, protected areas are associated with leisure activities. Measures of the importance of recreational visitors can be developed from visitor numbers, fees or permit applications (Hornback and Eagles, 1999). Protected areas also provide important, and sometimes unique, sites for research and education; these values should also be assessed.

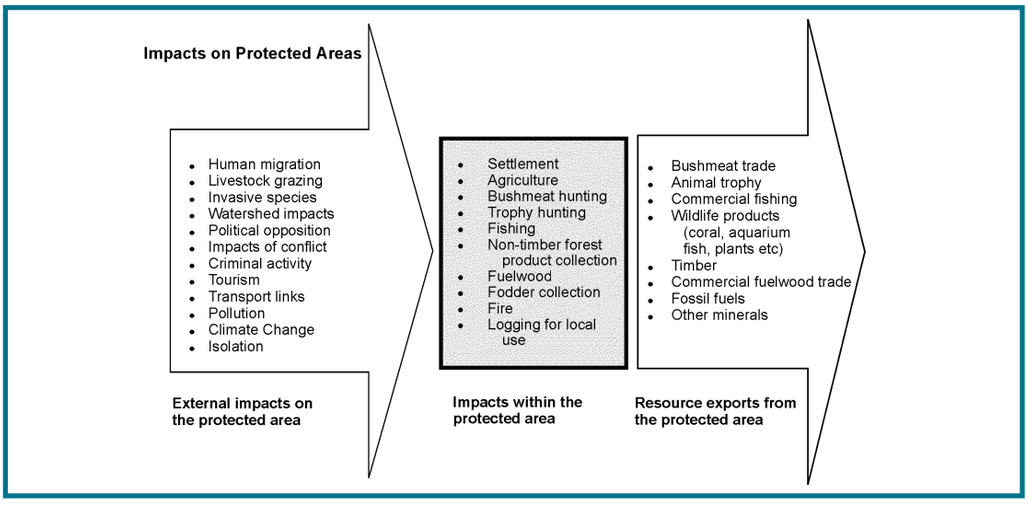
Of growing importance is the role of protected areas in providing environmental services. These include maintaining watersheds, and thus water supplies and quality, soil stabilisation, local climate mitigation and protecting coastal communities against the impact of storms. The onset of climate change raises the importance of protected areas in this respect, as they can be a buffer against the effects of extreme climatic events, such as floods, landslides and avalanches. Moreover, forest protected areas are important in tackling the causes of climate change by supporting the role played by natural ecosystems in carbon sequestration. Environmental services will often be outlined in the objectives of protected systems and sites.

Considerable work has been carried out recently on the economics of protected areas to establish the role which they play in regional or national economies. Sophisticated methodologies are now being developed to assess the economic benefit of protected areas, which go beyond the simple calculation of payments made by visitors in entry fees and other charges (e.g. Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Service Unit of IUCN, 1998).

Threats[1]

The type and severity of threats to a protected area are also key in determining how much effort to put into assessment. Indeed, few if any protected areas are immune from one type of threat or another – and many are vulnerable to a range of them. Threats vary from those posed by inappropriate government policies (such as including protected areas within logging concessions) to illegal activities such as poaching. Some key types of threat are outlined in Figure 4.1 below.

Figure 4.1 Types of threats to protected areas (from Carey *et al*., 2000)



[1] This information is taken from Carey, C., Dudley, N. and Stolton, S., 2000. *Squandering Paradise: The importance and vulnerability of the world's protected areas*. WWF, Gland, Switzerland.

Many of the external threats – such as air pollution or climate change – will be beyond the control of individual managers, but should nonetheless be included within the assessment because they impact on the attainment of management objectives. Impacts arising from threats occurring within the protected area, including extraction of resources from it, are, at least in theory, capable of more immediate remedial action. Most of the indicators used to measure threats will be numerical – for example estimates of the amount of bushmeat poached from within a protected area. In some cases, however, detailed studies will be required to understand the nature of the threat, e.g. by looking at pollution impacts on sensitive indicator species.

Vulnerability

The vulnerability of the site is a measure of the extent to which a protected area can withstand or absorb the impacts of the threats outlined above. Vulnerability has both human and natural dimensions.

The starting point is the legal status – which is frequently less clearly understood by protected area authorities than might be expected. A survey undertaken of protected areas in India, for example, found that only a third had their legal status confirmed (Kothari *et al.*, 1989). Lack of legal status weakens the ability of protected area managers or authorities to resist challenges to the area's integrity. Stages include official recognition by the government, initiation and completion of legal recognition; sometimes the whole process can take several years. Boundary demarcation is also important. Failure to set accurate boundaries makes it far harder for protected area staff to resist encroachment; staff may not know where the boundaries lie and each external challenge will then have to be confronted individually without any certainty as to the outcome. Also relevant is the existence of legal agreements with local communities to use protected area resources, plus an estimate of illegal uses (which could be assessed via the threats indicators) and estimates of visitor numbers and pressures.

Some habitat types are naturally resilient and can recover from even quite catastrophic change, while others can be permanently altered as a result of quite minor degradation. Specific issues to consider might be viability of populations of species of particular concern (e.g. their ability to resist current poaching pressure, or changes in aquatic life due to changes in hydrology arising from developments beyond the boundaries of the protected area). Current resource condition is therefore also important, as is the extent and nature of use. The susceptibility of the area to natural disasters (e.g. frequent cyclones) or to the possible impacts of climate change is also relevant.

National context

Assessments – particularly of protected area systems or of protected areas in more than one country – should also reflect something of the national context, including the ability and willingness to pay for protection. The context section could therefore include brief reference to the consideration of conservation needs and of protected areas within broader national policies, along with an indication of whether policies appear to be followed through in practice. Indications of ability to meet the costs of management are also important, including national wealth, debt and indications of national and international support for conservation.

4.2 Element 2: Planning: *Where do we want to be?*

Key criteria to be covered in this section include:

- protected area legislation and policy;

- design of protected area systems;
- design of reserves;
- tenure and customary use issues; and
- management planning.

Protected Area Legislation and Policy

A general analysis of the adequacy of protected area legislation and policy may be needed. This would normally just require an analysis of literature about legislation and an assessment of its adequacy. Such analysis will be particularly important if more than one country is being surveyed.

Design of protected area systems

At its simplest, this involves assessment of the number and extent of protected areas. Such information provides a basic measure of the emphasis given to protected areas. The growth and overall extent of protected areas is, however, not a sufficient measure of the adequacy of a network. This is because the areas selected may not adequately represent the biodiversity and other natural and cultural resources that the system aims to conserve. Methods and criteria for systematically selecting areas for inclusion in a protected area network have received much attention. MacKinnon *et al.* (1986) and Davey (1998) provide reviews of the extensive literature on this topic. Such methods aim to improve the effectiveness of the protected area system by ensuring that key features of interest are included within the network.

Design of reserves

Management logically follows a process of planning for the location and design of reserves. Where choices exist, it will always be important for planning to anticipate management needs and to leave managers with as few problems as possible. Examples of planning issues that affect subsequent management are the size and shape of reserves, their past use and condition, their location relative to intrusive adjacent land uses, alignment of boundaries with watersheds, maintenance of migration routes, connectivity between patches of suitable habitat, and negotiations with neighbours. Ideally, difficulties encountered with management should be fed back into the planning process, so that the design of established reserves is rationalised (e.g. to enclose complete watersheds, to exclude inholdings of private land, and to maintain connections between reserves and other tracts of natural or semi-natural land). However, changing the design of protected areas (i.e. altering their boundaries) once in place can be difficult, although not impossible. Alternatively, instead of modifying boundaries, protected area managers may need to explore the scope for making agreements with adjoining owners (e.g. on the protection of remnant areas of native vegetation). Experience in managing existing protected areas will also offer lessons for the planning of new reserves. In any case, close communication between planners and protected area managers is important.

The size of a reserve influences many aspects of management. It will determine the viability or likelihood of long-term survival of many species, perhaps including some for which the reserve was established. This is especially so when a large park or reserve protects a large species' population, since larger populations of species have a higher probability of persistence. A large protected area also helps increase resilience by enabling the protected area to withstand gradual changes (for example through climate change) or sporadic major changes, such as fire, population crashes amongst keystone species or catastrophic pest outbreaks. Size is also relevant to the ability of the reserve to

contain a natural disturbance regime, without the need for active intervention to simulate these dynamics.

Other relevant factors are shape, connectivity and integrity. More compact reserves, other things equal, can be more resistant to edge effects and invasive species. Also, a protected area that consists of a narrow coastal strip, for example, without room to expand landwards in case of sea-level rise, is susceptible to climate change (leading to the so-called "coastal squeeze" effect). Connectivity refers to the degree to which an individual protected area is connected to other protected areas within the network, or to land managed sensitively for wildlife through, for example, corridors, "stepping stones" for migratory species and buffer zones. The integrity of a reserve, or its insulation from adverse outside influences, depends not only on size and shape but also on the nature of the boundaries: for example, alignment of reserve and watershed boundaries in all but the flattest landscapes reduces or eliminates water-borne pollutants from outside.

Full guidelines for assessing the design aspects of protected areas and protected area networks are being prepared by a section of the WCPA Management Effectiveness Task Force.

Management planning

Even if protected area systems and individual reserves have been well designed, protected areas still need sound management. This criterion reflects the need for clear objectives for the protected area, supported by a management plan and adequate resources. Important indicators here will include both the existence of objectives and plans and some assessment of their quality – including scope and the clarity and practicality of their aims. The existence of a system of management effectiveness evaluation, and of a process for ensuring the results of such evaluations are fed back into management decisions are also indicators of effective planning systems.

4.3 Element 3: Input: *What do we need?*

Input evaluation seeks to answer the questions:

- are sufficient resources being devoted to managing the protected area system/site?
- how are resources being applied across the various areas of management? and
- is the project working with the right partners?

Adequacy of resources

The principal resources of interest, which can be used as indicators of input, are:

- funds;
- staffing;
- equipment and infrastructure.

Funds: The basic data set of budgetary information should consist of the following items (at an Agency scale the protected area management budget allocation should be aggregated across sites):

- the site/agency total annual budget allocation;
- budget separated at site level according to:

expenditure type:

- salaries;
- capital;
- maintenance and operations.

source of funds:

- main budget allocation;
- revenue earned from fees etc.;
- grants from outside bodies.

- value of in-kind contributions to management.

Staffing: The basic data set should consist of total staff numbers categorised by:

- location (head office/regional offices/on-park/off-park);
- function;
- skills and training;
- in-kind contributions from volunteers/other agency staff.

Equipment and infrastructure: The presence and adequacy of equipment, such as vehicles, field and office equipment, and infrastructure such as tracks, roads and buildings, should be recorded. They provide a basis for assessing the adequacy of current resources, since this requires a determination of equipment and infrastructure needs. Needs should be indicated within a management plan, or be capable of being inferred from objectives.

Application of resources

Data on staffing and funding will be most useful if information is available by management purpose, as this gives an indication of the directions and priorities of management. For example, knowing that 20 per cent of resources are devoted to natural resource management and 30 per cent to visitor management is more useful, in the context of evaluating management effectiveness, than knowing that 10 per cent is devoted to planning and 15 per cent to travel.

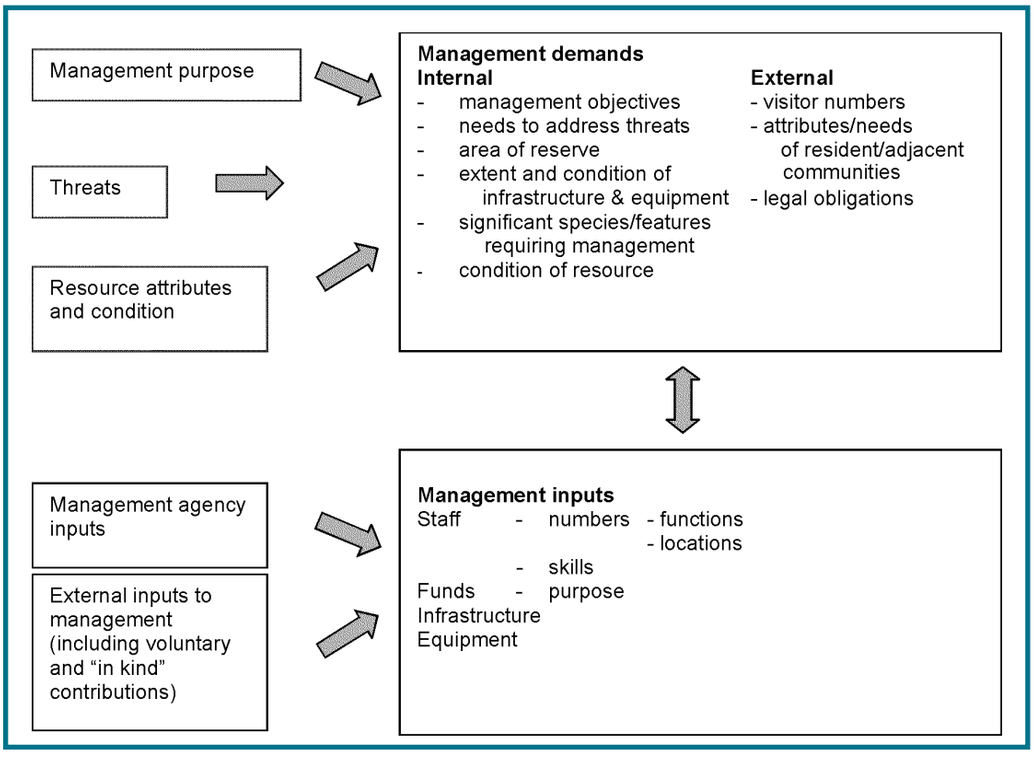
Broad categories to be used in assessing levels of input could include:

- natural resource management;
- cultural resource management;
- visitor management; and
- community liaison and development.

The level of resourcing needs to be measured in relation to the size of the management task and within the standards of the national and regional area. The relationship between inputs and management demands is complex and is illustrated in Figure 4.2.

Assessing management demand often relies on the manager/assessor using his/her best judgement to estimate the level of staff and funds that are required to manage the system/area to meet agreed objectives. This is a qualitative judgement and its accuracy will depend on the knowledge and experience of the person making the estimation.

Figure 4.2 The relationship between management demands and management inputs, and the influences on both



This estimate may be prepared in many ways. It will be most accurate if the management is divided into a series of tasks or activities and separate estimates are made of the needs of each. The basis of division should match the way in which work and funds are organised for the area. For example, it may be organised according to management process (e.g. research, planning, maintenance, development, education and extension, law enforcement) or by management function (e.g. natural resource management, cultural resource management, visitor management, community liaison and development). Explanatory notes need to accompany the calculations so that the basis on which they were prepared is readily apparent. This is important to ensure that figures between years, or between sites within a protected area system, can be properly compared.

Demand for resources cannot be properly estimated without understanding the objectives of management and the current state of the biological, social and cultural environment (i.e. the *context). Planning* therefore underpins this process. Furthermore, the information derived from monitoring should feed back into planning.

The need for this contextual understanding increases from site to global scales. For example, comparing expenditure across time within a site or between sites in the same country has more meaning than a comparison of expenditure per unit area between a heavily visited system of protected areas in a wealthy country and a little visited system in a poor country.

The limitations on use of financial and staffing data, in the absence of contextual information, have been well recognised (James *et al*., 1997). However, although only limited comparative data are available, they can provide some indication of whether an area is receiving more or less resources than comparable areas in similar circumstances. For example, James *et al*. (1997) estimated a global mean budget of US$776 per km^2 for protected areas, with mean values of US$57 per km^2 for South America, US$143 per km^2 for Sub-Saharan Africa and US$390 per km^2 for South and Southeast Asia.

Comparing sites will always be difficult because of the particular conditions that affect management requirements in each area. Benchmarking within national and regional contexts will help to minimise but not eliminate these problems. Time series data can also assist by providing information on trends in the level of support for protected area management at a site, national or regional level so that it is possible to tell whether inputs are increasing, stable or decreasing.

Partners

Where significant resources are put into the management of protected area systems or individual protected areas from bodies other than the management agency, the inputs from these outside sources need to be assessed. This is most important where the work of these outside bodies or individuals contributes directly to the achievement of management objectives for the protected area system or site. The assessment should also consider if the right partners are engaged in the project by examining the role of current partners and identifying potential partners who might also be involved.

4.4 Element 4: Process: *How do we go about it?*

The assessment of management processes focuses on the standard of management within a protected area system or site. This is largely a qualitative rather than quantitative process. Relevant questions include:

- are the best systems and processes for management being used, given the context and constraints under which managers are operating?
- are established policies and procedures being followed?
- what areas of management need attention to improve the capacity of managers to undertake their work (more resources, staff training etc)?

The application of appropriate management processes does not guarantee that management of the area will be effective and so process evaluations alone are not a reliable guide to effectiveness of management. However, the adoption of the best possible management processes and systems is essential for good management and a regular audit of such systems can help to achieve better management outcomes.

Determining implementation of management systems and processes often involves a large number of indicators including:

- planning;
- natural resource assessment management;
- cultural resource assessment management;
- maintenance;
- facility development;

- patrol and enforcement;
- communication;
- education and advocacy;
- training;
- research;
- monitoring and evaluation;
- reporting;
- visitor management;
- management of resource use by humans (extractive, tourism);
- participation;
- conflict resolution;
- personnel management; and
- budget and financial control.

Many of these are fairly obvious and do not require additional explanation here. However, three concepts require some discussion: best practice, management standards and capacity building:

Establishing best management practice

Information that can be used to help establish standards for management processes can come from a number of sources including:

- agency policies;
- relevant provisions in existing park management plans;
- best practice guidelines;
- people with local, national or international experience in protected area management;
- park staff; and
- local communities and others with a stake in the management of the area.

The notion of best practice provides a guide to assessing the appropriateness of management processes that are being used *but* it must be recognised that it is neither sensible nor possible to define a single "best practice" for any area of activity. Not only will best practice vary from country to country and region to region, but it is also dependent on the circumstances that apply to different "types" of protected area. Factors affecting best practice include:

- available resources;
- nature and extent of use of the protected area;
- nature and extent of threats to protected area values;
- national cultural and behavioural norms;
- legal and administrative framework of the country; and
- objectives of management.

Setting management standards

The first requirement for process evaluation is to establish standards for the conduct of management that can be used as a basis for assessing performance. In their simplest form, standards can be defined for application to the management of virtually all protected areas, but they are necessarily general and relatively insensitive to the particular needs of individual cases. Ideally, standards should be established for each protected area system or site to address each of the management systems and processes listed above.

A scoring system may be used to define desirable standards. These will set forth the ideal: that is the way in which a particular management process should be conducted if there were no deficiencies in funding, staffing numbers, staff skills, etc. Any information on best practice (see above), along with professional experience and knowledge of local circumstances, should be drawn on to establish the management standards. A stepped scoring system (use of four or five steps is common) should then be established, ranging from "complete failure" to meet management standards up to "full compliance".

The establishment of management standards and the assessment of performance against these standards should be a participatory process, involving not just the protected area manager and staff, but also community representatives, external experts and other stakeholders. The level of detail contained in management standards will vary. For each process, standards should address the important factors that affect management success. In most instances a core set of factors will apply but there may be additional or distinctive factors that need to be considered on a case-by-case basis. In most instances standards will be expressed in a descriptive rather than quantitative way, though this is not a reason for lack of precision in framing the standards.

The actual assessment against standards is an exercise in judgement. It is important to establish why an aspect of management is not performed to the desired standard as this can help identify what improvements could be made. Some aspects of management are effectively beyond the control of managers; in such cases, individual managers should not be held accountable for any shortcomings. Nonetheless, these issues need to be recognised: the problem may be solvable by a change in policy or practice elsewhere in the system.

Improving management capacity

As well as forming the basis for process evaluation, the definition of management process standards can help improve management capacity. These standards can act both as a policy document to guide staff and as a basis for planning future management programmes, since identification of barriers to better management is the first step in addressing any shortcomings. This information can also be used to support proposals for additional funds or training, either from within the agency or from external donors.

4.5 Element 5: Output: *What were the results?*

One way of assessing management effectiveness is to look at the outputs derived from management activity. This has been a common approach in reporting and evaluation of conservation programmes and often forms the core information presented in annual reports and other reviews. This type of information is most useful for evaluation purposes where pre-existing plans, targets or standards have been established against which achievement can be measured. Two principal questions are involved:

1. what products and services have been delivered?
2. have planned work programmes been achieved?

Product/service delivery

The quantities of products and services that derive from the activities of protected area managers – in brief, the outputs – can be measured in many ways. Some common measures are:

- numbers of users (e.g. visitor numbers to the park, numbers of people using a service, numbers of inquiries answered, numbers of researchers);
- measures of the volume of work output (e.g. numbers of meetings held with local communities, numbers of patrols undertaken, extent of area surveyed in a research programme, numbers of prosecutions instigated); and
- measures of physical outputs (e.g. length of park boundary delineated and marked, numbers of brochures produced or distributed, number and value of development projects completed).

Achievement of planned work programme

The effectiveness of management using output measures can also be assessed by the extent to which a planned work programme has been achieved. This form of assessment requires that quantitative or qualitative targets for work output be established as part of the planning and management process. Again, there are a number of measures that can be used in assessing achievement against targets:

- actual work programme versus planned work programme (e.g. numbers of patrols undertaken, extent to which planned capital works programme has been completed);
- actual versus planned expenditure; and
- extent of implementation of management plan or other programme-planning document (usually relates to longer-term activities than an annual work programme).

Reviews of work programme achievement and expenditure are common internal management tools. Broad-scale reviews of implementation of planning commitments are often used as a major element in external audits or programme reviews.

This type of output evaluation is important in establishing accountability. However, its full value as an evaluation tool will only be achieved if it is integrated into the planning and management cycle. Results from this type of monitoring can be used to:

- track and report on implementation of the plan over time;
- prepare annual work programmes based on the commitments made in the management plan; and
- help revise the plan both during its life and at the end of the planning cycle.

This type of monitoring can help ensure that management plans are not shelf documents that are largely ignored in the day-to-day business of managing a protected area. As monitoring results build up over time, judgements can be made about whether current levels of resources will allow the plan to be fully implemented and which topics within the plan require more or less attention. If the majority of actions and policies proposed in

a management plan remain unimplemented, this may indicate a critical shortage of management resources or a lack of acceptance of the plan by staff. However, if implementation is proceeding well, but there is evidence that the desired *outcomes* are not being achieved, new strategies or policies may be required.

Output assessment does not address the question of whether the plans are appropriate or adequate, but simply are they being implemented? The adequacy of planning systems and the plans themselves are better assessed by *process* and *outcome* approaches to evaluation respectively.

Measuring site scale process and output evaluation

Process and *output* indicators can be assessed together by using a checklist to be completed by the manager/assessor. An example of the type of checklist and scoring system that could be used for this type of evaluation is given in Appendix 2. This checklist forms a set of generic standards to assess management, which needs to be adapted and refined to suit local or regional circumstances. Using this system, it is important to record what could be done to improve management and whether or not this is under the control of managers. An assessment, using this system, was carried out in the Dja Faunal Reserve, Cameroon and Minkébé Reserve, Gabon in 1999 – see case study 3 in Part B (Hakizumwami, 2000).

4.6 Element 6: Outcome: *What did we achieve?*

Outcome indicators are important because they measure the real impacts of management action: they assess the extent to which the management objectives are being achieved. As such, they need to be based upon a clear understanding of what it is that management is aiming to accomplish (MacKinnon *et al*., 1986; Mason, 1997; Hockings, 1998). Unfortunately such clarity in the expression of desired outcomes is not always available: sometimes objectives are framed in terms of activities to be undertaken rather than results to be achieved, and sometimes no explicit management objectives have been set (Thorsell, 1982).

The importance of establishing clear, measurable, outcome-based objectives as a basis for management cannot be stressed too much. It is fundamental, not only to the assessment of management effectiveness but to the whole process of management itself (MacKinnon *et al*., 1986). Setting up an outcome-based monitoring and evaluation programme is likely to highlight areas where objectives are unclear, lack specificity or are phrased in terms of outputs rather than outcomes. Such objectives should be clarified and re-stated in an appropriate form before the monitoring programme proceeds (Jones, 2000).

A set of outcome-based management objectives forms the starting point for designing this type of evaluation. Assessment can be made from:

- a management plan or other relevant work plan;
- the identification of specific threats; and/or
- the objectives of the IUCN categories of protected areas.

Based on the objectives, a set of indicators that will reflect the achievement of these outcomes needs to be selected and appropriate monitoring programmes instituted to

collect data. A process for designing monitoring programmes for outcome evaluation is given in Figure 4.3.

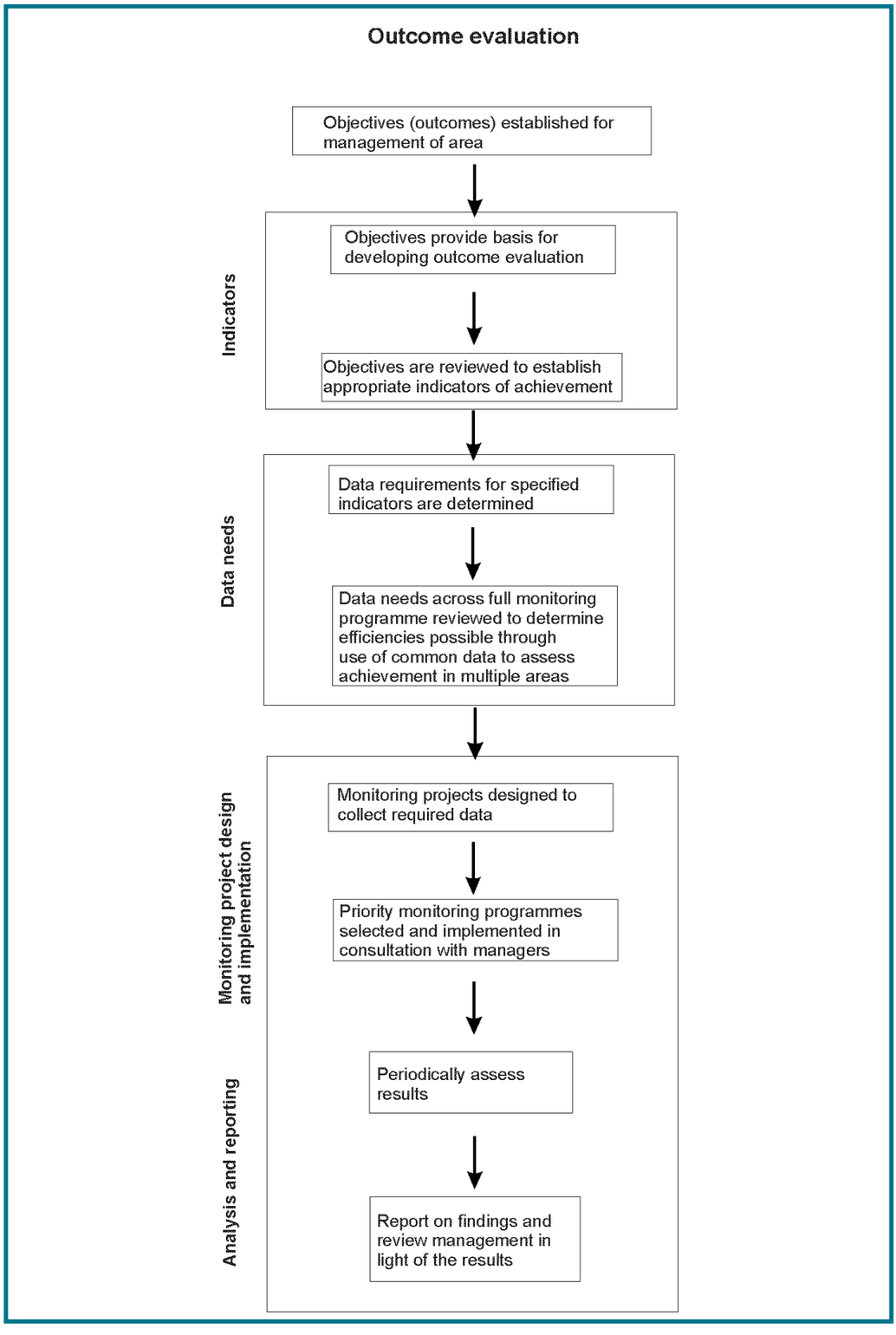
The management of large systems/protected areas with multiple objectives, and usually with limited resources, means that monitoring efforts must be targeted to high priority areas, using a limited number of indicators. However, by considering the full range of monitoring and evaluation requirements in the design phase of the programme, data can be collected in a way that can be used to assess achievements across a range of objectives.

Because the specific objectives for management will be different for each protected area, the content of monitoring and evaluation programmes for assessing outcomes will be correspondingly diverse. Examples of such programmes are given in the Tasmanian Wilderness World Heritage Area case study (case study 1 in Part B) and in Hockings (1998).

In the absence of specific objectives for a system, or for an individual protected area, the objectives associated with the protected area category designation can help select indicators and design monitoring programmes. General objectives for management are specified in the *IUCN Guidelines for Protected Area Management Categories* (IUCN, 1994). Because the objectives are different for each type of protected area, evaluations should be conducted separately for each category, using indicators that reflect the differing objectives. The specific indicators selected should be broadly applicable to the category of protected area within the country or region.

Possible *outcome* indicators are listed in Appendix 1 for the primary and secondary objectives that apply to each category of protected area. These are designed to be relatively simple indicators: more elaborate monitoring programmes using a wider range of indicators may be used to target specific issues or problems where these are known. The objectives are grouped according to the relevant IUCN protected area category but relevant objectives and indicators can be selected from a range of categories where this is appropriate to address the particular circumstances that apply to protected area systems in a country. Key objectives for each category listed have been selected from the full suite of objectives listed in the 1994 IUCN guidelines.

Figure 4.3 Process used to develop an outcome-monitoring programme



Source: Adapted from Hockings (1998) and Jones (2000).

5. Applying the framework at various scales

This chapter considers the scale at which evaluations should be undertaken, from the site up to the global scale, and who should be involved in the exercise.

5.1 Site level evaluations

Assessments of individual sites will probably be the commonest form of assessment. Assessment is often applied as a result of particular problems or threats at a site level that stimulate a detailed response. Evaluations vary from extremely detailed, long-term monitoring programmes to quick assessments aimed at pinpointing key areas of concern or identifying best responses. Site evaluations should generally include a wide range of stakeholders if a full overview of issues is to be achieved.

5.2 Agency/national evaluations

At agency and national scales, the assessment of management effectiveness should focus on **both** the effectiveness with which sites within the system are managed **and** the agency or system-wide issues that affect the overall operation of the protected area network. As with site-based evaluations, assessments should allow for the varied conditions in different countries, systems and categories of protected areas.

Most of the information required for assessment has to be collected at the agency level. This is usually also the point at which management systems, policies and practices are determined and is therefore a "natural" scale for both assessment and any follow-up action. Where a single agency is responsible for managing all protected areas within a country, the agency and national scales will be identical. However, in many countries more than one agency is responsible for managing protected areas; it is then desirable to examine both the individual agencies and the overall national picture. National and hence global assessments will require data collected from component agencies to be combined.

The coarseness of national level data may conceal useful local data and indeed reduce its utility. For example, a study on landscape change in the national parks of the United Kingdom (Countryside Commission, 1991) found overall declines of 4.6 per cent in the length of hedgerows and 1.3 per cent in the length of stone walls within the parks. However, these averages mask considerable variation between the different parks within the United Kingdom. Therefore, loss of hedgerows is an issue for parks such as the Brecon Beacons and Dartmoor, but not for Northumberland or the Peak District where loss of stone walls is of more concern.

Different user groups, and different uses for the data, will be involved according to the scale. Thus while individual managers are most likely to need information at the agency level, for use in adaptive management and for accountability purposes, a wider range of external users will be interested in assessments at the national and global levels, for use in lobbying, accountability, programme planning and priority setting.

5.3 National and international levels

Information on management effectiveness collected at the agency scale will often need to be combined with data from other agencies or groups (including non-governmental, private, indigenous peoples and other interests) to develop a national overview. The collation of this sort of overview is desirable as an input to national policy making and priority setting.

Moreover, there is an increasing need for nations to report on their obligations under international agreements. The World Heritage and Ramsar Conventions and the Convention on Biological Diversity all contain provision for monitoring and reporting. As James *et al*. (1997) have pointed out, national reporting formats need to be standardised at a relatively high level of detail if valid cross-country comparisons are to be made. Such harmonisation is also useful at site level to enable protected area agencies to assess the effectiveness of their system and allocate budgets, staff and other resources across sites.

5.4 A global system for recording effectiveness data

The collation of data at the national level could be handled by a designated national clearing-house (most probably the national protected area agency or responsible government department). Globally, this information could be incorporated into the protected areas database maintained by WCMC. This database already provides the basis of the *United Nations List of Protected Areas*, the authoritative register of the world's protected areas estate (IUCN, 1998). As is the case with existing protected area data held by the Centre, the WCPA could be involved in the validation of data and its dissemination and use.

For WCMC to incorporate the information collected by projects assessing protected area management effectiveness, each project would need to provide a basic dataset for inclusion on the database. This dataset would not aim to provide exhaustive information on the complexity of questions related to protected area management, but to offer a harmonised service which reflects the wide range of users. The system however should be flexible enough to be developed over time in response to user needs and available resources. The database could also include links (via web sites or contact persons) to more in-depth studies that are summarised on the database.

Although there is a clear desire to collect information that can be compared on a regional or global basis, in practice this may prove difficult. Estimations of effectiveness and degree of threat in a rich country, with a well-maintained protected area system, cannot easily be compared with those of a country where there are severe resource constraints, political problems and no implementation of protected area systems. Thus,

some variation in the database on effectiveness can be expected within a country or region, and comparisons between regions should be approached far more cautiously.

It is premature, at this stage, to specify the structure and content for a global dataset for management effectiveness information. The desirability and practicality of developing such a dataset should be discussed in the international protected area community in the lead up to the next World Parks Congress.

5.5 Who should be involved?

Can a manager, who is responsible for an area, assess the effectiveness of its management objectively? While every manager has a responsibility for continuing evaluation of his/her areas of responsibility, formal evaluations often rely on others within the organisation directing the evaluation project. There are benefits in involving outsiders who will be impartial and bring a freshness of vision (and usually particular evaluation expertise). On the other hand, they will have only a limited knowledge of the area and its issues and the time spent on learning is a real cost in time and money. When outsiders complete the evaluation, they also take with them the information and perspectives gained in conducting it, which are then no longer available to management. They may make impractical suggestions because of limited local experience. Also, local managers and local communities have sometimes been marginalised in evaluations of international conservation projects carried out by teams of visiting experts who may only visit the area for a brief period.

External evaluators (consultants, academics, funding agency staff) commonly focus on questions relevant to external bodies (stakeholders, funding agencies etc.) and tend to focus on accountability. Internal evaluators commonly focus on issues of relevance to the managers (i.e. efficiency and effectiveness of work) without really questioning the overall programme. Involvement of staff responsible for management of an area will generally greatly enhance the subsequent application of evaluation results in future work (Patton, 1999). On the other hand, an evaluation conducted entirely by insiders may lack credibility, especially if there is some controversy surrounding management of the area. As a rule, long-term monitoring and evaluation programmes should give a central role to protected area staff and provide opportunities for local community participation, although outside expertise can be a valuable element in the evaluation team.

Protected area management practice has moved towards the inclusion of local communities, neighbours, NGOs and other stakeholders in planning and decision making, and sometimes includes a co-management approach. This emphasis on participation should apply also to the evaluation of management effectiveness. Those methodologies that have been carried out principally by or with managers, and without external involvement, will need to develop processes for wider participation. It also means that a universally applicable, standardised assessment tool is not a realistic goal. There must be scope for a variety of people to influence the contents and standards established through the evaluation.

Ideally the assessment process should involve a partnership between many players. Depending on circumstances, this may include:

- local managers;
- senior agency managers;

- government agencies in different sectors;
- different tiers of government;
- local communities;
- indigenous groups;
- NGOs;
- donors;
- international convention staff;
- private sector bodies involved in management of protected areas; and
- representatives of other sectors and interests.

Some of these groups should be involved in the design and execution of the assessment system, while for others it may be sufficient to know that the evaluation is being carried out and to have periodic access to the results.

6. Conclusions

The framework presented here is a toolkit for assessing management effectiveness of protected areas. It provides a structure and an approach to developing systems to evaluate protected area management. There are a number of different methodologies available within the framework. These can be used to create a variety of levels of assessment, from broad and relatively quick assessments that might be applied at a national level to detailed, on-going monitoring programmes that will provide a more in-depth assessment of management effectiveness at the site level.

The challenge is to apply these tools widely and to establish monitoring and evaluation as integral activities within protected area management. But to achieve this aim, several impediments will need to be overcome. First, there is lack of **awareness**. The publication of this framework and guidelines is one step towards promoting a better understanding of the benefits that come from such assessments and the various tools that are available to undertake them. But much more will need to be done to promote assessment and to publicise the findings from case studies around the world.

Secondly, there needs to be a **willingness** to use such systems. Many NGOs have recognised their need for information on management effectiveness to assist them in their advocacy work and to help in setting priorities for funding and assistance to protected area systems and projects. International bodies (e.g. Conventions, IUCN, WCMC) are interested in the collection and application of this information at a global level for reporting, priority setting and decision making. Some managers and management agencies have recognised the potential for assessment systems to become an integral part of the way they manage: to provide a basis for adaptive management and reporting. But some also perceive dangers in this type of information, and this may discourage them from releasing the findings of such studies or undertaking the work in the first place. There is a clear potential to use this information in a system for accrediting park management, in a similar way to forest certification or ecotourism accreditation. The possible pitfalls and benefits of developing such verification systems require careful consideration.

Thirdly, there is **capacity**. When many protected areas around the world are suffering from a crisis of underfunding, there is a legitimate concern that requirements to undertake assessments of management effectiveness will just place a further burden on an already overtaxed system. But many of the approaches outlined here for rapid assessment can be part of the solution to this problem. Demonstrating the extent of under-resourcing, and its impact on the achievement of the objectives for which the protected areas were established, is a first step towards gaining the additional support that is required. Widespread adoption of the methodologies outlined in this document will require a large training effort over many years. Training is required for individuals from management agencies, NGOs, local communities and other groups directly involved in assessments. This will be undertaken principally within the context of pilot projects or in response to requests from individual sites or management agencies. But it

is also highly desirable to establish training in evaluation methods within the curricula of training institutions. There is also a need to train managers and others in the appropriate use of the results from assessments (e.g. in the revision of management practices and plans, preparation of funding bids, preparation of reports, lobbying).

The whole question of management effectiveness has emerged from relative obscurity and gained a far higher profile in the last five years, as demonstrated by the number of new initiatives reported here. The test of the usefulness of this work will come from its application.

Appendices

Appendix 1

Potential indicators associated with the objectives of the IUCN Protected Area Management Categories

Assessing the outcome of protected area management effectiveness is only possible with a set of clear, measurable and outcome-based objectives. Where such objectives are not available, the general objectives for management that are specified in the *IUCN Guidelines for Protected Area Management Categories* (IUCN, 1994) can be used. The table below lists potential indicators associated with these management categories and possible indicators and data collection methods at both a system and site level.

Potential indicators associated with the IUCN management category objectives

Protected area managed mainly for science (Strict Nature Reserve: Category Ia)

Objectives	Site level		System level	
	Possible indicators	Method of data collection	Possible indicators	Method of data collection
To preserve habitats, ecosystems and species in as undisturbed a state as possible	Population estimates of key species and populations	Field survey	Population estimates of key species and populations	Collate data from site-based monitoring programmes
To maintain genetic resources in a dynamic and evolutionary state			Extent of ecosystem stresses	Survey of managers and others with relevant expertise
To maintain established ecological processes	Indicators selected to reflect key processes for the particular ecosystem involved	Field survey		
To secure examples of the natural environment for scientific studies, environmental monitoring and education, including baseline area for which all avoidable access is excluded	Numbers of scientific studies and monitoring programmes carried out in the reserve	Manager's report	Numbers of scientific studies and monitoring programmes carried out in reserves	Collate data from site-based reporting systems
To minimise disturbance by careful planning and execution of research and other approved activities	Extent of disturbance from: ■ authorised activities; and ■ unauthorised activities or other anthropogenic cause	Either field survey of sites of disturbance or register of disturbing events (e.g. unauthorised clearing, bushfire etc.)	Extent of disturbance from: ■ authorised activities; and ■ unauthorised access	Survey of managers and others with relevant expertise
To limit public access	Numbers of authorised people accessing reserve	Manager's report		
	Extent of unauthorised access	Estimate by field staff		

Protected area managed mainly for wilderness protection (Wilderness Area: Category Ib)

Objectives	Site level		System level	
	Possible indicators	Method of data collection	Possible indicators	Method of data collection
To ensure that future generations have the opportunity to experience understanding and enjoyment of areas that have been largely undisturbed by human action of a long period of time	Percentage of reserve area with high wilderness index	Wilderness index calculated using methods from Lesslie and Maslen (1995).	Percentage of reserve area with high wilderness index	Wilderness index calculated using methods from Lesslie and Maslen (1995).
To maintain the essential natural attributes and qualities of environment over the long term	Indicators selected to reflect key processes for the particular ecosystem involved	Field survey	Extent of ecosystem stresses	Survey of managers and others with relevant expertise
To provide for public access at levels and of a type that will serve best the physical and spiritual well-being of visitors and maintain the wilderness qualities of the area for present and future generations	Percentage of reserve area with high wilderness index Visitors' perceptions of wilderness experience	Visitor surveys	Percentage of reserve area with high wilderness index Visitors' perceptions of wilderness experience	Visitor surveys

Protected area managed mainly for ecosystem protection and recreation (National Park: Category II)

Objectives	Site level		System level	
	Possible indicators	Method of data collection	Possible indicators	Method of data collection
To perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources, and species to provide ecological stability and diversity	Population estimates of key species	Field survey	Extent of ecosystem stresses	Survey of managers and others with relevant expertise
	Indicators selected to reflect key processes for the particular ecosystem involved	Field survey	Population estimates of key species	Collate data from site-based monitoring programmes
To protect natural and scenic areas of national and international significance for spiritual, scientific, educational, recreational or tourist purposes	Extent of use-related degradation or stress	Field survey		
To eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation	Extent of encroachment considered inimical to purposes of designation	Mapping of encroachment area	Evidence of system-wide pressures on protected areas from sources, e.g. unregulated tourism or mining	Site by site collection of information
To manage visitor use for inspirational, educational, cultural and recreational purposes at a level that will maintain the area in a natural or near natural state	Visitor experiences, satisfaction and understanding	Visitor surveys	Visitor experiences and satisfaction levels	Visitor surveys
	Extent of visitor-related degradation or stress	Field survey	Extent of visitor-related degradation or stress	Survey of managers and others with relevant expertise
	Number of visitors	Manager's reports		
	Number of participants in educational/interpretive programmes	Manager's reports		

Protected area managed mainly for conservation of specific natural features (Natural Monument: Category III)

Objectives	Site level		System level	
	Possible indicators	Method of data collection	Possible indicators	Method of data collection
To protect or preserve in perpetuity specific outstanding natural features because of their natural significance, unique or representational quality, and/or spiritual connotations	Indicators selected to reflect condition of nominated features	Field survey	Extent of ecosystem stresses	Survey of managers and others with relevant expertise
To eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation	Extent of encroachment considered inimical to purposes of designation	Mapping of encroachment area	Population estimates of key species	Collate data from site-based monitoring programmes
To an extent consistent with the foregoing objectives, to provide opportunities for research, education, interpretation and public appreciation	Visitor/user understanding and satisfaction levels	Visitor/user surveys	Visitor/user understanding and satisfaction levels	Visitor/user surveys
	Extent of use-related degradation or stress	Field survey	Extent of use-related degradation or stress	Survey of managers and others with relevant expertise

Protected area managed mainly for conservation through management intervention (Habitat/Species Management Area: Category IV)

Objectives	Site level		System level	
	Possible indicators	Method of data collection	Possible indicators	Method of data collection
To secure and maintain the habitat conditions necessary to protect significant species, groups of species, biotic communities or physical features of the environment where those require specific human manipulation for optimum management	Population estimates of key species	Field Survey	Population estimates of key species	Collate data from site-based monitoring programmes
	Estimates of extent and condition of critical habitats	Field Survey	Estimates of extent and condition of critical habitats	Collate data from site-based monitoring programmes
To eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation	Extent of encroachment considered inimical to purposes of designation	Mapping of encroachment area	Evidence of system-wide pressures on protected areas from sources, e.g. unregulated tourism or mining	Site by site collection of information
To develop limited areas for public education and appreciation of the characteristics of the habitats concerned and the work of wildlife managers	Visitor understanding and satisfaction levels	Visitor surveys	Visitor understanding and satisfaction levels	Visitor surveys

Protected area managed mainly for landscape/seascape conservation and recreation (Protected Landscape/ Seascape: Category V)

Objectives	Site level		System level	
	Possible indicators	Method of data collection	Possible indicators	Method of data collection
To maintain the harmonious interaction of nature and culture through the protection of landscape and/or seascape and the continuation of traditional land uses, building practices and social and cultural manifestations To support lifestyles and economic activities which are in harmony with nature and the preservation of the social and cultural fabric of the communities concerned	Extent of change in traditional land uses or landscape features	Depends on attributes of feature to be monitored	Extent of change in traditional land uses or landscape features	Depends on attributes of feature to be monitored
To bring benefits to, and contribute to the welfare of, the local community through the provision of natural products (such as forest and fisheries products) and services (such as clean water or income from sustainable tourism)	Measures of community wellbeing (income, social conditions) Flow of benefits attributable to natural products and services	Surveys of local communities	Measures of community wellbeing (income, social conditions) Flow of benefits attributable to natural products and services	Surveys of local communities
To encourage scientific and educational activities which contribute to the long term well-being of resident populations and to public support for environmental protection of such areas	Numbers of school visits; number of visitors to interpretative centres	Surveys of visitors to interpretative centres	Appreciation among public at large of values of protected areas	Surveys of public opinon
To maintain the diversity of landscape and habitat, and associated species and ecosystems To eliminate where necessary, and thereafter prevent, land uses and activities which are inappropriate in scale and/or character	Extent of change in habitat areas or populations of key species Register of non-conforming land uses and activities	Field survey Field survey	Extent of ecosystem stresses	Survey of managers and others with relevant expertise

Protected area managed mainly for the sustainable use of natural ecosystems (Managed Resource Protected Area: Category VI)

Objectives	Site level		System level	
	Possible indicators	Method of data collection	Possible indicators	Method of data collection
To protect and maintain the biological diversity and other natural values of the area in the long term	Population estimates of key species	Field survey	Population estimates of key species	Collate data from site-based monitoring programmes
To protect the natural resource base from being alienated for other land-use purposes that would be detrimental to the area's biological diversity To promote sound management practices for sustainable production purposes	Register of non-conforming land uses and activities	Field survey	Extent of ecosystem stresses	Survey of managers and others with relevant expertise
To contribute to regional and national development	Income from sustainable production	Field survey	Income from sustainable production	Collate data from site-based reporting systems

Appendix 2

Scoring system for process and output indicators

Process and output indicators can both be assessed using a form or checklist and/or scoring system. The tables below suggest the type of checklists that could be applied.

1. Site information

Reserve name: . . . . . .

IUCN Category . . . . . .

Area:. . . . . ha.

2. Financial and staffing commitments

Minimum data set

Category	**Budget (specify year and currency)** **Year:** **Currency:**	**Amount actually expended**	**Estimate of US$ or staff required to meet management objectives**
Financial (US$) **Government allocation** Recurrent			
– Salaries			
– Maintenance and operations			
Capital			
Revenue raised and retained at site			
Contributions from other agencies/groups			
Secondary agencies that contribute to conservation			
Other Government			
Staffing (numbers)	**Number of approved positions**	**Number of staff employed**	
Permanent staff			
– Technical/professional			
– Support/administrative			
– Field			
Casual/seasonal staff			
– Technical/professional			
– Support/administrative			
– Field			

If possible collect more detailed data on budgets and staffing. It will probably be necessary to use the classificatory systems used by the agency for this breakdown of budgets and staffing.

Issue	Criteria	Score	Comments (including consideration of whether problems are effectively outside the control of the manager)
General			
1. Legislation	a. Problems with legislation or regulations represent a major barrier to achieving management objectives	0	
	b. Problems with legislation or regulations are a significant but not major barrier to achieving management objectives	1	
	c. Problems with legislation or regulations are not a barrier to achieving management objectives	2	
	d. Legislation or regulations are particularly effective in achieving management objectives	3	
2. Law enforcement	a. There is no effective capacity to enforce protected area legislation and regulations	0	
	b. There are major deficiencies in law enforcement capacity (e.g. staff lack skills, patrol capacity is low, problems with legal processes)	1	
	c. Law enforcement capacity is acceptable but some deficiencies are evident	2	
	d. Law enforcement capacity is excellent	3	
3. Planning	a. There is no management plan for the protected area	0	
	b. A management plan is being prepared or has been prepared but is not being implemented	1	
	c. An approved management plan exists but it is only being partially implemented because of funding constraints or other problems	2	
	d. An approved management plan exists and is being implemented	3	
Additional points	e. The planning process allows adequate opportunity for adjacent landholders and other stakeholders to influence the plan	+1	
	f. There is an established schedule and process for periodic review of the management plan	+1	
	g. Annual work programmes and budgets are based on the provisions of the management plan	+1	

Issue	Criteria	Score	Comments (including consideration of whether problems are effectively outside the control of the manager)
4. Resource inventory	a. There is little or no information available on the natural/cultural resources of the area and efforts to acquire this information are limited	0	
	b. Information on natural/cultural resources is not sufficient to support planning and decision making and efforts to acquire this are limited	1	
	c. Information on natural/cultural resources is sufficient for key areas of planning/decision making or this information is being rapidly acquired	2	
	d. Information concerning natural/cultural resources is sufficient to support most or all areas of planning and decision making	3	
5. Resource management	a. Requirements for active management of natural and cultural resources (e.g. fire mgt, feral animal control, cultural sites) have not been assessed	0	
	b. Requirements for active management of natural and cultural resources are known but are not being addressed	1	
	c. Requirements for active management of natural and cultural resources are only being partially addressed	2	
	d. Requirements for active management of natural and cultural resources are being fully or substantially addressed	3	
6. Maintenance	a. Little or no maintenance of equipment/facilities is undertaken	0	
	b. Maintenance is only undertaken when equipment/facilities are in need of repair	1	
	c. Most equipment/facilities are regularly maintained	2	
	d. All equipment/facilities are regularly maintained	3	
7. Neighbours	a. There is no contact between managers and individuals or groups who own or manage neighbouring lands and seas	0	
	b. There is limited contact between managers and individuals or groups who own or manage neighbouring lands and seas	1	
	c. There is regular contact between managers and neighbours but limited co-operation on issues of mutual concern	2	
	d. There is regular contact between managers and neighbours and issues of mutual concern are cooperatively addressed	3	

Issue	Criteria	Score	Comments (including consideration of whether problems are effectively outside the control of the manager)
Additional points	e. There is open communication and trust between local people and protected area managers	+1	
	f. Programmes to enhance local community welfare while conserving protected area resources are being implemented	+1	
8. Economic benefits to local communities	a. There is little or no flow of economic benefits to local communities from the existence of the protected area	0	
	b. There is some flow of economic benefits to local communities from the existence of the protected area but this is of minor significance to the regional economy. People from the local community are not generally employed in protected area management	1	
	c. There is a flow of economic benefits to local communities from the existence of the protected area and this is of moderate or greater significance to the regional economy but most of this benefit accrues from activities outside the park boundary (eg. spending by visitors getting to the park)	2	
	d. There is a major flow of economic benefits to local communities from the existence of the protected area and a significant proportion of this derives from activities on the park (eg. employment of locals, locally operated commercial tours etc)	3	
9. Communication	a. There is little or no communication between managers and stakeholders involved in the protected area	0	
	b. There is communication between managers and stakeholders but this is ad hoc and not part of a planned communication programme	1	
	c. There is a planned communication programme that is being used to build support for the protected area amongst relevant stakeholders but implementation is limited	2	
	d. There is a planned communication programme that is being used to build support for the protected area amongst relevant stakeholders	3	
10. Management systems	a. Problems with management systems (e.g. budgeting, office procedures, staff training) significantly constrain management effectiveness	0	
	b. Problems with management systems partially constrain management effectiveness	1	
	c. Management systems provide basic support to managers	2	
	d. Management systems provide active and effective support to managers	3	

Issue	Criteria	Score	Comments (including consideration of whether problems are effectively outside the control of the manager)
Additional points	e. There is a structured process for developing and allocating annual budgets for the area	+1	
	f. There are adequate systems for financial management and control, record keeping and retrieval	+1	
	g. There is an active training programme that is addressing deficiencies in skills and developing the potential of staff	+1	
Additional items for different protected area categories			
Category I			
11. Control over access/use of the protected area	a. Protection systems (patrols, permits etc) are ineffective in controlling access or use of the reserve in accordance with designated objectives	0	
	b. Protection systems are only partially effective in controlling access or use of the reserve in accordance with designated objectives	1	
	c. Protection systems are moderately effective in controlling access or use of the reserve in accordance with designated objectives	2	
	d. Protection systems are largely or wholly effective in controlling access or use of the reserve in accordance with designated objectives	3	
Categories II, III and V			
12. Resident communities and/or traditional land-owners	a. Resident communities and/or traditional owners have little or no input into management decisions	0	
	b. Resident communities and/or traditional owners have input into management decisions but no direct involvement in decision making	1	
	c. Resident communities and/or traditional owners directly contribute to decision making in some areas	2	
	d. Resident communities and/or traditional owners directly contribute to decision making in all areas	3	
Additional points	e. There is open communication and trust between local people and protected area managers	+1	
	f. Programmes to enhance local community welfare while conserving protected area resources are being implemented	+1	
	g. Where permitted, harvesting of natural resources by local people is undertaken in a sustainable manner	+1	

Issue	Criteria	Score	Comments (including consideration of whether problems are effectively outside the control of the manager)
13. Visitor opportunities	a. No consideration has been given to the provision of visitor opportunities in terms of access to areas of the park or the diversity of available experiences	0	
	b. Some consideration has been given to the provision of visitor opportunities in terms of access to areas of the park or the diversity of available experiences but little or no action has been taken in this regard	1	
	c. Consideration has been given to the provision of visitor opportunities in terms of access to areas of the park and the diversity of available experiences. Policies and programmes to enhance visitor opportunities have been implemented	2	
	d. Management of visitor opportunities is based on research into visitors' needs and wants. Plans to optimise visitor opportunities have been implemented.	3	
14. Visitors	a. Visitor facilities and services are grossly inadequate (either do not meet the needs of most visitors or visitor use is seriously damaging resources)	0	
	b. Visitor facilities and services are inadequate (either do not meet the needs of some visitors or visitor use is damaging resources)	1	
	c. Visitor facilities and services are adequate for current levels of visitation	2	
	d. Visitor facilities and services are excellent for current levels of visitation	3	
15. Commercial tourism	a. There is little or no contact between managers and tourism operators using the protected area	0	
	b. There is contact between managers and tourism operators but this is largely confined to administrative or regulatory matters	1	
	c. There is limited cooperation between managers and tourism operators to enhance visitor experiences and protect park values	2	
	d. There is exclellent cooperation between managers and tourism operators to enhance visitor experiences and protect park values	3	

Issue	Criteria	Score	Comments (including consideration of whether problems are effectively outside the control of the manager)
Category IV			
16. Management intervention	a. Management interventions required to maintain protected area resources are not known or not being implemented	0	
	b. Management interventions required to maintain protected area resources are known but are not being implemented	1	
	c. Management interventions required to maintain protected area resources are known but are not being fully implemented	2	
	d. Management interventions required to maintain protected area resources are being implemented	3	
Category V			
17. Control of land uses and activities	a. Mechanisms for controlling inappropriate land use and activities in the protected area are not in place or are largely ineffective	0	
	b. Mechanisms for controlling inappropriate land use and activities exist but there are major problems in effectively implementing them	1	
	c. Mechanisms for controlling inappropriate land use and activities exist but there are some problems in effectively implementing them	2	
	d. Mechanisms for controlling inappropriate land use and activities exist and are being effectively implemented	3	
Category VI			
18. Sustainable production	a. Production activities in the area are being conducted in a way that is seriously degrading natural values	0	
	b. Production activities in the area are being conducted in a way that is partially degrading resource values	1	
	c. Production activities in the area are being conducted in a largely sustainable manner	2	
	d. Production activities in the area are being conducted in a wholly sustainable manner	3	

Issue	Criteria	Score	Comments (including consideration of whether problems are effectively outside the control of the manager)
19. Regional and national development	a. The contribution of production activities to development is minimal or non-existent	0	
	b. Production activities in the area are contributing locally to development but not significantly at a regional scale	1	
	c. Production activities in the area are significant to regional development but are not nationally significant	2	
	d. Production activities in the area are contributing significantly to national development	3	

PART B

Case studies

This section contains a number of case studies demonstrating the application of a variety of methodologies that have been used to assess management effectiveness and showing the relationship of these methodologies to the management effectiveness evaluation framework presented in Part A. A selection of these case studies is also available in Spanish on the WCPA Management Effectiveness Task Force Website at:
http://www.nrsm.uq. edu.au/wcpa/metf/

Case study 1

Experience in outcomes-based evaluation of management for the Tasmanian Wilderness World Heritage Area, Australia

Glenys Jones[1] *and Helen Dunn (Hocking)*[2]

Introduction

The purpose of management is to achieve objectives, and the extent to which management objectives are achieved should be the principal measure used in assessing management performance. This is the premise that prompted the development of an outcomes-based approach to evaluating management performance for the Tasmanian Wilderness World Heritage Area.

This case study describes the management context, the early steps taken to introduce an evaluative approach to management; how evaluation was integrated into the management plan for the area; how practical monitoring programmes were developed and are being implemented; how performance data are being gathered and presented; and how the findings of evaluation are being reported.

Tasmania's experience in developing and implementing a process of evaluating management performance for the Tasmanian Wilderness provides a ready example that demonstrates the application of 'outcome evaluation' as described in Part A.

Management context

The Tasmanian Wilderness World Heritage Area was first inscribed on the World Heritage List in 1982 on the basis of all four natural criteria and three cultural criteria. Covering approximately 1.4 million hectares (3.4 million acres), the Tasmanian Wilderness is one of the largest conservation reserves in Australia and protects vast tracts of high quality temperate wilderness.

The Tasmanian Wilderness is managed under joint commonwealth and state government arrangements on an annual budget of currently more than A$8 million (approximately US$5 million), comprising about $5 million from the Australian federal government, and $3.4 million from the Tasmanian state government. The level of funding is negotiated between the state and commonwealth governments based on the estimated requirements to implement the jointly approved management plan for the area. The majority of the land within the World Heritage Area is protected under the

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Tasmanian *National Parks and Wildlife Act 1970* and primary responsibility for managing the area is with the Tasmanian government department responsible for administering the Act[3].

Early steps in introducing an evaluative approach to management

Approval of the first management plan for the Tasmanian Wilderness in 1992 (Department of Parks, Wildlife and Heritage, 1992) marked a significant step in the protection and conservation of the south-west region of Tasmania. However, it was recognised at the time that in order to determine whether management under the plan was achieving its objectives, a complementary system of monitoring and evaluation would be required to provide evidence about the results or outcomes. Consequently, one of the prescribed actions under the first management plan was to develop a framework for monitoring and evaluating the effectiveness of management.

A consultant with professional expertise in evaluation, Dr Helen Hocking (now Helen Dunn) was employed to work with departmental staff to strengthen the capacity of the agency to monitor, evaluate and report on progress in management of the Tasmanian Wilderness. The following elements were undertaken as part of that project (Hocking, 1993):

- *A review of evaluation in the management of natural areas* highlighted the paucity of material and examples available on evaluation of natural areas. It also noted the virtual absence of evaluation of management for cultural sites, or evaluation of areas managed for diverse objectives. The review also drew attention to the increasing demands for public accountability and high quality in public sector management.
- *An analysis of staff concerns and issues* related to implementation of the management plan and evaluation of achievement of the plan's objectives. This identified the need to assist staff to improve management practices (and the desire from staff for this to happen), and the need for long-term monitoring of the achievement of objectives (including the condition of World Heritage values).
- *The development of an overall evaluation framework for the 1992 management plan* which provided a basis for evaluating the achievement of the plan's objectives. This framework took as its starting point the objectives of management stated in the management plan, and 'unpacked' these objectives to derive specific outcomes which would provide the criteria for evaluation. Possible evidence or indicators of performance were proposed against each outcome.
- *Two small-scale evaluations* were conducted to demonstrate the application of evaluative processes to specific and immediate management issues.

[3] Currently, this is the Department of Primary Industries, Water and Environment. Over recent years the department has undergone several structural and corresponding name changes including: the Department of Environment and Land Management (1992–1998); the Department of Parks, Wildlife and Heritage (1989–1992); the Department of Lands, Parks and Wildlife (1987–1989); and the National Parks and Wildlife Service (1972–1987).

- *A market research survey was designed and administered* to gauge Tasmanian community knowledge and attitudes to the World Heritage Area. This filled a significant information gap, and demonstrated another approach to data collection for evaluation.

Incorporating evaluation into the revised (1999) Management Plan

By the time the first management plan for the Tasmanian Wilderness was due for revision, the agency was well positioned to incorporate a structured approach to evaluating management performance into the management plan (see Jones (2000) for details of the methodology for incorporating outcomes-based evaluation into a management plan). The 1999 management plan (Parks and Wildlife Service, 1999) includes the following elements related to monitoring, evaluation and continuous improvement in management performance:

- Management objectives;
- Statements of key desired outcomes derived from the objectives of management (these serve as the criteria against which management performance will be judged);
- Prescriptions for management actions aimed at achieving the objectives;
- Prescriptions for monitoring selected performance indicators to inform the evaluation of management performance;
- Requirements for reporting on the performance of management (i.e. the findings of evaluation);
- Requirements for the periodic review of the management plan.

Evaluation framework for the 1999 Management Plan – the basis for the monitoring programme

A tabular Evaluation framework for the 1999 Management Plan provides the basis for the monitoring programme which supports evaluation of management performance. The framework presents the key desired outcomes of management (derived from the management objectives) together with a range of performance areas and indicators that could provide evidence about the extent of achievement of each desired outcome. It also identifies who could provide the required information about each performance area or indicator (see example below).

Example from the evaluation framework for the 1999 Management Plan

Objective 5 of the 1999 Management Plan: *To present the World Heritage Area in ways that foster community understanding and appreciation of its World Heritage and other natural and cultural values, and that maximise support for the area's conservation.*

Key desired outcomes	Potential performance areas and indicators	Monitoring responsibility or capacity
5.1 Widespread community familiarity with, appreciation of, and support for the World Heritage Area, the protection and conservation of its natural and cultural values and the management of the conservation issues the area faces.	**Community awareness/ support for the World Heritage Area:** results of public surveys, especially evidence of changes, trends etc; assessment by World Heritage Area Consultative Committee.	**Planning/evaluation** staff (through public phone survey by market research company)
	Community awareness of, and attitudes to, management issues: results of public and visitor surveys.	**Planning/evaluation staff** (through public and visitor surveys)
	Media coverage: level, nature and prominence of media messages related to the World Heritage Area and management issues.	**Media staff, volunteer or student research project**
	Support groups: changes in membership levels of support groups e.g. Wildcare; 'Friends of…' groups; level of volunteer support etc.	**Community Partnerships staff**

The evaluation framework is not a static document but continues to evolve over time as performance indicators are added, refined or deleted through experience, and/or management objectives are refined over successive management plans.

Developing and implementing a practical monitoring programme

While the evaluation framework identifies potential indicators across the full range of management responsibilities, the final selection and development of monitoring programmes is guided by the relative importance of the information to the objectives of management, its usefulness in informing management decisions, and the practicality of its collection.

A co-ordinator for monitoring and evaluation (working within the agency's planning section) has overall responsibility for ensuring that the agency has a co-ordinated and targeted monitoring programme. However, as far as possible, monitoring programmes are developed in conjunction with those people responsible for a particular aspect of management, and the monitoring programme is usually integrated into their active management programme. This approach allows those with specialised or in-depth knowledge about particular areas to assist in identifying meaningful performance indicators and to develop practical monitoring programmes. It also fosters cross-agency ownership of the evaluation process. Of course, it is essential that evaluation methodologies and data are scientifically valid and stand up to external scrutiny. Where no active management programme aligns well with the needs for performance information, monitoring programmes are developed and managed by the co-ordinator for evaluation.

Reporting on the performance of management

Reporting management performance for World Heritage sites is an obligation under the World Heritage Convention. It also provides essential feedback about management performance to managers, funding bodies, stakeholders and the public.

In Tasmania, '*State of the Tasmanian Wilderness*' reports are prepared every 5 years, with an interim update every 2.5 years (Department of Primary Industries, Water and Environment, in prep.). These reports aim to allow a wide readership to understand the management situation and the changes that have occurred in the state of conservation of the area, for example: what the key management issues are; what improvement or deterioration in results has occurred; where impediments to effective management lie; and what needs to be done to improve management performance. Supplementary reports provide information on the implementation of the management plan and financial resources and expenditure.

Data gathering and presentation

While the principal focus of evaluation for the Tasmanian Wilderness is on outcomes or results, the approach also recognises the importance of management inputs and processes, as well as external factors in influencing management performance. Three main types of performance data are being used to inform evaluation for the Tasmanian Wilderness:

1. Scientific and other measured data on performance indicators (especially in relation to the World Heritage objectives of conservation and protection);
2. The views of visitors and the general public (especially in relation to the World Heritage objectives of presenting the World Heritage);
3. Assessment and critical comment about management performance from internal and external stakeholders closely involved with management (especially staff members and the World Heritage Area Consultative Committee, which is an external management advisory committee of community representatives).

Input for the report is gathered largely via questionnaires designed to gather data, information, assessment or critical comment about each performance area. Depending on the audience, the questionnaire is administered either orally or in writing.

Assessments of management performance and critical comment are sought from those with management responsibility and/or a legitimate evaluative role for each management responsibility. Two types of assessments are usually conducted:

- an assessment of **relative** performance, to indicate whether the results are better or worse than at the commencement of the management period; and
- an assessment of **absolute** performance, to indicate how satisfactory or unsatisfactory the current situation is.

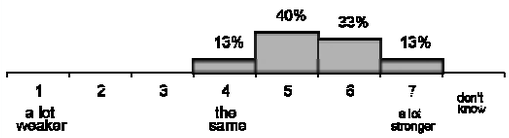
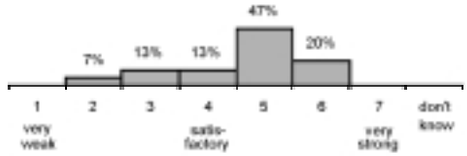
This approach recognises that while management performance may have improved over the management period, it may not yet be satisfactory. (See example 1 below).

Critical comment about management performance provides qualitative information in each area of management responsibility, including outstanding positive and negative developments that have occurred over the management period, and key factors that have contributed to, or hindered, management performance. (See example 2 below).

Examples of data presentation

Example 1: Assessments of management performance

Performance Area: Community Support for the Tasmanian Wilderness
Assessment by: Tasmanian World Heritage Area Consultative Committee

Assessment of relative performance	Assessment of absolute performance
Community support for the World Heritage Area – stronger or weaker? *Is the current level of community support for the World Heritage Area stronger or weaker than it was in 1992 (i.e. at the beginning of the management period)?*	Current level of Community Support *How would you rate the current level of community support for the World Heritage Area?*
	

Example 2: Critical comment on management performance

Performance area: Community engagement
Critical comment by: Tasmanian World Heritage Area Consultative Committee

Positive changes/initiatives	Negative changes/areas of management inaction or failure	Comments
■ A major shift towards talking – from both sides; managers have started to talk to groups and establish processes leading to an improved response to community views; ■ Aboriginal engagement/ partnerships; ■ Established practices – programmes such as huts partnerships; ■ Tourism in Natural Areas Group – better internal consultation.	■ Slowness of some agency staff to engage with communities; ■ Community consultation has been inappropriate in some areas – walking clubs feel the consultation for the Walking Track Management Strategy was not serious or respectful; ■ Co-operation between Departments was not always good.	■ The fire has gone out of the debate (people have learned that the World Heritage Area is nothing to fear) but we still have a lot of work to do to make the World Heritage concept welcomed rather than merely accepted; ■ There needs to be more proactive consultation – not reactive consultation with disaffected communities.

Detailed evidence, usually from scientific monitoring programmes, is presented about any changes that have been detected in the condition of significant conservation values, together with information about factors responsible for the change (where known). (See example 3 below). Note that, in some cases, evidence of change in significant values may reveal restoration or rehabilitation of these values. Information is also presented about other threats or risks to values, where impacts have not yet occurred or where there are inadequate data.

Example 3: Evidence of change in the condition of significant conservation values

Evidence of change in the condition of significant natural and cultural values is presented in detail in a tabular format (which is too complex to reproduce in this document). Information is presented under the following themes:

1. **Management issue/topic** (including topic; cause of change in condition of values (where known); nature and significance of the key values affected; and historical context/ background information).
2. **Report on the condition of values** (including condition indicators and monitoring methodology; evidence of change in the condition of values over the management period; and targets for condition indicators).
3. **Report on the pressures on values** (including indicators for pressures and monitoring methodology; evidence of change in the extent, level or severity of pressures over the management period; and targets for pressure indicators).
4. **Management actions and commentary** (including management actions and significant events calendar; key factors contributing to management performance; key factors limiting or threatening management performance; and management needs).
5. **Further information** (including source of information presented; contact officer details; and references to more detailed information, databases etc).

Lessons Learnt

To encourage agency adoption of an evaluative approach to management:

- 'Sell' the advantages of evaluation, for example as a means of reducing community conflicts, increasing transparency, providing a mechanism for public accountability, and improving on-ground conservation results.
- Encourage agency adoption of an evaluative approach through the influence of appropriate stakeholders, advisory forums etc.
- Foster agency and key stakeholders' learning and understanding about evaluation through demonstration and involvement.
- Develop agency ownership of the evaluation approach and process through working collaboratively with a range of levels of staff.
- Undertake small-scale evaluations to demonstrate the evaluative process and how it works in specific immediate cases.
- Work with staff who are receptive to new ideas and who can take the lead in establishing monitoring programmes and provide role models for others to follow.
- Consider the skills and experience required to introduce and gain acceptance for evaluation, and whether this role can best be achieved through internal and/or external sources (e.g. to enable effective communication with senior managers, scientists, field staff and key stakeholders).

In developing an evaluation framework for a management plan:

- Ask 'how would we know if management was working well?' and just as importantly 'how would we know if management was failing?' The answers to these questions often suggest the types of indicators that should be monitored for evidence of performance.
- Use the in-depth knowledge of those with management responsibility and/or expertise in a particular field to assist in identifying appropriate and practical performance indicators and monitoring methodologies.

Consider priorities, practicalities and balance when setting up monitoring programmes.

- Funding levels are rarely sufficient to support a full and comprehensive evaluation of all aspects of management. It is therefore essential to prioritise monitoring and evaluation needs so that they will compete realistically alongside other demands on the total management budget.
- Priority should be given to monitoring programmes that provide:
  - information about the extent to which key management objectives are being achieved (or are failing to be achieved);
  - information about the condition of the most significant conservation values, (especially those that are perceived as being at risk), or of other values considered to be good indicators of change;
  - information about the level or extent of perceived threats, pressures or risks to significant or vulnerable values;
  - information that can help resolve important, complex or controversial management issues (including social issues);
  - information that can be particularly useful in guiding ongoing decision-making (especially management direction and priorities);
  - information that can provide feedback about the outcomes of big expenditure management items or programmes.
- Start simply and keep the programme manageable. Start with a basic monitoring programme for core indicators and expand the programme as appropriate, taking account of experience.
- Get baseline information early. Ensure that monitoring or measuring programmes for performance indicators are undertaken early in the management period so that changes in conditions over the management period can be detected.
- Where possible, integrate monitoring programmes for performance indicators into the active management programmes for the relevant field of management.
- Be alert to opportunities for gathering information about performance indicators through 'piggybacking' monitoring programmes onto other projects, visitor surveys etc.

Consider issues of data input, reliability and credibility.

- Identify all sources of data.

- Ensure that data used in the evaluation are scientifically valid and/or from reliable sources.
- A cost-effective way of acquiring performance information across a broad range of input, process and external factors that may have affected management performance is to ask those with management responsibility and/or a legitimate evaluative role to identify key factors that have helped or hindered management performance.
- The inclusion of external participants in assessments (e.g. experts in particular management issues, or park advisory groups) can enhance the objectivity and/or credibility of the assessment and in some circumstances provide important additional information and insights that may not be readily sourced from within the management agency.

Improving ongoing management performance

To be successful, an evaluation programme must deliver results that are both useful and used. Reports on the performance of management should include recommendations for improving ongoing management performance and for addressing identified gaps or weaknesses in the evaluation. These recommendations then need to feed back into, and influence, decision-making processes so as to improve ongoing management performance. Evaluative management is a continually evolving process.

In Tasmania, work still needs to be done to strengthen and co-ordinate the linkage between the findings of evaluation and budget planning/allocation cycles so as to more strongly influence the setting of priorities and the allocation of financial and staff resources. This will allow the full benefits of evaluation to be realised by facilitating optimal adaptive management and continuous improvement in conservation management performance. Already, the adoption of an explicit performance evaluation process for management of the Tasmanian Wilderness has demonstrated tangible benefits to management, and the approach is attracting growing interest and strong support for its further development and application.

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Case study 2
Development and application of the WWF/CATIE methodology

Arturo Izurieta V[1]

Introduction

Based on the recommendations of the IV World Parks Congress (Caracas, Venezuela, 1992), the Central American Office of WWF and the Agricultural Center of Tropical Investigation and Teaching (CATIE) have been collaborating to develop the means to evaluate and improve the management of protected areas. They have devised a structured, sequential and simple-to-use methodology, which addresses the special needs of protected areas in Latin America. The system has been tested in Brazil, Costa Rica, Ecuador and Guatemala.

This case study provides an overview of the methodology used. It emphasises that the approach is compatible with the framework for management effectiveness set out in Part A. It also discusses capacity building, in terms of assessment and evaluation for those who work in protected area management.

Protected areas in Latin America

In the last 20 years, the establishment of protected areas in Latin America has increased significantly, expanding the protection and conservation of diverse and critical biological and ecological systems, but also helping in the sustainable development of urban and rural populations of the region. For example, between 1969 and 1997, the number of protected areas in Central America rose from 25 to 411; they now cover nearly 19 per cent of the region's territory (Godoy, unpublished).

While the increase in protected areas is welcome, it is important to assess the effectiveness of protection as well. In 1992, the IV World Parks Congress recommended the development of tools and strategies for protected area managers to help them evaluate and improve the management of protected areas (IUCN-BID, 1993).

The alliance between WWF and CATIE has focused specifically on the research and application of effective evaluation procedures for protected area management. It has tested these methods through academic research and on-the-ground case studies in protected areas within Latin America. The case study areas include:

- Costa Rica: the Carara Biological Reserve and the Guayabo National Monument (De Faria, 1993), the Osa Conservation Area (Izurieta, 1997

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- Ecuador: the Galápagos National Park and World Heritage Site in Ecuador (Amador *et al*, 1996);
- Guatemala: four protected areas in Guatemala (Soto, 1998); and
- Brazil and Costa Rica: private reserves (Mezquita, 1999).

In addition, the methodology has helped guide the development of other assessment techniques for protected area management. Currently, these findings are being published in a WWF/CATIE document.

Development and application of the WWF/CATIE evaluation methodology

The WWF/CATIE methodology grew out of several protected area planning exercises, which involved selecting and appraising key indicators for each category of management in a given country or region.

Costa Rica has a long history of, and interest in, conservation and protected area management. Research institutions and conservation organisations, such as CATIE and WWF, enjoy considerable political support. The National System of Conservation Areas of Costa Rica (previously the National System of Protected Areas) and Costa Rica's protected areas managers supported the research and helped in its development and field-testing.

The first study of effective management, undertaken by CATIE in 1993 (De Faria, 1993), under the direction of the WWF-Central American Office, involved a systematic and methodological selection of management indicators. De Faria carried out an extensive bibliographic review of the critical components and definitions for management of protected areas. He then developed a survey, which was sent to experts to determine the most important management indicators or variables. The indicators were grouped into management fields (*ambitos*): administrative, political, legal, planning, knowledge, present uses, management programmes, biographical characteristics and threats. Although the methodology does not specifically identify indicators that evaluate processes, products, or design aspects of protected areas, there are in all ten 'ambitos' that affect protected area management. The methodology also includes important evaluation aspects in relation to protected area buffer zones. Additionally, it helps identify gaps in information, as well as the actions needed to fill these and perform better evaluations in future.

The indicators were tested against the conservation objectives of each protected area, thus creating a complete evaluation. The procedure establishes a scale of measurement from 0 to 4, related to a modified ISO 10004 standard percentage scale. There is a description for each level:

Number	Optimal %	Description
0	35	Unsatisfactory
1	36–50	Marginally satisfactory
2	51–75	Moderately satisfactory
3	76–90	Satisfactory
4	91–100	Very satisfactory

Source: Taken from De Faria, 1993

For each indicator used, a number of conditions were established – the optimum condition being given the maximum value. The method uses matrices for each indicator and a global matrix that helps to visualise the relation between the different values obtained. A protected area obtains a value for its management through the sum of all the values of all the 'ambitos', expressed as a percentage of the optimum value.

The final percentage values are interpreted in management effectiveness terms (from unsatisfactory to very satisfactory), see example below:

An example of the matrix results – Corcovado National Park, Costa Rica

	Threats	Management programmes	Biogeographical characteristics	Actual illegal uses	Actual legal uses	Knowledge	Administrative	Planning	Legal	Others	Total reached	Optimal total	Optimal %
Corcovado National Park	14.8	7.02	15.2	17	10.6	11.9	10.9	8.05	6.05		**102.46**	184	**56**
Optimal total	24	16	20	32	20	20	20	24	8				
Optimal %	62	44	76	53	53	59.5	55	35.4	76				

Source: Modified by Izurieta, 1997

The methodology was carried out simultaneously in two protected areas in Costa Rica: the Carara Biological Reserve and the Guayabo National Monument. The results of these case studies showed the strengths and weakness of management in a systematic way, and helped to identify actions to improve the conservation of these areas.

In 1995, the methodology was applied in the Galápagos National Park, Ecuador, as a first step to revise the Park Management Plan. Some modifications were made in a few of the indicators, and new indicators introduced to meet the unique conditions of the park. The team also sought the participation of the local community in the evaluation process. A comparison was made between the values obtained by the team's evaluator and the community: the results were the same for both groups, with the exception of two indicators (Cayot and Cruz, 1998). The results of the evaluation were incorporated into the new Management Plan so as to remedy shortcomings. The Galápagos National Park is currently preparing for a second management evaluation.

The WWF/CATIE procedure was validated in 1997, when it was used to evaluate the management effectiveness of a subsystem of protected areas, in the Osa Conservation Area in southern Costa Rica (Izurieta, 1997). This validation was part of an academic study to test the procedure within different management categories of protected areas. The evaluation also looked at the administration of the protected areas and their influence in the region. This required identification of additional indicators.

The study also tested and compared the results of three different methods of evaluation: 1) an external evaluator; 2) a team evaluator; and 3) the "Delphi" System (i.e.

independent assessment by a number of people with relevant knowledge or expertise). Although no significant differences were found in the results obtained by the three methods, there were differences in how the results were shared and the number of people who benefited from them. For example, the team evaluator shared the information with field practitioners, community members and others who had a stake in the protected area. The study showed that it is possible to apply general criteria when measuring the effectiveness of the management of a system of protected areas, even when these cover a range of management categories. Incorporating the surrounding areas (*zones of influence*) into the evaluation gives a realistic view of the management of individual areas, and of a system of a number of areas. The results of the Osa Conservation Area study have been used as a funding tool, to improve planning efforts, to improve the administrative systems within each protected area and to integrate local populations with conservation efforts.

Another advance in the WWF/CATIE methodology arose from its application in Guatemala as part of an academic study (Soto, 1998). Four protected areas were examined, with different management categories. The indicators used were the same as those adopted by De Faria in 1993. Non-quantitative indicators were compared statistically to determine if these altered the overall results of the evaluation: no significant differences were apparent.

The WWF/CATIE procedure has also been used to evaluate private protected areas in Latin America (Mesquita, 1999). Some indicators and qualification criteria were added or adjusted to reflect the specific management requirements of protected areas of this kind.

Relationship of the methodology with the WCPA Framework and lessons learned

The WWF/CATIE procedure is in accordance with the guidance set out in Part A of this publication.

In all the case studies, there was participation of a team evaluator, who was employed within the protected area, and key members of the community and organisations that are linked to the protected area. As a result, the programme of evaluations has been an integrated and rich inter- and intra-institutional planning exercise; it has built positive relations between protected area and buffer zone institutions and stakeholders. Moreover the approach is flexible and adaptable: the key elements for evaluation are identified by protected area experts in the first place, but other critical indicators can be added to the process as they are identified.

The WWF/CATIE methodology combined research with field-testing. The evaluation method has helped to validate the approach, and promoted understanding of the need for better protected area management in Latin America. This enhanced understanding is invaluable for protected area managers and managers of entire protected area systems. All the methodological research studies are available in university libraries of the countries where the research took place. In addition, the evaluation results are available in the protected area sites for administrators and other interested parties.

The most difficult aspect has been evaluating the outcomes of management. These aspects are considered in the methodology, but they require a greater depth of knowledge, a longer time horizon for collecting and evaluating information and greater

investment in the analysis of results. Such resource-demanding work inevitably encounters greater obstacles in developing countries.

The results of the case studies have shown that in order to see changes in effective management, it is necessary to repeat the evaluation several times, making sure that the same indicators and criteria are used so as to measure progress.

The time required for an evaluation of management effectiveness varies from one protected area to another, depending on the quantity of information available, logistical support and the technical capacity of the team undertaking the work. The evaluation of the Galápagos National Park in Ecuador in 1995, where the optimal conditions existed for the exercise, lasted approximately three and a half months. The evaluation of the management effectiveness of the subsystem of protected areas in Costa Rica in 1997 took about six months.

Discussion

The results of the evaluation have been used to some extent in all the countries and protected areas that have applied the WWF/CATIE methodology. In particular leaders and managers directly associated with the protected areas have used the results to improve management and help meet protected area objectives. The case studies in Costa Rica by De Faria in 1993 and Izurieta in 1997 have resulted in practical information for evaluating and assessing protected area management. There has not, however, been a structured follow up to the evaluations. In the case of Costa Rica, the limited knowledge in planning and evaluation techniques of protected areas may have been an obstacle to applying the results in full. The only case that is known to have utilised in full the results of the assessment is the Galápagos National Park in 1995, a protected area that has a high level of resource knowledge and the ability to apply planning and evaluation mechanisms. The evaluation was well received, had concrete results and these were incorporated directly into the new management plan.

The teams carrying out evaluations must be technically competent in the key aspects of evaluation. If a qualified technical person does not exist, an external expert should do the evaluation. He or she should work alongside local protected area experts so that they can develop expertise in this area: training in evaluation techniques is a priority.

The point of evaluation is to improve management. Therefore, there must be a capacity to apply the results. Whoever carries out the evaluation, the protected area manager should be in a position to act on the findings. If necessary, he or she may wish to turn to an external expert to help internalise the results of the assessment into planning and management strategies.

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Case study 3
Management effectiveness of the Dja Reserve, Cameroon

Elie Hakizumwami[1]

Introduction: The Forest Innovations Project

Although gross damage to protected areas is usually obvious, by the time it is evident, it is often too late to do much about it. Identifying the most threatened areas before the problem becomes well-established – and the areas in which further funding or intervention could make a real difference – is therefore a very worthwhile, if complex, exercise.

This case study describes the development, testing and refinement of a methodology for assessing the management effectiveness of protected areas in the Congo Basin carried out under the auspices of the WWF/IUCN/GTZ Forest Innovations Project. It focuses on testing done at the Dja Reserve, Cameroon.

The methodology used in the region was based on the draft framework developed by WCPA (Hockings, 1997), and now set out in its final form in Part A of these guidelines. It also draws heavily on previous experience from WWF Central America/CATIE (see case study 2), WWF Brazil (see case study 4), and other systems that were presented at a Forest Innovations workshop in Costa Rica in 1999 (Dudley and Stolton, 2000). The methodology described emphasises social aspects and the participation of a wide range of stakeholders. It was developed with contributions from staff of IUCN and WWF. Field-testing was carried out in the Dja Reserve, Cameroon and the Minkebé Reserve, Gabon, two areas that were selected during a workshop in Yaoundé, Cameroon, in March 1998.

The project is ongoing, and comments received from the report on the field-testing (Hakizumwami, 2000), which is summarised in this case study, will be incorporated into a revised methodology. A review of the assessment's usefulness will then be carried out with conservation staff including staff in the protected areas concerned.

The Forests of the Congo Basin

The Congo Basin[2] contains the second largest continuous moist tropical forest in the world, covering about 2.8 million km^2. This represents about 20 per cent of the world's

[1] IUCN/WWF Forest Innovations project. The project was conducted jointly with Nigel Dudley and Sue Stolton from Equilibrium Consultants.

[2] In the context of this case study, the Congo Basin covers six countries: Cameroon, Central African Republic, Congo Brazzaville, Congo Kinshasa, Equatorial Guinea, Gabon.

remaining moist tropical forest reserve. The Congo Basin forests are the most biologically diverse in Africa. Since the 1930s, about 6 per cent of the forests in the region have been declared as '*protected areas*', being accorded the status of National Parks, Fauna Reserves, wildlife sanctuaries, etc. Many of these protected areas are still relatively undisturbed, mainly as a result of access difficulties that have safeguarded them from large-scale deforestation. Human populations are small, in part due to resettlement programmes during the colonial era. In the past ten years, the Congo Basin has became a major focus for international organisations and institutions interested in the conservation of biological diversity. These support the region's governments in establishing and managing protected areas.

The Dja Reserve

The Dja reserve is the largest in Cameroon, covering 5,260 km^2 in the Central-Southern and Eastern Provinces of Cameroon, 243km south-east of Yaoundé and 5km west of Lomié. The Dja River forms its natural boundary, except to the south-west. . The area was classified as a *'Réserve de faune et de chasse'* in 1950, a '*Faunal Reserve*' in 1973, and a Biosphere Reserve in 1981; it was inscribed on the World Heritage list in 1984. Dja is an IUCN category IV protected area. It has an equatorial climate with two rainfall peaks, a mean temperature of 23.3 C and mean annual rainfall of 1,570mm. The relief is fairly flat except in the south-east, although a major fault line on the southern edge has led to the formation of deeper valleys.

Ecologically, the Dja Reserve is characterised by a deciduous and semi-deciduous forest mixed with extensive swamp. The vegetation mainly comprises dense evergreen Congo rain forest with the canopy at 30-40m rising to 60m. Around 43 species of tree form the high canopy. The shrub layer contains over 53 species. The other main vegetation types are the herbaceous layer, swamp vegetation, secondary forest around abandoned villages, and recently abandoned cocoa and coffee plantations.

Dja harbours 109 mammal species, including threatened species such as the gorilla and elephant. The reserve has 360 bird species, of which 80 are migratory. Bates's weaver is endemic to southern Cameroon and the grey-necked picathartes is believed to be endemic to Dja. Reptiles include two threatened crocodile species; there are 62 species of fish (IUCN–Dja and ECOFAC, 1999).

Human population is low (2 people/ km^2). 5,000 people, mostly pygmies, are reported living within the reserve mainly in small encampments, maintaining an essentially traditional lifestyle (Moucharou, 1999). Some villages of Bantou and Pygmies (Baka) are established close to the reserve. In all, about 30,000 people depend directly on the resources of the reserve.

Since the establishment of Dja as a protected area in 1950, management has been restricted to resource protection and anti-poaching activities. However, the single warden and seven guards have not been enough to ensure protection. While there is no commercial timber exploitation within the reserve, logging and mining take place close by. Although access is restricted, both Pygmies and Bantou are free to hunt around and within the reserve using traditional techniques. Villagers also fish in the Dja River. Subsistence plots (cassava, maize, taro, etc) encroach on the reserve. Commercial poaching is common, while gathering of forest products for home consumption and commercial purposes also occurs. Small-scale production of cash crops, such as coffee and cocoa, takes place around and within the

Reserve. Since 1992, two conservation projects Dja-ECOFAC Project (since 1992) and IUCN-Dja Project (since 1995), and one development project were established to support the government in managing the reserve.

IUCN-Dja Project

The IUCN-Dja project, funded by the Dutch Government and jointly implemented by IUCN and the Ministry of Environment and Forestry, Cameroon, operates in the south-eastern part of the reserve. The project aims to contribute to conservation and sustainable management in Dja Reserve and its periphery, particularly in the Lomié region. The project has had technical support from the Service Néerlandais des Volontaires (for ecodevelopment activities) and the Gougen Ark Foundation (for research on mammals), which was planned to run for five years, subsequently extended by four months (December 1995–April 2001), with total budget of 6,231,859 Dutch Guilders. The field-testing in Dja worked closely with the IUCN project. Project staff were encouraged to comment on, and add to the assessment system, which has the potential to be used to assess entire protected areas, not just individual projects within them.

Evaluating the management effectiveness of Dja

Two questionnaires were used to assess management effectiveness (one for staff and one for local communities) based upon the WCPA framework. Background research included a literature survey and was followed up by site visits, interviews and analysis (see Hakizumwami, 2000). After collection of data and information, the results were analysed to formulate conclusions and recommendations for an action plan for adaptive management. Two methods were used – a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis and scoring.

The **SWOT** analysis took place within the framework developed in Hockings (1997) for WCPA and looked at strengths, weaknesses, opportunities and threats under the headings of design and planning, inputs and influences, processes, outputs and outcomes. **Scoring** was carried out using a scorecard also adapted from Hockings (1997). Although subjective, this was done to provide an idea about the level of management effectiveness and to serve as a basis to evaluate changes over time. The score is a trade-off of weaknesses against strengths in relation to predefined management objectives. Generally a four level rating scale was adopted. Additional points were added to issues of high importance to give them more weight. The level of the management effectiveness was related to a percentage. Although rating was subjective, the results can show the manager which areas require improvement.

Following discussions with project staff, the criteria (and indicators) for the assessment of the management effectiveness of protected areas within the Congo Basin context were agreed upon, including:

- Status of the protected area and law enforcement
- Vulnerability of the protected area
- Information availability
- Planning efficiency
- Resourcing (financial, human, material) availability

- Partnerships
- Incentives for local communities participation
- Conflict resolution

The SWOT analysis and scoring were together used to develop some general conclusions relating to the reserve, as outlined below.

Summary of the main conclusions of the Dja field test

Status of the Protected Area:
Biodiversity richness of Dja reserve and its periphery makes effective management essential. However, this also leads to conflicting interest amongst different parties (logging companies, government institutions, local communities, conservation agencies, etc.) For effective management to be achieved, the concept of short term protected area management '*project'* must be replaced by a concept of a *'programme'* for protected area management, which addresses long-term planning and resource requirements. Such an approach will allow intervention that takes account of the different influences on the management of area.

***Pressures on the reserve*:**
More investigation should be made of the logging activities around the Dja Reserve and the impact on park management arising from immigration into the reserve as a result of logging.

Legislation:
Although there is the political will to establish a network of protected areas in the region, this calls for institutional backing to be mobilised at different levels. Inadequate legislation governing protected areas, inappropriate land use allocation (particularly the logging concessions close to the reserve and within the ecological corridors), and insufficient funding all undermine effective management, especially as, in the short term at least, they are outside the control of the protected area management team. Legislation governing protected areas also overlooks the local communities' customary rights to use resources in the protected areas.

Natural resources management systems:
Human populations within and around the Dja Reserve rely almost entirely on natural resources for their survival. They have, however, a tradition of preservation of natural resources within their customary territories. Their cultural strategies for conservation - such as totem, taboos, customary sanctuaries, respect for others' territories, and vigilance committees to regulate resource use – create an opportunity for effective management of the reserve.

Financial and human resources sustainability:
Given the international value of Dja Reserve, there is a need for the international community's commitment to ensure effective management. This requires sustainable funding and technical support to implement plans. However, donors have to keep in mind that natural resources conservation is a long process: success should be evaluated over the long term.

Partnership:
Generally, threats to Dja Reserve originate from outside the reserve and most of them are beyond the control of the protected area manager. Consultation with key stakeholders

and main local actors, along with conflict resolution skills, is therefore vital for effective management.

Relations with the local population:
The ability of forest people to influence the decisions taken which affect their livelihoods is still limited due to the lack of information and absence of formal and legal mechanisms to present their views. Most conservation initiatives are designed and implemented without the input of local communities or regard to the customary laws and land use patterns.

Lesson learned

Several key lessons stand out:

Choose the right assessor:
Assessment of protected area management effectiveness must be sensitive to social and economic issues as well ecological. Therefore an assessor is needed with wide experience in natural resources management, and with the skills and capacity to use participatory methods which integrate biophysical and socio-economic aspects.

Involve protected areas staff from the outset:
The main limitation recorded during the field-testing of the system for assessing management effectiveness was that the team managing the protected area was suspicious of the assessment. Introductory meetings were necessary to explain the objectives and the importance of assessing management effectiveness.

Create a climate of trust for local communities:
Where possible, external project staff should not be involved in discussions with local communities; and if a translator is needed, it is better to allow the interviewees to select their own. This creates an environment of trust, and encourages local people to provide maximum and accurate information.

Involve the key stakeholders:
Since management effectiveness is affected by internal as well as external factors, assessment needs to involve the key stakeholders.

Address the wider issues, such as:

- The impact of the creation of the protected area on local communities' livelihoods (income, well-being, vulnerability, social organisation, food security, use of natural resources etc.) and on the local communities' behaviour towards the use of natural resources;
- The influence of the funding agency on management effectiveness;
- The commitment of governmental institutions towards the management of the protected area;
- The international community's commitment (in particular, for sites of international importance) to support the management of protected areas;
- The integration of the individual protected areas within the wider regional or national protected area network;
- The assessment of the complementarity of objectives between different actors.

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Case study 4
Management effectiveness evaluation of protected areas in Brazil

Arturo Izurieta V[1]

Introduction

Brazil is the largest country in South America (8,511,996 km^2) and one of the world's mega-diverse nations. Due to concern about the deterioration of natural resources and biodiversity in Brazil, WWF, together with the Brazilian Environment Institute (IBAMA), set out to evaluate 86 protected areas, using a methodology that was simple and inexpensive to apply, would gather precise information, and would generate results quickly. The project also aimed to call attention to the so-called "paper parks", and to press the government to vote on, and pass a Bill to create a National System of Protected Areas (Sistema Nacional de Áreas Protegidas – SNUC). The bill had been in the House of Representatives since 1992, but had never been voted on. This case study presents a brief summary of the methodological procedure that was developed, focusing on how it was applied and the results and repercussions for the system of protected areas in Brazil. Its relationship with the WCPA framework is also discussed.

Brazil's protected areas

In Brazil, protected areas receive the name of "conservation units". These are either conservation units of **direct use**, where exploitation of natural resources in a sustainable manner is permitted, or conservation units of **indirect use**, where the use of natural resources is not allowed. IBAMA manages the federal conservation units. State governments, NGOs, the private sector and indigenous communities also manage protected areas in Brazil. Many conservation units lack the financial and human resources needed for effective management, leading to problems in achieving their conservation objectives (Ferreira *et al.*, 1999).

Objectives, methodology and application

In order to support its "Protect our Parks" campaign, WWF Brazil joined with IBAMA to carry out an evaluation of the management effectiveness of conservation units in Brazil in 1998. The study was conducted on the 86 federal conservation units of indirect use that had been in existence for six years or longer (this was considered a reasonable length of time to establish proper management).

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IBAMA and WWF Brazil formed a joint team to plan and manage the evaluation. Eight key indicators were selected to measure the **implementation** of the protected areas aims: *tenure of the land; boundary demarcation; existence of management plan; presence or absence of illegal activities within the protected area; budget received in relation to the budget requested; staff numbers; adequacy of equipment; adequacy of infrastructure.* Five indicators were selected to measure the **vulnerability** of the protected area*: degree of insularisation (fragmentation); percentage of degraded land within the protected area; illegal exploitation of resources within the protected area; use of the land in the buffer zone; and presence of development projects within the buffer zone* (Lemos de Sá *et al.,* 2000).

The indicators were assessed through 13 multiple choice questions, mostly of a quantitative nature. The indicators were scored according to a six-point scale, in some cases associated with percentage values as follows:

Score	Percentage equivalent
–	No information available
0	0 – 29%
1	30 – 49%
2	50 – 69%
3	70 – 89%
4	90 – 100%

Source: Adapted from Ferreira *et al.,* 1999.

Example: Tenure of the land in the protected area:

Score	Proportion of protected area under State tenure
(4)	90 – 100%
(3)	70 – 89%
(2)	50 – 69%
(1)	30 – 49%
(0)	0 – 29%
(–)	information not available

Judgements about the degree of implementation of a protected area and its vulnerability were made on the basis of the average score obtained for relevant questions (see below):

Average score	Meaning in terms of implementation	Meaning in terms of vulnerability
0 – 1.99	Protected area that is largely unimplemented	Protected area that is largely secure
2 – 2.99	Protected area with minimal implementation	Protected area that is moderately vulnerable
3 – 4	Protected area with reasonable implementation	Protected area that is highly vulnerable

Source: Adapted from Ferreira *et al.*, 1999.

The evaluation questionnaires were completed by the directors of the 86 conservation units and analysed by WWF. Where park directors did not know the answer, WWF staff completed the questionnaire with information from IBAMA central office staff.

47 of the 86 areas assessed were largely unimplemented, 32 were considered to be minimally implemented and only seven to have been implemented to a reasonable degree. 37 of the 86 areas assessed were felt to be vulnerable or highly vulnerable to human activity, while 49 were considered to be only slightly vulnerable (Lemos de Sá, *et al.,* 2000).

The analyses of the data on implementation and vulnerability were used to prepare a "risk matrix" which groups the 86 conservation areas into four classifications, according to the degree of risk faced by each area (protected areas were regarded as being at greater risk as their vulnerability scores increased and as their implementation scores dropped). The status of the areas according to the risk matrix was:

- 20 conservation areas (23% of the total) were at "extremely high risk";
- 17 conservation areas (20%) were at "high risk";
- 27 conservation areas (31%) were at "medium risk";
- 22 conservation areas (26%) were at "normal risk".

Relation of the method to the framework developed by WCPA

This section reviews the WWF Brazil methodology in relation to the guidelines contained within the WCPA framework set out in Part A.

The evaluation methodology was designed to assess a large number of protected areas over a short period of time. This meant that participation in the evaluation was limited to the directors of the protected areas and to certain other employees of IBAMA and WWF Brazil. The methodology is simple and comprehensible. By assessing a large number of protected areas at one time, it was possible to carry out statistical analyses to see differences or similarities in management effectiveness in relation to attributes such as geographical zone and biome.

The indicators selected by the WWF/IBAMA evaluating team address issues of "requirements" (equivalent to inputs) and management processes, with some consideration given to threats and outcomes. The evaluation is roughly equivalent to a level I evaluation in the WCPA Framework (see Part A, Chapter 3.1). The indicators are related mainly to management aspects and buffer zone issues such as development projects, land use and illegal exploitation of natural resources. There are no indicators that evaluate aspects of community contribution to, or participation in, protected area management, nor intra/inter-institutional relations.

The evaluation results reflect clearly the strength and weaknesses of the different protected areas in relation to implementation and vulnerability. Implementation issues are usually associated with aspects under the control of the protected area administration, whilst issues of vulnerability are outside its control.

Discussion

The results of the evaluation survey were used by WWF, with great effect, in their campaign in support of protected areas in Brazil. This was done by publishing a report detailing the findings of the study (Ferreira *et al.,* 1999), and through a number of associated media and public relations events.

Using the report's data, WWF argued that the SNUC Bill had to be voted upon and approved by Congress in order to improve the conditions of the parks. One important effect of the bill is that financial resources collected by parks would be reinvested in the protected area system, which is not currently the case.

WWF also launched an e-mail petition in favour of parks, asking people to press Congress to vote on the SNUC Bill. On Environment Day 1999 (5 June) WWF organized an event in front of the National Congress. Hundreds of children stood on the Congress front lawn forming a map of Brazil. Others stood inside the map, each representing a protected area, holding a sign with the park's name on it, and wearing a coloured T-shirt and cap to represent the degree of risk that the protected area faced (black = extreme risk; red = high risk; yellow = medium risk; and green = normal risk). The children also read out the petition that was sent by e-mail, and handed over 5,000 signatures to a group of Congressmen. Ten days after this event, the SNUC Bill was voted on and approved in the House of Representatives. Just over a year later, on 21 June 2000, the Senate gave its approval as well.

As a result of this work, WWF has been asked by other institutions and State Governments to help carry out similar studies for state-level protected areas. It organized a seminar in September 1999 to explain the methodology to staff members from the States of Mato Grosso, Minas Gerais, Rio de Janeiro, Rondônia and São Paulo, and they are now carrying out their own studies. Fundacion Vida Silvestre Argentina (FVSA) has applied the methodology to protected areas in Argentina.

However, the media's interest in the campaign (between March and October 1999, there were 50 news releases on newspapers and magazines about the WWF report, and several TV and radio interviews) caused some difficulties between WWF Brazil and IBAMA, mainly because the parties did not agree in advance on the objectives of the study and the use of its results. This was exacerbated by a failure of communication between WWF and IBAMA just before the release of the report (Lemos de Sá *et al.,* 2000). Some IBAMA staff responded defensively, seeing the report as a reflection on their management rather than on the difficult circumstances faced by protected area managers in Brazil. As far as WWF was concerned, "*the study was meant to be a 'snap shot' of the present situation, a base-line for future monitoring, and an instrument for government planning, not a judgement of past or present performance*" (Lemos de Sá *et al.,* 2000).

Subsequently, WWF and IBAMA staff have reviewed the difficulties that arose over the publication and use of the results of the study, and have clarified the project's objectives and their institutional roles. This has resulted in a formal, five-year co-operative agreement. A second park survey is scheduled for 2000 (Lemos de Sá *et al.,* 2000).

The WWF Brazil/IBAMA study is a good example of how evaluation results can be used for advocacy and for broad policy setting and prioritisation. It also demonstrates the

tensions that can arise between protected area managers and NGOs if objectives and roles are not clarified in advance of co-operative efforts.

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Case study 5
Monitoring management of protected areas: A regional initiative for Central America (PROARCA/CAPAS)

Arturo Izurieta V[1]

Introduction

Although frequently referred to as the "system" of Central American protected areas, the protected areas of the region (currently 411 in total) are in fact only now being planned and managed as a real system. This development is based on political commitments which have been made in the Central American countries to achieve better environmental protection and resource management.

PROARCA (Proyecto Ambiental Regional de Centroamerica) is the Regional Environmental Project for Central America. The Central America Protected Area System (CAPAS) is one element within this larger project. PROARCA/CAPAS is a partnership of the Central American Commission on Environment and Development (CCAD), the U.S. Agency for International Development (USAID), the International Resources Group Ltd (IRG) and The Nature Conservancy (TNC). Its objective is to provide political, technical, and economic support for the management of protected areas in Central America.

The PROARCA/CAPAS system to monitor protected areas management in Central America was developed in May 1997 at a workshop of regional and international experts in protected area and natural resource management.The workshop discussed proposals developed by the technical staff of the project, and produced a series of guidelines relating to the methodology. These were that the system should: 1) be simple; 2) be cheap; 3) generate data in a short time; 4) be applicable over the wide range of protected area types in the region; and 5) promote management excellence in protected areas.The system that was developed from this methodology contains the following components:

1. a desired scenario for the protected area;
2. the agreed scope of the analysis;
3. the factors that should be addressed in the analysis;
4. criteria for each factor to be addressed; and
5. indicators for each criteria.

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The monitoring system has been applied to different protected areas throughout Central America. Implementation has had political backing from CCAD and technical support from members of PROARCA/CAPAS.The support of protected areas managers in the areas where monitoring has been applied has been a key factor in improving the methodology and in identifying new elements to be monitored.

Description of the methodology: procedure and application

The procedure is based on the 'scoring model' to evaluate protected areas developed by TNC in the early 1990's. The PROARCA/CAPAS methodology includes the monitoring of 43 indicators within 17 management factors, which are grouped in five fields: social, administrative, natural and cultural resources, political/legal, and economic/financial. The procedure uses a scoring scale from 1 to 5, where 5 equals the optimum value which can be reached.

The first trials of the procedure were carried out in 1997 in four pilot protected areas with different IUCN management categories, within the Volcanic Central Mountain Range Conservation Area in Costa Rica.Monitoring was carried out in the same areas the following year. As a result, some changes and adjustments were made to the indicators initially proposed to suit the circumstances of the individual sites.

The application of the procedure required initial training of managers of the protected areas, as well as of the technical personnel in charge of the protected area at the state level.The training sessions allowed the "evaluators" to review each indicator to be monitored and to make sure that they were relevant to their protected area.

The procedure requires a joint effort of all those who participate in the planning and decision-making for the protected area to identify an "optimum scenario" for each area, **representing the desired management conditions to be achieved in a specified period of years**. The achievement of this optimum scenario involves five stages of work, each of one year's duration. Thus the method visualises a 5-year period to work gradually towards the optimum scenario for the management of the protected area. In most protected areas where the monitoring procedure has been applied more than once, it has been possible to observe the advance, or decline, in management as measured by the same indicators.

The scenarios developed for the system have contributed to the construction of 5-year management visions for the protected areas. Protected area personnel and other key actors have been able to discuss what should be the optimum level of management, and to propose actions, activities and processes that will raise the level of performance.

PROARCA/CAPAS has also identified some additional outcome indicators which should eventually be incorporated in the system. These include: changes in the population of key species within the protected area; the presence of rare species; the behaviour, distribution and abundance of species; indicators of the integrity of ecosystems; changes in surface water; impact of global climatic changes; changes in air quality; changes in plant coverage; changes in human activities.

Although PROARCA is a regional project with the political support of Central American nations, the application and implementation of the system has been slow. This has been due mainly to changes in the personnel who carry out the protected area evaluation. However, the monitoring system has been useful to protected area managers

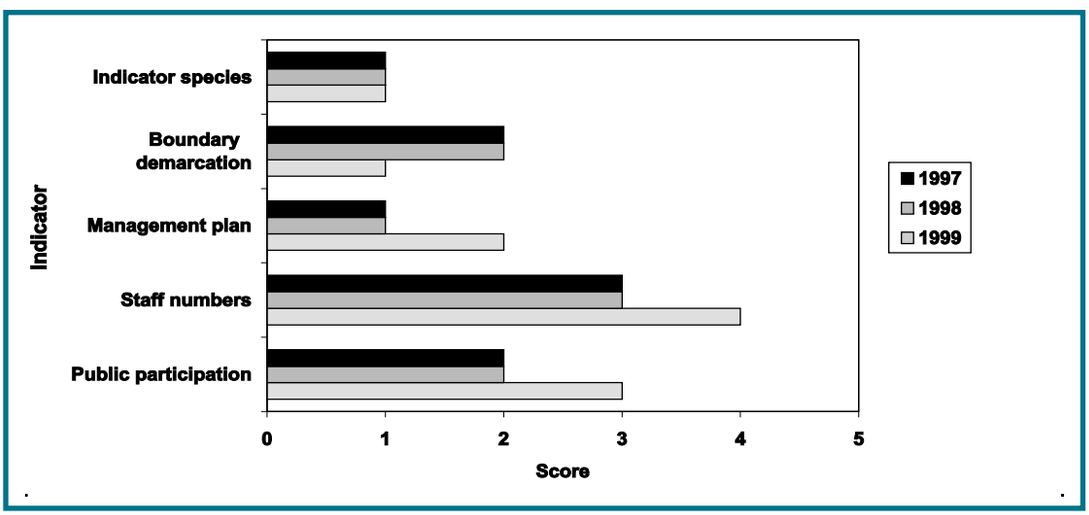
in various ways: they now recognise the importance of monitoring and evaluating management, the value of developing a scenario for the optimum management of protected areas, and the help that the system can give by prioritising programme actions and expenditure.

To date, the system has been applied in several countries in Central America. In Panama, the Autoridad Nacional del Ambiente (ANAM) has officially adopted the framework and most of the protected areas of the country are already implementing it. Pilot sites have been supported in Belize in cooperation with the Belize Audubon Society (Cockscomb and Crooked Tree Wildlife Sanctuaries). In El Salvador, the framework has been implemented in close coordination with Parques Nacionales y Vida Silvestre (PANAVIS) (Montecristo and El Imposible National Parks); in Nicaragua, five protected areas have implemented the framework in cooperation with the Ministerio de Ambiente y Recursos Naturales (MARENA). In Guatemala, Sierra del Lacandón National Park, Biotopo del Quetzal, and Laguna de Lachuá and Cerro San Gil Refuge have all been involved.

Results for five indicators from three monitoring sessions in the Poás Volcano National Park, Costa Rica, are presented in the figure below. They demonstrate how data from the sessions can be used to track protected area management over time. In this example, it is clear that, for three consecutive years, Poás has not invested in research to identify and document indicator species. Perhaps this is a management decision or perhaps due to a lack of resources. In order to understand the full significance of the results, it is necessary to look at the field reports. The example also shows, however, that the park has gained new staff since 1999, since the indicator level rose from 3 to 4, and that the park has improved in its approach to public participation in decision-making.

The system is being further developed in several ways. In Guatemala, a database is being created to allow better access to the information generated by the monitoring, and to improve the interpretation of results. In Costa Rica, where natural resource management is based on Conservation Areas (i.e. geographical areas that comprise a subsystem of protected areas and the surrounding buffer zones, or zones of influence), the methodology has been used to develop a monitoring framework for the National System of

Results of five indicators from three monitoring sessions using PROARCA/CAPAS method in Poas Volcano National Park, Costa Rica



Conservation Areas (SINAC). This framework, which has yet to be applied, could help develop a strategy for site level monitoring in Conservation Areas. As well as monitoring conservation status, the framework could also be applied to activities outside protected area boundaries, for instance, to law enforcement outside protected areas, logging permits etc.

The methodology and its integration with the WCPA framework

In line with the WCPA framework, the system is designed to measure and help improve the quality of management. This is done by comparing the results from the first monitoring session, which provides the baseline data, with the optimum scenario. Every six months thereafter, the results are compared against the scenario and the previous measurements in order to assess progress. Comparisons should be made of the same protected area over time; comparisons between and among protected areas are not considered appropriate, however, as the factors that influence their management differ so widely.

The PROARCA/CAPAS methodology is participatory. It provides officials of the protected areas and many other actors, such as representatives of social organisations and local communities, with an opportunity to learn about what has been happening, not only in the protected area but also within its zones of influence, and to co-ordinate action for the benefit of all concerned.

The monitoring system is simple, transparent and easily comprehensible.Some of the relevant results of the application of the strategy have, for example, been made available on the PROARCA project web pages.

Discussion

The PROARCA/CAPAS system contributes to improved management of the protected areas of Central America and to the consolidation of these into a “system” in a strict sense.The emphasis on monitoring which is promoted by PROARCA/CAPAS has had the political support of the Central American countries and its application has been well received.

At first, it was intended to apply the same indicators to all pilot protected areas. However, although some common management indicators may need to be monitored in all protected areas, experience has shown that there is also a need to modify, and /or include new, indicators according to the institutional and political realities and the management regimes which are unique in each case.

The strategy has contributed enormously to the identification of optimum scenarios to be reached over a set period of years. However, although the strategy promotes and guides a process in which actions are directed towards the achievement of these scenarios, very few protected areas have yet achieved this goal.

The PROARCA/CAPAS strategy is primarily a “monitoring” strategy, which could in time incorporate concepts of “evaluation”. Indeed evaluation will be greatly assisted by several, repeated monitoring exercises. The real challenge, though, is not only to monitor developments and interpret the results, but to respond to them through concrete actions that improve the quality of protected area management.

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Case study 6
Rapid assessment and prioritisation methodology

Jamison Ervin[1]

Background to the methodology

WWF's Forest For Life Campaign and the WWF/World Bank Alliance have developed the "Rapid Assessment and Prioritisation Methodology" to help gauge progress towards their conservation targets. The methodology outlined in this case study is intended to provide policy makers with a broad tool for assessing and prioritising forested protected area systems, not to answer more specific questions, see below:

The Methodology CAN	The Methodology CANNOT
■ Identify overall strengths and weaknesses in management capacity and PA policies	■ Assess individual PA management effectiveness and policies in detail
■ Analyse the overall scope and severity of a variety of threats and stresses	■ Identify steps to mitigate specific threats or stresses in each protected area
■ Identify areas of high ecological and social importance and indicate their vulnerability	■ Identify specific steps to reduce vulnerability in each PA
■ Prioritise PA policy interventions according to urgency and importance	■ Develop specific policy interventions for each PA
■ Identify gaps in PA assessments and complement on-going efforts	■ Serve as an all-encompassing, comprehensive PA assessment process

The most thorough and effective approach to implementing this methodology is to hold a facilitated workshop in which protected area managers, policy makers and other stakeholders participate fully in evaluating each element of the assessment, analysing the results, and identifying priorities and next steps. This approach need not be prohibitively expensive; costs can be minimised for example by planning a workshop in tandem with existing meetings.

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The methodology presented in the case study draws from, and is consistent with, the framework developed by WCPA and described in Part A of these guidelines. It contains all six WCPA assessment elements, as illustrated below:

Context	Planning	Inputs	Processes	Outputs	Outcomes
■ Biological importance ■ Social importance ■ Threats ■ Vulnerability	■ Legal status ■ Management planning ■ PA site design ■ PA system design ■ Macro policy issues	■ Staff ■ Equipment ■ Transportation ■ Facilities ■ Funding	■ Training ■ Supervision ■ Data management ■ Research and monitoring	■ Education and outreach programmes ■ Fulfilment of management plan ■ Law enforcement	■ PA integrity ■ Degree and extent of degradation ■ Community benefits

In general, the "Rapid Assessment and Prioritisation Methodology" is broad-based, as indicated above. It can thus provide answers to such questions as: What are the threats facing a protected area and how serious are these? How do protected areas compare with one another in terms of infrastructure and management capacity? What is the urgency for taking actions in each protected area? What is the overall level of integrity and degradation of each protected area? How well do national and local policies support effective management of protected areas?

An in-depth, field-based assessment is required to answer more specific questions, such as: What particular steps are needed to prevent or mitigate existing threats? What are the specific needs for training, capacity building and infrastructure support? What concrete actions are needed for each protected area? How well does the protected area meet its management targets, and what are the reasons for success in this regard? What particular policies need to be revised and how?

A broad-level assessment, such as the one presented here, can serve as a 'trip-wire' to identify individual protected areas that may warrant more in-depth study. It can also help draw out broad programmatic issues, such as training or protected area site design, that may warrant more thorough analysis and review. These different assessment dimensions are illustrated below.

Broad-scale assessments	In-depth, fine-scale assessments
■ Wider range of topics	■ Narrower range of topics
■ Focus more on context, planning and inputs	■ Focus more on processes, outputs and outcomes
■ Primarily office-based	■ Primarily field-based
■ Policy-focused	■ Programme-focused
■ Part of macro, comparative assessments	■ Part of routine evaluation and adaptive management processes
■ PA managers, policy makers and national stakeholders participate	■ PA staff and local stakeholders participate

Process Involved in the Methodology

The "Rapid Assessment and Prioritisation Methodology" includes five steps, as outlined below.

Step 1: Identifying the protected areas to be included in the assessment
The first step is to decide whether, and how, to limit the number of protected areas to be included in the assessment process. In countries with few protected areas (e.g. Algeria, Mozambique and Nepal), they can all easily be included in the assessment. In countries with many protected areas (e.g. Brazil, China and United States), an assessment of all areas is likely to be impractical. Some approaches to narrowing down a long list of possible sites for inclusion are:

1. limiting the assessment to a particular region, such as a province, district or state;
2. limiting the assessment to a particular management category, such as national protected areas, or to certain IUCN categories; or
3. limiting the areas through random sampling, (appropriate when the aim of the assessment is simply to detect broad trends rather than develop priorities and next steps).

Step 2: Assessing existing information for each protected area
The second step is to assess the existing data for each protected area. Many countries have already conducted studies on protected area management effectiveness and prioritisation. Gap analyses, needs assessments, threats analyses, legal and policy studies, and scientific research can all contribute to an understanding of each assessment element.

Step 3: Filling data gaps through questionnaires and workshop
The third step is to gather the remaining information needed to complete the management effectiveness questionnaire, including the analysis of threats and stresses described below. Depending on the assessment objectives, the quality and extent of existing data, and the resources available, the information gathering stage may vary widely. At its simplest, a consultant or assessment team will complete the questionnaires and threats analysis themselves, based on professional judgement and stakeholder consultation. This approach is most appropriate for very broad assessments, whose results will be used primarily for uncovering general trends. A more thorough approach will involve a consultant or assessment team seeking answers to the questionnaires, which may be done in person, over the telephone, by mail or electronically. The most in-depth and effective approach is to administer the questionnaire and threats analysis as part of a workshop involving protected area managers, administrators and stakeholders (e.g. social and conservation NGOs). Participants themselves conduct the analyses and, on that basis, recommend priorities and possible next steps.

Step 4: Analysing the findings
The fourth step of the process is to analyse the data. The analyses described in this paper include: 1) overall effectiveness (inputs, practices, policies); 2) extent and severity of existing degradation; 3) extent and severity of potential degradation; 4) total potential loss; 5) vulnerability; 6) conservation urgency; and 7) social urgency. The assessment team may decide that some analyses are not useful, and that others may need to be modified.

Step 5: Identifying next steps and priorities
The fifth step is to identify priorities and next steps, based on the findings and analyses.

This step will vary considerably, depending on the objectives of the assessment. The "Rapid Assessment and Prioritisation Methodology" includes a few examples of ways to set priorities and identify next steps, including: comparing overall effectiveness; threats and stresses; total potential loss; vulnerability; and biological and social urgency.

The questionnaire

The methodology includes a two-part questionnaire. The first part focuses on overall **management effectiveness issues**, and covers the following topics:

1. ***Staffing***: sufficient number, skills, training, supervision, and salaries.
2. ***Communication and information***: internal communication, telephones, computers and software, data, and data management systems.
3. ***Transportation and facilities***: vehicles, equipment, staff facilities, maintenance, visitor facilities.
4. ***Management planning***: management plan, resources inventory, threats analysis, work plan, employee handbook.
5. ***Management practices***: fulfilment of management prescriptions, annual review, enforcement of laws, education, communication with communities.
6. ***Research and monitoring***: impact of uses, ecological research, social research, identification of adaptive management needs.
7. ***Biological importance***: globally or locally threatened ecosystem and/or species, high biodiversity, high endemism, critical landscape function, large size.
8. ***Socio-economic importance***: local employment, sustainable development potential, subsistence, aesthetics, and social (e.g. medicinal), educational and recreation values.
9. ***Legal status and security***: permanency, absence of disputes, boundary demarcation, complementary laws, and local support.
10. ***National and local policies***: sufficient funding, land use laws, comprehensive biodiversity assessments.
11. ***PA site design***: layout and configuration, maintenance of key species, natural processes, buffer zone.
12. ***PA system design***: representativeness of ecosystems, prevention of extinction, sites of high biodiversity are conserved, and maintenance of natural processes throughout the landscape.

The second part of the questionnaire addresses **threats and stresses.** Threats are potential or impending stresses in which a detrimental impact has not yet occurred, but may occur in future. Stresses are external forces or events that have a detrimental impact on the integrity of the protected area (i.e. that result in diminished biological diversity and/or impoverishment of the area's natural resources). Stresses may include both legal and illegal activities and may result from direct and indirect forces.

A variety of localised threats may arise, including logging settlement and encroachment, mining, grazing, dam building, poaching, conversion to agriculture, tourism and recreation. For each threat, respondents are asked to indicate:

- The likelihood of the threat occurring or increasing.
- If the threat has occurred, the extent of degradation (including the breadth, degree and permanence).
- If the threat is likely to occur or increase in the future, the potential impact it is likely to have (including breadth, degree and permanence).

In addition, many protected areas face problems of a more general nature, some of which may also be the subject of the questionnaire:

- The area is difficult to monitor, because it is large or remote, or has few staff.
- The protected area management is under pressure to exploit natural resources of the protected area.
- Bribery and corruption is common throughout the region.
- The area is experiencing civil unrest.
- Cultural practices, beliefs and traditional uses conflict with the objectives of the protected area.
- The natural resources in the protected areas are potentially profitable to exploit.
- The area is near major roads, railways and/or commercial waterways.
- There is a strong demand for, and trade in, products from the protected area.
- The area surrounding the protected area is under great economic pressure (e.g. poverty, or as lack of jobs and reliable sources of income).

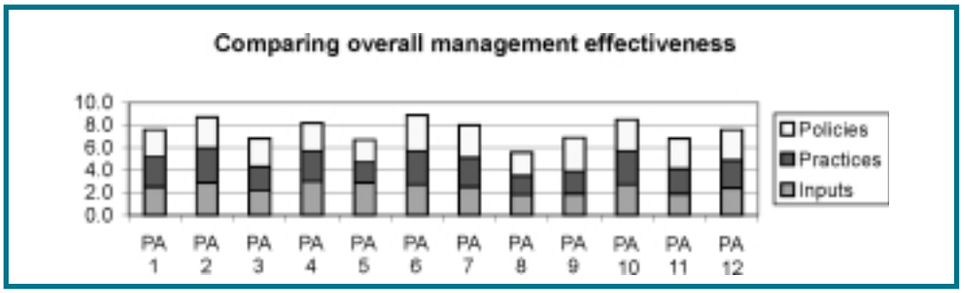
Finally, protected areas may be vulnerable to more global pressures (e.g. to do with climate) which can also be covered in the questionnaire:

- The area is susceptible to, and has a diminished capacity to prevent, natural catastrophes.
- The area is susceptible to climate-induced changes, notably protected areas:
  - with ecosystems at the latitudinal or altitudinal limit of their range, such as Arctic ecosystems or areas with high elevation forests, which are vulnerable to temperature rise;
  - at low-altitudes which are vulnerable to rising sea levels, e.g. shoreline mangrove forests, or tidal mud flats;
  - that are vulnerable to the effect of storms of increasing frequency and intensity (e.g. coastal sites and those on steep slopes).
- The area is susceptible to air pollution and acidification.
- The area is susceptible to invasive, exotic species.

Analyses

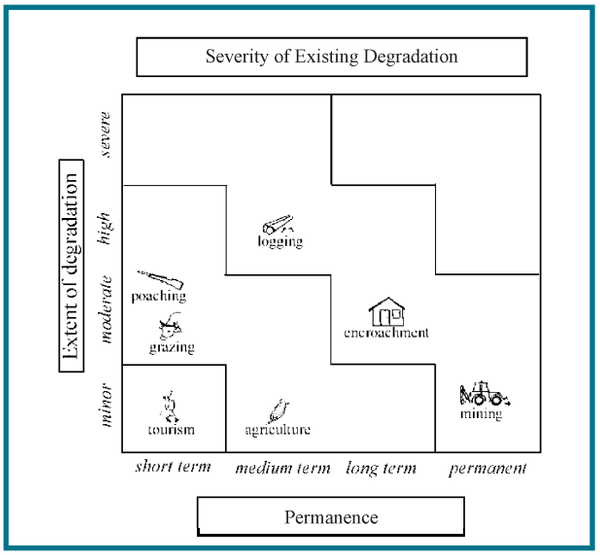
Overall Management Effectiveness

The overall effectiveness of a protected area is a combination of inputs (questions 1-3); management practices (questions 4-6); and policies (questions 9-11). The effectiveness of protected area systems is indicated by question 12. The results from a number of protected areas can be summarised in a simple table format. This information allows protected area administrators and policy makers to 1) compare overall effectiveness of each protected area; 2) identify broad areas of institutional strengths and weaknesses; and 3) identify trends and patterns in protected area management, see below:



Severity of existing degradation

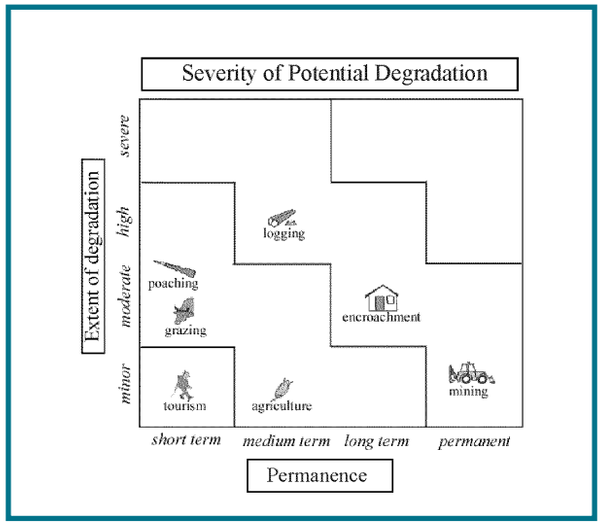
The severity of existing degradation is a combination of the **extent** (breadth and degree) of damage, and the **permanence** of damage caused by each stress. Damage that is mild and can easily recover, or be restored, can be considered relatively low, or '1st degree' severity; damage that is extreme and is unlikely to recover, or be restored, can be considered catastrophic, or '4th degree' severity. Each stress can then be plotted to provide a visual display of the overall severity of existing degradation:



Severity of potential degradation

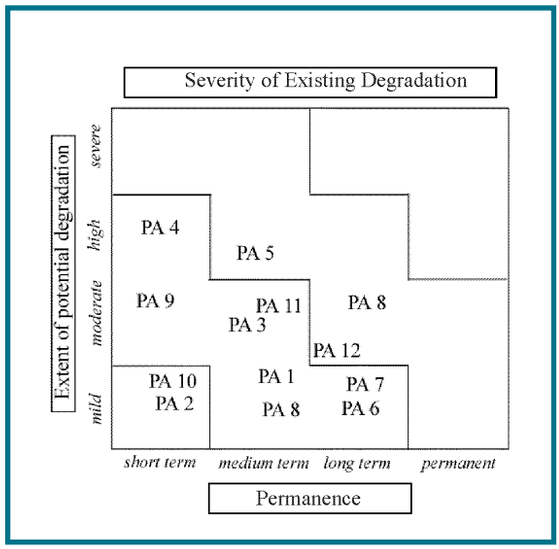
The severity of potential degradation is a combination of the extent (breadth and degree) of damage, and the permanence of damage **likely** to be caused by each threat. Damage that is likely to be mild, and can easily recover, can be considered relatively low, or '1st

degree' severity; damage that is likely to be extreme, and is unlikely to recover, or be restored can be considered catastrophic, or '4th degree' severity. Each stress can then be plotted within the graph to provide a visual display of the overall severity of potential degradation:



Comparing threats and stresses

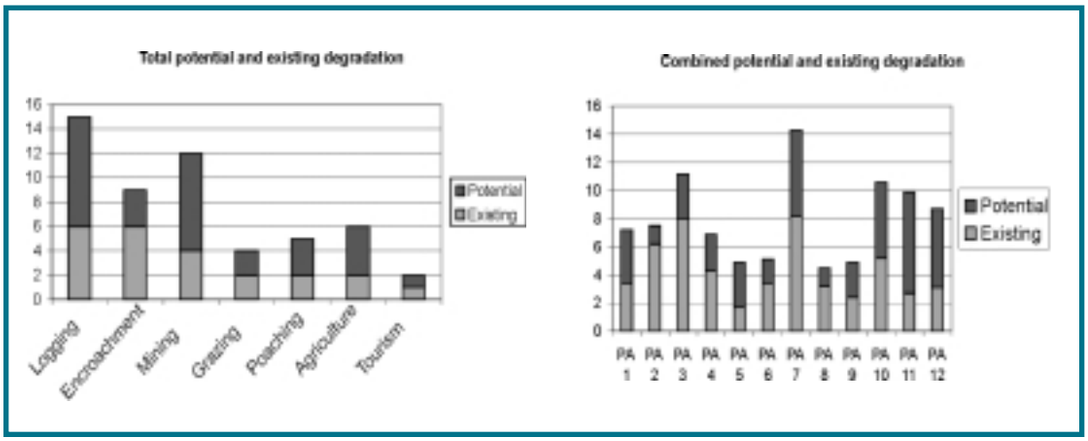
To compare threats across **multiple** protected areas, one must first determine the average extent of degradation for all threats, as well as the average degree of permanence for these threats. These figures can then be plotted for each protected area onto a single matrix. The result is a visual summary of the severity of threats and stresses across all protected areas:



Existing and potential loss

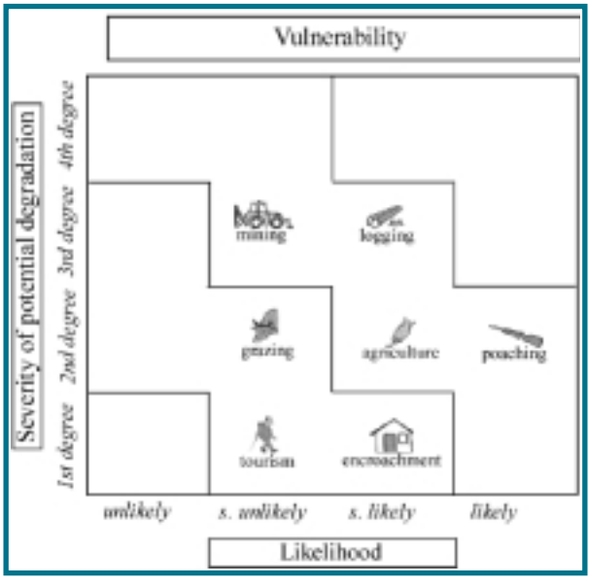
The total existing and potential loss is a combination of the severity of (i) existing degradation and (ii) of potential degradation for each threat and stress within the protected area. In the figure below, the bottom half of the bar indicates *existing* levels of

degradation: the top half indicates *potential* severity of degradation. A combination of the results from all the protected areas can provide an overall picture of the levels of existing and potential damage for each protected area:



Vulnerability

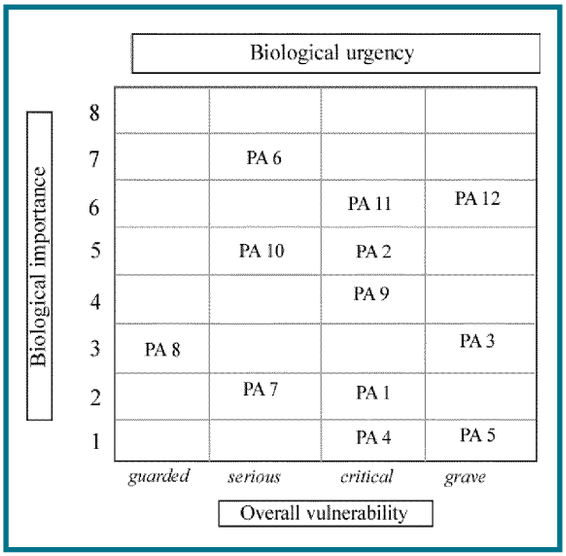
A protected area's vulnerability is its overall susceptibility or exposure to threats and stresses. Vulnerability is the combination of the severity of future degradation from all threats (1st, 2nd, 3rd or 4th degree severity from the previous analysis), with the likelihood of any one threat or stress occurring or increasing. This information can also be graphed, as shown below:



Biological and social urgency

The biological urgency of a protected area is an indication of how important protected area security and effectiveness is in relation to its biological importance. Conservation urgency can be determined by combining the vulnerability (guarded, serious, critical or grave) with the biological importance of the protected area (detailed under question 7 in

the management effectiveness questionnaire). The social urgency of a protected area is an indication of how important protected area security and effectiveness are in relation to its importance to society, and can be determined in the same manner as biological urgency. This information can also be presented as a graph:



Conclusions

Protected areas vary considerably from region to region, and from country to country. For a variety of reasons, the effectiveness, the levels of existing and potential degradation, the vulnerability, and the biological and social urgency of each protected area will differ. The analyses for assessing individual protected areas, and the analyses for comparing multiple protected areas, can enable policy makers to sort through large amounts of complex, multi-variable information, and to answer key questions such as:

- Which protected areas should receive priority?
- Which protected areas are most at risk?
- Which protected areas have strong capacity, and which are weak?
- Which protected areas warrant more detailed, in-depth assessments?
- Which protected areas represent the most strategic conservation investments?
- What are the overall strengths and weaknesses of the protected area system?

The "Rapid Assessment and Prioritisation Methodology" is simply a tool for asking these questions in a structured way. The follow-up steps that may develop as a result of implementing this methodology are the most important outcome and should be the primary focus for policy makers.

Furthermore, the methodology is only one step in a long process of assessing, prioritising, strengthening and supporting protected area systems. There is too a need to: develop policies that provide comprehensive land use planning and natural resource protection; conduct thorough biodiversity inventories; evaluate the design of protected area systems; increase protected area management capacity; and develop policies and incentives for effective protected area management.

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Glossary

***Criterion*:** a major category of conditions or processes – quantitative or qualitative – which together helps define the six elements of the framework. A criterion is characterised by a set of related indicators.

***Effective management*:** the *efficient and orderly use of human and material resources on a planned basis directed to achieve management objectives* (Deshler, 1982). In the context of protected areas, management objectives will be derived from a number of sources including: national/agency protected area legislation, regulations, policy and standards; international conventions and designations; and management plans or agreements relating to the area.

***Element*:** A major component of the evaluation framework defined by the aspect of management that is being assessed. The elements relate to the steps in a strategic planning and management cycle. Performance within each element is assessed by reference to a number of defined criteria.

***Evaluation*:** the judgement or assessment of achievement against some predetermined criteria (usually a set of standards or objectives); in this case the objectives for which the protected areas were established. Information on which such assessments can be based could come from many sources, but monitoring has a particularly important contribution to make in providing the basic data that should underpin the evaluation.

***Indicator*:** a measure – quantitative or qualitative – that provides useful information about a criterion.

***Monitoring*:** the process of repeated observation, for specified purposes, of one or more elements of the environment, according to prearranged schedules in space and time and using comparable data collection methods (Meijers, 1986). It can be used to assess change in environmental parameters over time. In the context of this paper, it is important to note that monitoring need not only address the state of the external physical and social environment, but can also focus on the activities and processes of management.

***Protected area*:** IUCN (1994) defines a protected area as: *An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.*

Abbreviations

CBD	Convention on Biological Diversity
CNPPA	Commission on National Parks and Protected Areas (now the World Commission on Protected Areas)
GEF	Global Environment Facility
IUCN	The World Conservation Union
TNC	The Nature Conservancy
WCMC	World Conservation Monitoring Centre (now UNEP-WCMC)
WCPA	World Commission on Protected Areas
WWF	Worldwide Fund for Nature

Evaluation of management effectiveness should be seen primarily as a tool to assist managers in their work – to help ensure that protected areas achieve the objectives for which they were established.

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