Title: **Management Effectiveness - assessing management of protected areas?**

Authors: Marc Hockings, Sue Stolton and Nigel Dudley

Authors' affiliations: Marc Hockings, University of Queensland, Brisbane, Australia and IUCN World Commission on Protected Areas; Sue Stolton and Nigel Dudley, Equilibrium Consultants, Bristol, UK.

Abstract

To maximise the potential of protected areas, we need to understand the strengths and weaknesses in their management and the threats and stresses that they face. There is increasing pressure on governments and other bodies responsible for protected areas to monitor their effectiveness. The reasons for assessing management effectiveness include the desire by managers to adapt and improve their management strategies, improve planning and priority setting and the increasing demands for reporting and accountability being placed on managers, both nationally and internationally. Despite these differing purposes for assessment some common themes and information needs can be identified, allowing assessment systems to meet multiple uses. Protected area management evaluation has a relatively short history. Over the past 20 years a number of systems have been proposed but few have been adopted by management agencies. In response to a recognition of the need for a globally applicable approach to this issue, the IUCN World Commission on Protected Areas developed a framework for assessing management effectiveness of both protected areas and protected area systems. This framework was launched at the World Conservation Congress in Jordan in 2000. The framework provides guidance to managers to develop locally relevant assessment systems while helping to harmonise assessment approaches around the world. The framework is strongly linked to the protected area management process and is adaptable to different types and circumstances of protected areas around the world.

Introduction

Since the first protected areas were established, managers and others involved in the conservation movement have sought to achieve effective management of these areas. However *management effectiveness* as a prominent issue in protected area management is a relatively new phenomenon. It was not raised by speakers at the 1972 Second World Conference on National Parks, although in the same year, a Conservation Foundation Task Force on the National Parks System did raise the issue of stresses to park systems and the capacity of the Parks Service in America to deal with these (Strong *et al.* 1972). They recommended adoption of an annual system of park environmental reports to assure a continued monitoring of each park's internal and external environmental factors and to identify matters requiring remedial action. They further recommended that these reports should be compiled into a system-wide environmental report.

A decade later, the third World Congress on National Parks (the Bali Congress) contained one paper on monitoring (Croze 1982) in the section of the Congress dealing with *New Directions in Protected Area Management*, but this dealt with monitoring to provide baseline and trend data on ecological systems. The importance of such information for effective management was noted but the use of this information to assess and adapt management was not addressed. In the Congress workshop on *Managing Protected Areas*, papers by Deshler (1982) and Thorsell (1982) addressed the issue of management effectiveness explicitly. Deshler's paper consisted of a discussion of what constitutes effective management but did not develop this into an assessment system. Thorsell's paper advocated the use of an evaluation checklist or questionnaire. The development of "tools and guidelines" to "evaluate the ecological and managerial

quality of existing protected areas" was identified as one of the actions in the Bali Action Plan that was adopted at the end of the Congress (Miller 1984). The outcomes from the workshop session were later compiled into a book, *Managing Protected Areas in the Tropics* (MacKinnon and MacKinnon 1986), that contained a chapter on *Evaluating the Effectiveness of Management*.

Following the Bali Congress the issue of management effectiveness of protected areas began to appear in international literature and particularly within the work and deliberations of Commission on National Parks and Protected Areas (CNPPA)[1] (e.g. MacKinnon and MacKinnon 1986; MacKinnon and MacKinnon 1986; IUCN Commission on National Parks and Protected Areas 1988). While the issue was recognised as important, there was relatively little action between the third and fourth World Parks Congresses. The methodology presented at the Third Congress and subsequent book do not appear to have been followed up in the literature or the further work of IUCN. In the fourth (Caracas) Congress, effective management was identified as one of the four major protected area issues of global concern (McNeely 1993). One of the Congress workshops aimed to:

"● develop further and obtain agreement on the categories and types of protected areas;

● develop an international system for categorising the effectiveness of protected area management;

● develop an agreed system of categories of threats to protected areas" (McNeely 1993, p. 162).

A discussion paper with a possible methodology for assessing management effectiveness was prepared for the workshop (Foster 1991). The proposed methodology was discussed but not adopted at the workshop and the recommendations of the Caracas Congress included a call (Recommendation 17) for IUCN to further develop a system for monitoring management effectiveness of protected areas. At the same time, a number of evaluation methodologies (e.g. Chrome 1995; Hockings 1998; The Nature Conservancy 1998; Courrau 1999; Cifuentes *et al.* 2000) were being independently developed around the world. However none had resulted in widespread adoption outside of the organisation, protected area system or region in which they were developed (see Hockings (2000) for a review of these systems).

There was little action on the issue within IUCN until early 1996 when the decision was taken to develop a methodology for the CNPPA that would be widely applicable around the world. One of us (MH) was asked to lead a Task Force within the Commission to carry this work forward and all the authors were key participants in this process. This paper outlines the framework for assessing management effectiveness of protected areas that has been developed by IUCN and examines its application in case studies in Australia and Africa.

What is meant by management effectiveness

There are three main components that should be considered in assessing management effectiveness of protected areas:

- Design/planning issues;
- adequacy and appropriateness of management resources, systems and processes; and

[1] Later in 1996, the Commission on National Parks and Protected Areas changed its name to the World Commission on Protected Areas or WCPA

- delivery of protected area objectives.

Design/planning considers how design issues such as the size and shape of protected areas; the existence and management of buffer zones and links between protected areas; affect the capacity of sites to achieve their stated function. Design failures can, for example, lead to problems of protected areas that are too small to be effective, are fragmented and fail to provide capacity to adapt to environmental change. Planning considers the existence and adequacy of planning undertaken for the protected areas.

Adequacy/appropriateness looks at how management is resourced and conducted. This component considers both whether there are sufficient management resources and 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.

Delivery assesses whether protected areas are achieving their stated objectives. 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 and behaviour of local human communities towards the protected area).

Why assess management effectiveness?

There are many reasons why people want to assess management effectiveness. Three common uses of such evaluation are:

- promoting adaptive management (progressive improvement of management based on reflective learning);
- improving project planning; and
- promoting accountability .

Adaptive management: First and foremost, evaluation should be seen as a normal part of the management process. 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 (Holling 1978; Grumbine 1994). Evaluation helps management to adapt and improve through this learning process.

Improve program planning: Evaluation studies can also be used to improve program/project planning – either at the time of initial design or as a review of previous programs where the lessons learnt will be applied to programs that follow. Within government, systematic evaluation has become a key step in linking program implementation with planning and budgeting (Knight 1990). 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. Managers can use the results of evaluations of management effectiveness in developing proposals for additional resources. Such requests are more likely to win support when they can be justified on the basis of evaluation results. For example, a study of the 1991-92 Australian Government budget process found that over 60% of the major new initiatives and almost half of all new initiatives (measured by dollar value) announced in the budget were influenced by evaluation findings (Department of Finance 1992).

Promote accountability: Accountability for performance is being increasingly demanded across all sectors of society and conservation management is no exception. Governments in many countries have instituted procedures for reviewing government programs, including conservation programs (O'Faircheallaigh and Ryan 1992; Auditor General of British Columbia 1996; Rump 1996). 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.

Planning guidelines commonly specify that 'performance indicators' should be developed as part of the plan to provide a means for measuring success of the program. The specification of performance indicators is, for example, a key element of the logframe planning system used by USAID and many other agencies (Mason 1997).

The management cycle and evaluation

A management cycle approach which relates evaluation to the process of management is a common approach to the design of public sector evaluation programs (Caulley 1993; Auditor General of British Columbia 1996). Evaluation methodologies based on this approach have been criticised because of a perceived focus on program inputs, processes and outputs, rather than concern for the real impact (outcome) on the program in terms of its intended objectives (Caulley 1993). However, there is no inherent reason why a focus on outcomes should not be included in a system based on this approach. One of the major strengths of this approach is the ready match that exists between evaluation information and the planning and management systems used by managers. Information from monitoring and assessment programs can therefore be readily analysed and applied within the planning and management system. This was particularly important in the development of the WCPA approach, given that we sought to link the evaluation system closely to the manager's needs and perspectives and to promote an adaptive approach to management.

Management consists of several linked, iterative phases of planning, action and review (Department of Finance 1989). The starting point of this management cycle consist of understanding the environment within which management is operating (*context*) and then establishing objectives and associated management strategies designed to achieve these objectives (*planning*). Resources of staff and money (*inputs*) are allocated to undertake management activities and actions according to established operational practices and standards (*processes*). This management activity produces services and products (*outputs*) that are intended to achieve objectives (*outcomes*).

The WCPA management effectiveness evaluation framework (WCPA Framework) is based around this management cycle (**Figure 1**). The framework elements and the criteria that are used to assess management effectiveness in relation to each element are explained in Table 1 and the accompanying text.

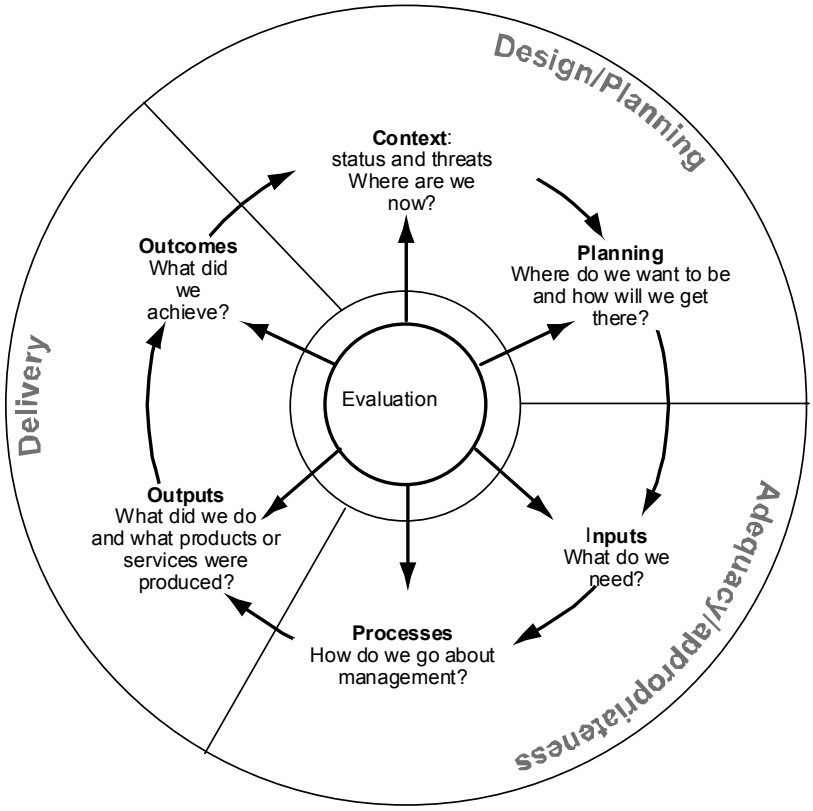

Figure 1 The management cycle and evaluation

Table 1 **WCPA Framework for assessing management effectiveness of protected areas and protected area systems**

Elements of evaluation	**Design issues**		**Appropriateness of management systems and processes**		**Delivery of protected area objectives**	
	Context	**Planning**	**Inputs**	**Processes**	**Outputs**	**Outcomes**
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 programs 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 used to assess management effectiveness	Significance Threats Vulnerability National context	Protected area legislation and policy Protected area system design Reserve design Management planning	Resourcing of agency Resourcing of site Contributions from 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	Economy	Efficiency Appropriateness	Effectiveness	Effectiveness Appropriateness

The context review, although not an analysis of management, provides the information that helps put management decisions into context and allows them to be prioritised based on the biological, cultural and political information gathered. In the case of protected areas, important aspects of context are the significance and values of the area that led to its declaration as a conservation area and the threats and opportunities that the area faces.

Planning involves setting the direction and objectives of management and deciding on the strategies that are required to achieve the objectives. Planning effective strategies requires an understanding of both the desired endpoint of management (the vision and specific objectives) and the starting point or context within which management operates.

Allocating funds and staff time to management should be linked to and, in large part, directed by planning decisions. Although protected area management plans rarely provide specific commitments of funds and staff, they establish the basis for short-term or annual operational planning in which decisions about allocation of resources are made. Managers then use these resources to undertake their jobs by implementing the actions and strategies indicated by planning documents (e.g. management plans, annual operations plans, functional or issue-specific plans) and through reactive or opportunistic management actions. In undertaking these activities, managers are guided by agency policies and practices, the general norms and standards applied to protected area management in their regional area and by their own training and experience.

The results of this management activity can be considered in two ways. Firstly there are the direct outputs produced by the management activity that commonly consist of a set of products or services (some examples for protected areas are area of land sprayed for weeds, kilometres of track maintained, numbers of guided walks conducted, numbers of anti-poaching patrols undertaken). As well as these outputs from management, results can also be considered in terms of the impact or outcome of management activities, especially in relation to the achievement of objectives established for the area (some examples for protected areas are extent of reduction in weed infestation, visitor satisfaction with walking experiences, change in knowledge and attitudes of visitors who attend guided activities, extent to which poaching is controlled).

The management cycle is completed when the manager reviews progress and uses this review information to adjust or correct their planning and management. This review function is often visualised and presented as only being linked to management outcomes. However, evaluation can look at all aspects of the management cycle, including the context within which management takes place. The results of evaluating each aspect can be fed back into the management cycle. The criteria that can be used to assess each element of the Framework are specified in general terms below but it is expected that specific criteria, indicators and assessment methods will be adapted to suit individual cases.

Design issues - context and planning

Context involves issues that lie outside the direct operations of the protected area manager or management agency. It is the context within which they operate and includes consideration of the conservation and other values of the protected area which underpin the objectives set for management of the site, 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 *per se*, but provides information that helps put management decisions into context. Where assessment is being 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 area of assessment required.

Planning focuses on the determination of intended outcomes for the protected area system or the individual protected area: the vision for which the system or site is being planned and the strategies that have been selected to achieve this vision. Assessment may consider the appropriateness of national protected area legislation and policies, the existence and adequacy of plans and strategies for protected area systems, the adequacy of design of individual protected areas and plans for their management. Design is considered a planning issue because design of individual reserves or the whole protected area system is essentially a planning process undertaken by mangers rather than imposed from outside (although many of the design decisions made may be constrained by the external physical, social and political environment). Assessment 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 are especially 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; while site assessments ask questions such as whether the protected area is too small to protect biodiversity over the long term.

Adequacy and appropriateness of management resources, systems and processes – inputs and processes

The evaluation of *inputs* assesses the adequacy of resources available to management, focussing primarily on measures of staff numbers and skills, funds, equipment and facilities required at either agency or site level. The adequacy 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.

Management demands are affected by the management purpose and strategy applying to the area. For example, areas developed for intensive tourism will require more resources for recreation management than isolated sites with few visitors. The level of threat, and consequent requirements for threat abatement, and the attributes and condition of the natural and cultural resources within the area will also affect requirements for funds and staff. Regional protected area management norms will also affect the requirements for management resources. For example, there are regional differences in visitor expectations regarding the provision of visitor interpretation and the quality of visitor infrastructure. These differences impact on the resource requirements for management.

Processes considers the appropriateness of management processes and systems in relation to the management objectives for a system or a site. Differing regional norms for the way management of protected areas is conducted will affect the assessment of this element of the evaluation framework in much the same way as regional norms

affect the assessment of management inputs. Assessment will involve consideration of diverse management processes such as facility maintenance, methods of interaction with local communities, visitor management, procedures for natural and cultural resource management, and financial and office management systems.

Delivery of protected area objectives – outputs and outcomes

Output evaluation considers what has been done by management, and examines the extent to which targets, work programs 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 the progress made in implementing long-term management plans.

Outcome evaluation assesses whether management has been successful with respect to the objectives in a management plan, legislation, 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 either in national legislation, policies, or site-specific management plans. Approaches to outcome evaluation may 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. However, the monitoring required is significant, especially since little attention has been given to this aspect of protected area management in the past. Protected area management plans typically establish many objectives for management. Establishing outcome-based monitoring programs for each objective is likely to be beyond the capacity of most management agencies. Thus, the selection of indicators to be monitored is critical. Attention should be directed towards the most important objectives and, where possible, indicators should be selected that do not require elaborate or expensive monitoring programs to collect relevant data.

Evaluating management effectiveness using the framework

Table 1 sets out each of the framework elements (*context, planning, inputs, processes, outputs and outcomes*), explains the issues covered within each element, and lists some of the criteria that can be used to evaluate each element.

Ideally, systems for assessing management effectiveness of protected areas will incorporate components that cover each of the elements of evaluation outlined here. 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. In general, the effort required to collect the relevant monitoring data increases from left to right across the model in Table 1. But so, too, does the value of the information collected.

Selection of indicators for environmental performance monitoring

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.

The selection of indicators is a complex process often involving trade-offs between partially incompatible attributes. As Bernstein (1992, p.1112) points out,

"developing indicators that successfully reflect ecological effects and are managerially useful requires reconciling two sets of often conflicting constraints .[that]. emerge from the separate ecological and management contexts that indicators must be responsive to".

Key attributes of useful environmental indicators have been identified by various authors (e.g. Centre for Coastal Management 1993; Briggs *et al.* 1996; Abbot and Guijt 1998). They suggest that, to the greatest extent possible, 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; and
- be able to be collected, analysed and reported on in a timely fashion.

It is important that data collection programs for the selected indicators can be sustained in terms of budgets and staff skills. Simple indicators are generally preferable to complex ones. If assessments are to be reported widely, the extent to which indicators are understandable by the non-specialist is also a consideration. The criteria and possible indicators relating to each of the Framework elements have been outlined in more detail in Hockings *et al*. (2000).

Discussion

Management effectiveness has grown to be a prominent issue in relation to protected areas over the past two decades. During this time, a number of evaluation systems have

[2] Field assessments and staff and community consultations in this project were undertaken by Elie Hakizumwami, who was familiar with protected area management issues in the two sites and had worked extensively on conservation issues in the Congo Basin.

been proposed but these have not been widely adopted by management agencies, although the interest by management agencies is high. The WCPA Framework has been developed as a flexible design tool for preparing evaluation systems that are responsive to the needs, capacities and circumstances of that apply to protected area around the world. The two case studies reported in this paper represent very different systems for evaluation although both were developed from the WCPA Framework. The Fraser Island case study involves a detailed and on-going monitoring and assessment of management that has being used to adjust future planning and management of the reserve, as well as to report on management outcomes to stakeholders. The park managers were directly involved in the conduct of the monitoring programs. The Congo Basin case study was much less resource intensive and involved an external assessor working with parks managers and the community to assess current management, with a particular focus on the adequacy and appropriateness of planning and management systems and processes.

Acknowledgments

Many people contributed to the discussions leading the development and refinement of the WCPA Framework for evaluating management effectiveness of protected areas. Comments and inputs from the members of the WCPA Management Effectiveness Task Force are particularly acknowledged. QPWS field staff and University of Queensland staff and students contributed to the conduct of monitoring programs on Fraser Island. Special thanks are due to Rod Hobson, Niki Turner and Keith Twyford.

The Congo Basin case study was developed by the BMZ-funded joint WWF/IUCN Forest Innovations project with contributions from IUCN and WWF administrative and technical staff in Central Africa.

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