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# Accountability, Reporting, or Management Improvement? Development of a State of the Parks Assessment System in New South Wales, Australia

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**Abstract** Management effectiveness evaluation has been recognized as an important mechanism for both reporting on and improving protected area management. The Convention on Biological Diversity's program of work on protected areas calls on all countries to implement such systems. In 2004, the first whole of system assessment of park management effectiveness, based on the IUCN-WCPA Management Effectiveness Evaluation Framework, was undertaken in New South Wales, Australia as part of a State of the Parks reporting requirement. This article describes the development of the State of the Parks assessment tool, its elements, and how it addresses the management effectiveness difficulties associated with assessments conducted across an extensive and diverse range of park types. The importance of engaging staff, at all levels, throughout the process is highlighted, as well as the adjustments made to the assessment tool based on staff feedback. While some results are presented, the main purpose of the article is to identify and discuss important procedural and methodological considerations. These include balancing quantitative and qualitative assessment approaches, achieving a comprehensive understanding of the management processes, and responding to any problems associated with assessments.

**Keywords** Management effectiveness · Management performance · National park · Protected area · State of Parks · Evaluation · Assessment

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## Introduction

Are the values of protected areas being maintained? Are threats to these values being decreased? Are appropriate standards of management being observed? These questions are the "stuff" of management effectiveness evaluation for protected areas, which has been prominent on conservation agendas since the IVth World Parks Congress in 1992 (Hockings and others 2000; Hockings and others 2004). The attention being paid to this issue is reflected in goals and targets for the development and implementation of management effectiveness monitoring and assessment systems in global and national conservation policies and programs. The Convention on Biological Diversity (CBD) Programme of Work on Protected Areas for example calls on all countries to develop and implement systems for assessing management effectiveness (Goal 4.2, Convention on Biological Diversity 2004). Within Australia, the National Reserve System Directions Statement indicates that protected area agencies should establish programs, such as State of the Parks (SoP) to assess and report on the management of protected areas within their jurisdiction (Direction 34, National Resource Management Ministerial Council 2004). These documents reflect a global consensus of governments about the key objectives and activities to be pursued for protected areas.

## Approaches to State of the Parks Assessment

It is only over the past fifteen years that the issue of evaluating the effectiveness of protected area management has received any significant attention (Margoluis and Salafsky 1998, Hockings and others 2004, Stem and others 2005). SoP assessment and reporting is also a recent

development, with few protected area management agencies fully adopting the approach. The "State of" terminology has been borrowed from State of the Environment reporting, which is itself a relatively recent, although far more widespread, process. The characteristics of SoP reporting that distinguish it from other management effectiveness evaluations are the simultaneous coverage of all or most protected areas within a system (rather than the assessment of a subset of protected areas) and a focus on the use of consistent indicators across all sites. Thus, SoP assessment and reporting is the systematic evaluation of management across a protected area system.

Three approaches currently exist: external reports by non-government organizations, joint assessments involving both external reviewers (usually NGO partners) with agency staff, and internal assessments by agency staff (Table 1).

Interest in SoP reporting reflects concern about the adequacy of simple input and output measures commonly included in annual reports (dollars spent, hectares gazetted, plans of management prepared, etc.) and a desire to extend reporting to management outcomes as well as improve understanding of the effectiveness of management activities. Methodologies that assess and permit reporting on the

**Table 1** State of the Parks assessment approaches and examples

| Initiating agency | Assessment title/focus | Notes |
|---|---|---|
| *External assessments* | | |
| WWF Canada (1989–1998) | Endangered Spaces reports on government performance in protected area management based largely on integrity assessment (WWF Canada 1998). | Analogous with endangered species reports. Assessments undertaken by WWF. |
| National Parks and Conservation Association (1999) | State of Parks (National Parks Conservation Association 2006). | Reports for 17 national parks, preserves and historic sites. Assessments undertaken by National Parks and Conservation Association. |
| *Joint agency/external assessments* | | |
| WWF—Brasil with Brasil's protected area management agency, IBAMA (1998) | Management of the protected area system (Ferreira and others 1999). | Assessment of 86 protected areas undertaken by IBAMA staff. Results used to lobby for improved policy and resourcing. |
| WWF with various protected area management agencies (since 2001) | Rapid Assessment and Prioritization of Protected Area Management (RAPPAM) to assess management effectiveness of collections or whole systems of protected areas (Ervin 2003). | Since 2001, over 1,400 protected areas in 32 countries have been assessed using workshops with staff and stakeholder input |
| Metsahallitus (Finland's park management agency) (2004) | Management effectiveness evaluation incorporating a modified RAPPAM assessment with site inspections and stakeholder consultation (Gilligan and others 2005). | Assessment by staff and an external review team, guided by an expert advisory panel. |
| *Internal agency assessments* | | |
| Parks Canada (first report in 1994) | State of Protected Heritage Areas, mandated for updating every two years and increasingly focused on ecological integrity (Parks Canada 2003). | Assessment by staff; increasingly informed by ecological integrity monitoring data (Nik Lopoukhine, pers. comm., 2007). |
| Great Barrier Reef Marine Park Authority (1998) | State of the Great Barrier Reef Marine Park focused on conservation status and threats reported in commissioned assessments (Wachenfeld and others 1998). | While a single protected area, the Marine Park is 330,000 $km^2$ and composed of many zones with differing levels of protection—it resembles a system-wide assessment. Assessment by agency staff. |
| Parks Victoria (2000–2007) | State of the Parks first report released in 2000 (Parks Victoria 2000a; Parks Victoria 2000b) was largely an inventory of park attributes and threats. Second report, released in 2007 focused on a more comprehensive management effectiveness evaluation (Parks Victoria 2007). | Assessment by agency staff. |
| NSW National Parks and Wildlife Service (2001–2007) | State of the Parks first report released in 2001 (NSW National Parks and Wildlife Service 2001) was largely an inventory of park attributes. Second report released in 2004 (NSW Department of Environment and Conservation 2005) focused on a more comprehensive management effectiveness evaluation and is the subject of this article. | Assessment by agency staff. |

values of protected areas are essential for improving accountability in the management of protected areas. Likewise, developing an understanding of the effectiveness of management to support a more adaptive approach requires a broader view of evaluation (Hockings and others 2006). This article discusses issues relevant to developing assessment instruments to achieve the dual purposes of reporting and management improvement, and the difficulties that arise when assessing whole protected area systems. The article is based on a SoP assessment project conducted in New South Wales, Australia. As a consequence of Australia's federal form of government, most protected areas, including the vast majority of national parks, are managed by State agencies. Drawing from the experience with SoP assessment in the New South Wales Parks and Wildlife Group of the Department of Environment and Climate Change (NSW DECC), it also reviews the benefits of systematic assessment (note: at the time of conducting the first SoP assessment, the agency was called the Department of Environment and Conservation but for simplicity it is referred to as NSW DECC in the text).

## Agency Driven State of Parks Assessment and Reporting

SoP programs are generally developed with the twin objectives of improving capacity to accurately report to government and the public on whether management activities are effective in meeting planned objectives and contributing to a better knowledge of the condition of and pressures on protected areas within the system. Developing a wider understanding of the challenges, achievements and shortfalls in management is important for managing an expanding area with limited resources and under escalating pressures.

### Accountability

Accountability for performance is demanded across all sectors of society (O'Faircheallaigh and Ryan 1992; Auditor General of British Columbia 1996; Rump 1996), and conservation management is being increasingly scrutinized (NSW Audit Office 2004). Traditionally, concerns for accountability focused on issues of financial and managerial probity, but this has now expanded to include concerns for the efficiency and effectiveness of management. The NSW Auditor-General concluded in an audit of reserve management in NSW that the Parks and Wildlife Division lacked an adequate information base to measure success but that the then fledgling SoP system offered great promise in addressing this gap (NSW Audit Office 2004).

Increased expectations about demonstrating accountability within the government structure has benefits to park management agencies in providing a credible base for enhanced resourcing; however, there are also benefits to increasing accountability within public forums. Open and accountable reporting about the condition of and pressures on the park system can help to raise public awareness about important values of reserves as well as their management challenges. While there may be some nervousness about publicly reporting problems, openly acknowledging areas in which park management can be improved, and demonstrating the will to address these problems can increase credibility and trust in the agency amongst stakeholders.

### Increasing Knowledge and Improving Decision-Making

Australia's protected area system is distinctive in having large numbers of reserves; many of which are relatively small in size (Sattler and Glanznig 2006) and most are managed by State governments. In Australia, SoP assessments have grown, in part, out of a desire by park management agencies to have better knowledge about the protected areas they manage. Often agencies have good information for a relatively small number of large, iconic parks, but, for the majority of parks, information on condition, pressures and management may be restricted or out-of-date. As park systems expand in number and area, developing an adequate information base can become increasingly problematic. By collecting information about the whole protected area system, the SoP approach can inform both system-wide and park level planning and decision-making, helping establish resource allocation priorities and sharing lessons learnt amongst staff. At the park level, SoP evaluations provide park managers with an opportunity to think holistically about their management and whether desired outcomes are being achieved (Pomeroy and others 2005). Collecting information on a park level also ensures that experiential knowledge is captured and not lost through staff relocation.

SoP assessment and reporting can help build an organizational culture where staff are encouraged to plan, act, review and adapt; that is, to manage adaptively. While this may sound intuitive, park management agencies have been slow to move towards an adaptive approach to management. This is in part because evaluation has not traditionally been a part of the culture of these organizations (Jones 2000) and in the absence of perfect information, park managers must still act (Pullin and Knight 2001). This approach, based on the precautionary principle, is at the core of the NSW SoP system. By taking an adaptive approach to management, park management agencies can assess how well their management strategies

are working and the conditions under which their programs are likely to succeed or fail (Stem and others 2005).

## Institutional and Methodological Issues in Developing a SoP System

The varying objectives and circumstances of protected areas mean that a completely standardized approach to management is not possible. Allowing for this diversity can be a challenge when designing a system to assess the management of all parks using common assessment criteria. Similarly, the information available to use in an assessment can vary greatly between parks within a system. Monitoring programs are common only in the most significant parks, and then, only a few aspects of park management are considered. In the absence of quantitative data, assessment systems must rely on qualitative information gathered from park managers. The use of qualitative data can be criticized as simply surveying the perceptions of park managers, which may not reflect the actual condition of the park. However, in the absence of more quantitative data, park managers may be the only experts with knowledge about the management of the park or there simply may not be sufficient time or funding available to collect other expert opinion or quantitative data across all parks.

Developing and implementing a park management evaluation system requires significant agency commitment to design, collect and consolidate the evaluations, ensure their reliability, analyze the data, and then report in meaningful and useful ways throughout the levels of management. Before agencies have had an opportunity to realize the efficiency savings that can be made through implementing a systematic approach to better understanding management actions and outcomes, devoting resources to evaluation can be seen as taking staff away from actually managing the parks. Overcoming this attitude requires a shift in the culture of an organization. Therefore, agency executives must advocate the importance of assessing the effectiveness of management and line managers must genuinely support and promote park managers carrying out monitoring and evaluation. If these tasks are simply added to the existing workload without communicating the benefits of the process, then it is likely to foster resentment and resistance to a change towards an adaptive approach. For example, communication should include information on products or uses to be derived from a SoP approach, such as a better-coordinated or reduced administrative reporting burden on field staff. It is also essential to gain the commitment of management at all levels of the agency. Without a high-level commitment, there can be major limitations to the development of a SoP assessment system.

When a reporting system is first introduced to an agency, it can be perceived as a form of surveillance, especially if staff are not given a clear indication of how the information collected will be used. This sort of suspicion can jeopardize the integrity of the process as park managers misrepresent the on-park situation for fear of reflecting badly on themselves, their line manager or their colleagues. Equally, there is the danger of staff being overly critical of performance, in good faith, or in an attempt to attract additional funding to address, what they perceive to be, chronic shortcomings in resources. It is therefore essential that there is strong support from senior staff to explain the rationale and uses of the system so that park managers are encouraged to report truthfully. In addition, there is a need to have sufficient training for staff and appropriate methodological systems in place to 'normalize' evaluations so that assessments across different sites are comparable.

## Methodological Options for Assessments

In designing an assessment and reporting system, it is important to ensure the system meets the needs and circumstances of the agency. This involves selecting the appropriate balance and number of quantitative and qualitative indicators, the level of detail of the indicators, and the number of parks assessed. By varying the attributes of the assessment system, park management agencies can devise a system that suits the skills and resources available to the agency.

In spite of an often-perceived benefit of using only quantitative indicators, most assessment systems have used either qualitative indicators or a mixture of quantitative and qualitative indicators (Hockings 2003). In his review of 27 methodologies developed to evaluate management of protected areas Hockings (2003) identified whether the systems used qualitative or quantitative data and which of the six elements of the WCPA Management Effectiveness Evaluation Framework (Table 2) were addressed. This study indicated that systems relying on only quantitative indicators were more narrowly focused; addressing on average 1.5 of the WCPA elements compared to an average of 3.1 elements for qualitative systems (data reanalyzed from Table 4 of Hockings 2003).

Recently, there has been a move towards using a mixture of qualitative and qualitative indicators (Sechrest and Sidani 1995, Hockings and others 2009) reflecting the methodological and practical advantages and disadvantages of each type of indicator (Table 3).

A benchmarking and best practice report into performance measurement in protected areas across Australia and New Zealand recommended that qualitative assessments be

**Table 2** IUCN-WCPA Management effectiveness evaluation framework elements and criteria (after Hockings and others 2000)

| Elements of evaluation | Explanation | Criteria for assessment |
|---|---|---|
| Context | What is the current situation? | Values and significance. |
| | Assessment of values, significance, threats and stakeholder environment. | Threats. |
| | | Stakeholder issues. |
| Planning | Are plans in place and are planning systems adequate? | Management planning. |
| | | Other planning and direction setting processes and influences. |
| Inputs | Are resources for management adequate? | Resourcing of site management (staff time and funds). |
| Processes | How is management carried out and does it meet relevant standards? | Suitability and standards of management for key management issues and processes. |
| Outputs | What were the results of management? | Extent of implementation of plans and work programs. |
| | Assessment of the implementation of management programs and actions. | |
| Outcomes | What has been achieved? | Maintenance of key reserve values. |
| | Assessment of outcomes—the extent to which values are maintained and objectives achieved. | Control of threats. |
| | | Achievement of management objectives. |

**Table 3** Advantages and disadvantages of quantitative and qualitative State of Parks indicators

| Strengths | Weaknesses |
|---|---|
| *Quantitative indicators* | |
| Less susceptible to the influence of subjective bias. | Indicators are often chosen subjectively and may have limited connection to issues being examined—may lead to choice of inappropriate indicators that do not reflect the complexity of the system (i.e. what is measured may not be meaningful). |
| Suitable for statistical analysis and inference. | Many indicators would need to be measured to provide information on the range of protected area management issues. |
| Can use experimental design to test for causation. | Adequate experimental design (e.g. random control trials) is often not possible for logistical, economic or ethical reasons. |
| Allows explicit comparison over time and space by comparing like with like. | Monitoring indicators in all protected areas within the system is logistically and economically difficult. |
| | Time required to detect trends may mean information is not available to guide decision-making in the short-term. |
| | Danger of inappropriate extrapolation of indicator data that is spatially, temporally or context specific. |
| | Skills and equipment necessary to collect and analyze indicator data not always found within management agencies. |
| *Qualitative indictors* | |
| Data collection may be relatively quick and easy across full extent of protected area system. | Can be affected by subjective bias—qualitative assessments may be affected by personal differences in standards or application of assessment criteria making comparisons over time or between sites less reliable. |
| Can provide some information that cannot be collected quantitatively. | May be perceived as less valid than quantitative data and consequently may lack acceptance by some stakeholders. |
| Can take a broad-scale view of an issue by asking the assessor to mentally assimilate a broad range of existing information. | Requires extensive training and auditing of results to minimize subjectivity and increase reliability of data. |
| Acknowledges the value of experiential knowledge and engages reserve managers with the evaluation. | May not be reliable indicators of performance or results for issues where managers lack capacity or experience to make informed judgments. |
| Can account for trends when no quantitative data exists. | Data reliability may vary widely between staff based on their experience and training, therefore determining reliability may not be straightforward. |

used to augment quantitative measures because of the acknowledged difficulties in a wholly quantitative approach (Committee on National Parks and Protected Area Management 2002).

In developing an assessment and reporting system, agencies often need to trade off the detail of the information collected through indicators and the number of indicators on which data are collected. To achieve the appropriate balance between the depth and breadth of indicators, agencies must consider the purpose for the information they are collecting. If the assessment system has highly specific objectives, then few, detailed indicators may be appropriate. However, if the aim is to inform management generally, then larger numbers of high-level indicators may be more suitable. Berger and Hodge (1997) have argued similarly for a broader systems approach to indicator selection for State of Environment reporting because limitations inherent in the traditional Pressure-State-Response framework restrict the capacity of the data to support improved decision-making.

Equally, the decision of whether to assess all parks relatively broadly or focus on key parks in detail needs to be guided by the aims of the assessment and reporting system. Where resources are scarce, or focused on particular sites, it may pay to report on a small number of parks using primarily quantitative indicators. However, if system-wide assessments to guide management decisions or resource allocation are a priority, then it will be important to have some information about as many protected areas in the system as possible. This will necessitate a significant reliance on qualitative indicators and assessments when working with large protected area systems.

It is necessary to be clear about the limitations of such approaches too. Results that are highly reliant on qualitative assessments should be seen as indicative, helping to point management in the right direction and to identify priority areas, rather than conclusive; that is, confidently describing the root cause of any problems. Having established priority areas, more detailed analysis or investigation may then be required to understand the factors contributing to the problems or opportunities that arise.

## The NSW Approach to SoP

The NSW protected area system, at the time the State of the Parks assessment was undertaken in 2004, consisted of 639 parks covering nearly six million hectares with just over 1500 staff and a recurrent budget of A$182 million (NSW Department of Environment, Conservation (NSW DEC) 2005). National Parks (81.1% by area and 25.7% by number) and Nature Reserves (14% by area and 56.4% by number) were the dominant park types (NSW DEC 2005). In 1997, the park system was estimated to cater for more than 22 million visitors per year (NSW DEC 2005). The agency was largely regionally based with 93% of the staff located outside head office (NSW DEC 2005).

The initial design for the NSW SoP system was based on the collection of quantitative data on a sample of parks from across the state. This sought to capture, through a series of indicators, detailed information on natural, cultural and social values within the park system, and the management of threats to these values. The indicators were selected through consultation with field and research staff and stakeholder groups. Due to the number of indicators and the time required to complete the data collection, the sample size was restricted to 22 parks (3% of the reserve system). These parks were selected to represent different park types and geographical locations across NSW. Data were collected firstly as a pilot study to ensure the indicators were feasible and then on another two occasions over a two-year period.

After the second data collection exercise, it was clear that the small sample size and intensive labor requirements associated with the assessment limited the system-wide applicability of the approach. Attempting to collect such detailed quantitative data had forced the NSW DECC to limit severely the number of protected areas that could be assessed. This meant that while the information collected provided detail on some indicators of performance, it was simply not collected for sufficient parks to generalize to other parks or across a sufficiently wide range of management issues to provide system-wide insight into management effectiveness. In addition, the information collected was considered not to be of great value for planning and decision-making; hence, a more rapid assessment technique was sought, which assessed more parks and exploited both qualitative and quantitative data.

### The 2004 NSW SoP Assessment

The rapid assessment component of the SoP program was designed to provide complete coverage of NSW DECC-managed protected areas. The principal assessment instrument was based on questions to be answered by staff responsible for managing reserves. The system was developed by three of the authors (MH, RWC, RJ) through a consultancy arrangement and was based on the IUCN World Commission on Protected Areas Framework (IUCN-WCPA Framework) for assessing effectiveness of management of protected areas (Hockings and others 2000). The primary objectives of the assessment system were to provide:

- information that could form the basis for a public SoP report that would illuminate key aspects of performance

in reserve management (i.e., for accountability and reporting);
- information that could be used by NSW DECC staff in planning and decision-making to improve management outcomes (i.e., for adaptive management);
- data to support accountability in submissions to NSW Treasury, and in support of departmental budget bids (i.e., for planning, accountability and reporting).

Initial design parameters for the assessment system were for a rapid system of no more than 10 assessment questions. The recommendation was that the assessment system should address all six elements of the IUCN-WCPA Evaluation Framework and the key criteria in each element (Table 2); hence, a comprehensive system would require approximately 20 assessment items.

The starting point for the design of the assessment system was a review of existing management effectiveness evaluation systems around the world, focusing particularly on those that had been designed using the IUCN-WCPA Framework. One of the values of the IUCN-WCPA Framework is that it provides guidance for the design of assessment systems and facilitates harmonization and adaptation of systems to meet specific local needs. The basic structure of the NSW SoP system was built around adaptations of components taken from:

- the World Bank/WWF Alliance Management Effectiveness Tracking Tool (Stolton and others 2003) (for identification of reserve values and qualitative assessment of management performance);
- WWF Rapid Assessment and Prioritisation of Protected Area Management (Ervin 2003) (for assessment of threats); and
- UNESCO/IUCN Enhancing our Heritage Workbook (Hockings and others 2001) (for assessment of stakeholders, planning, inputs and outcomes).

Additional features were included, given the need for a credible system relying primarily on staff assessments. These focused on providing justification for assessments and the reporting of sources of information used in making judgments about performance.

The assessment instrument consisted of four parts that addressed all elements and criteria in Table 2. It consisted of a combination of quantitative and qualitative assessment items. Descriptive information was collected about each reserve such as size, location, legal designation, IUCN Protected Area Category designation, and relevant legal and contextual information such as designation under international agreements (e.g., World Heritage or Ramsar Conventions). These were inserted into the assessment instrument from corporate datasets for verification by field staff. This was done to reduce the time required to complete the assessments, to detect any errors in the corporate datasets and to limit staff discontent with the process by ensuring they were not required to input information already held centrally. Information was also sought on staff time and financial inputs into management of each reserve. The existence and status of relevant planning documents (e.g., management plans, reserve or regional weed or fire management plans) was examined. Staff assessments of the five most important reserve values, five most significant threats and five key stakeholder groups and issues were also gathered, along with numbers of visitors and number of neighboring properties. These were considered key extrinsic factors influencing management activity and outcomes. Finally, management effectiveness was examined through thirty assessment items in nine broad areas of park management (Table 4) and required staff to rate performance against a four level ordinal scale. In all cases, where a qualitative assessment by staff was necessary, a justification for the assessment and the sources of information used in making the assessment was required. An example from the section on management effectiveness is given in Table 5.

Staff were not required to assess management for any items that did not apply to their reserve (e.g., management of historic heritage if there were no sites or resources identified on the reserve). In such cases, staff were required to justify their decision to not make an assessment.

The assessment system was developed using an extensive process of staff consultation (Fig. 1). Consultants developed a draft assessment instrument in consultation with NSW DECC staff responsible for the SoP program. This was then presented and reviewed at workshops held around the State with park managers, their supervisors at area, regional and branch level, planners, specialist regional support staff and researchers. The instrument was subsequently refined based on this feedback. There was widespread support for a more extensive assessment system, not constrained by the agreed 20 item limit of the modified design brief. Staff expressed the view that to collect data on a few aspects of park management might meet the needs for public reporting but would provide insufficient information to assist in planning and decision-making. They felt that if the NSW DECC undertook an assessment of management of the entire reserve system they should maximize the benefits of the assessment for staff rather than focusing just on accountability and reporting to the public.

Additional items for assessment were added to the instrument (lifting the number of assessment items from 20 to 30) and specific wording altered to reflect what staff considered to be appropriate standards of management. In this way, establishing the content and wording of the assessment items represented an implicit process of

**Table 4** Aspects of park management evaluated

| Topic | Specific item assessed |
|---|---|
| 1. Planning and direction setting | • Identification and use of information on reserves values |
| | • Adequacy of management plans and directions |
| | • Existence and implementation of work programs |
| 2. Adequacy of information to support decision making relating to management. | • Natural resources |
| | • Aboriginal heritage (places and sites) |
| | • Historic heritage |
| | • Visitors |
| 3. Key reserve management issues | • Weeds |
| | • Pest animals |
| | • Fire management |
| | • Visitor impacts |
| | • Aboriginal site management |
| | • Historic heritage management |
| | • Two issues nominated by staff as important for the particular reserve (optional) |
| 4. Law enforcement | • Effectiveness of law enforcement in preventing illegal activities |
| 5. Infrastructure and asset maintenance | • Existence of regular program of maintenance |
| 6. Community consultation | • Aboriginal |
| | • General community |
| 7. Visitor experiences | • Existence and adequacy of visitor facilities |
| | • Provision of basic visitor information |
| | • Provision of interpretive and educational services |
| 8. Monitoring | • Existence of monitoring and evaluation program |
| 9. Condition of park values | • Natural |
| | • Aboriginal sites |
| | • Historic heritage |
| | • Two other values nominated by staff as key values for the reserve |

**Table 5** Example of a qualitative assessment item

| |
|---|
| Condition of natural values |
| ☐ Natural values were not identified as being among the most important values for this reserve. |
| ☐ Insufficient information is available to assess the condition of the natural values previously identified |
| Assessment criteria |
| Poor—Important biodiversity and/or ecological values are being degraded. |
| Fair—Some important biodiversity and/or ecological values are being impaired and the continued integrity of these values is at risk without corrective action. |
| Good—Some important biodiversity and/or ecological values are being impaired but the continued integrity of most of these values is not currently at risk. |
| Very good—Most important biodiversity and/or ecological values are in excellent condition. |
| Assessment |
| Justification/Comment |
| Sources of information used in assessment |
| Proposed actions in next 12 months |

standard setting for the NSW DECC and considerable time was spent on this with staff at all levels, including senior management. Design of the section collecting inputs to management was particularly challenging as it became apparent that geographic regions of the State managed their budgets and staff allocations differently. Some were able to report on inputs to individual reserves, while others managed groups of reserves as a unit and did not account for inputs separately. It was decided to allow staff to report on inputs at either level. Following this process of consultation, pilot assessments were completed for four reserves and the resulting problems were resolved in discussion with SoP project staff. Senior management reviewed and approved the final assessment instrument.

## Data Collection and Review

The reliability of qualitative assessments can be improved by limiting their subjectivity (Norman and others 1991; Maguire 2004; Driessen and others 2005; Stem and others 2005); for example, by providing clear guidelines on how to interpret questions and by ensuring that categories are clearly defined. In NSW, this was done through training and the provision of detailed, written guidelines. All staff participating in the SoP assessment were invited to attend one of eight training workshops across NSW. The training provided staff with context for the assessment, a discussion on how the information collected could be used, how questions would be asked, and how to interpret and answer questions. Opportunities were provided for staff to discuss the aims of the survey, the process and the questions. Approximately 60% of staff participating in the survey attended the training and over 90% of work locations had at least one staff member in attendance who could later assist colleagues in completing the survey.

To supplement the training, detailed, written guidelines were provided. The guidelines provided definitions of potentially subjective terms, such as ‘widespread’ and ‘severe,’ information on how to interpret questions and examples of the type of information that was being sought

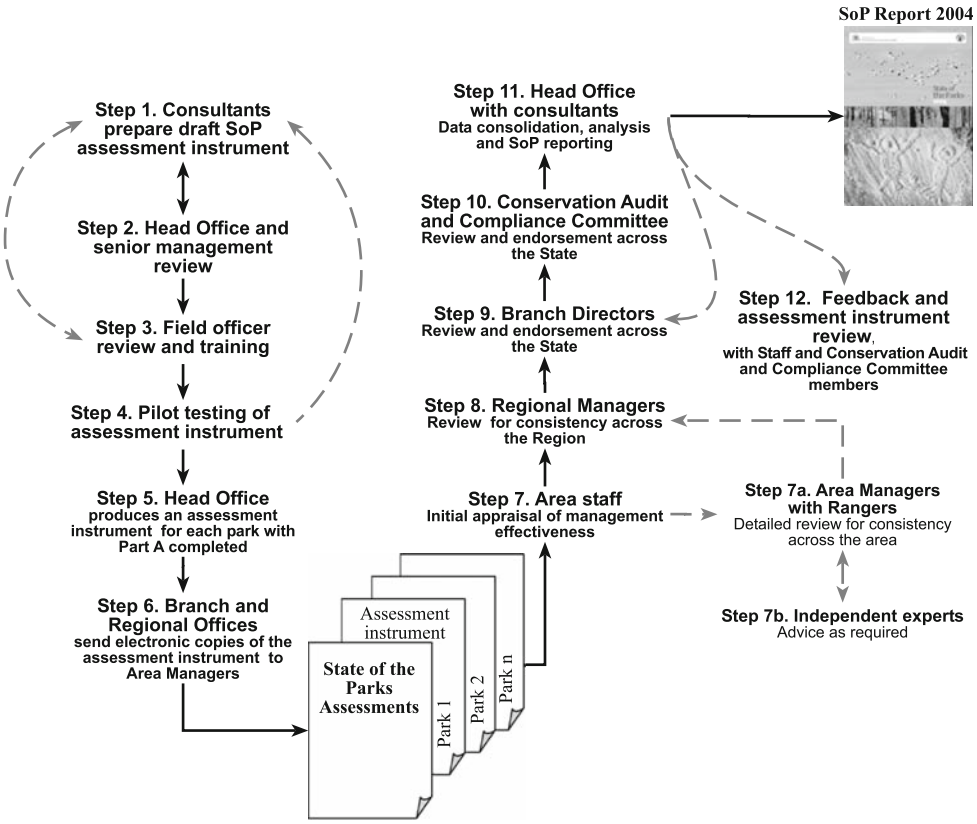


**Fig. 1** State of Parks development, review, and assessment process

and the rationale behind the questions. This was particularly important for assessment items that required staff to categorize their management against a set of criteria (standards for management). Here, staff were provided with specific examples of management situations that met particular criteria.

One survey per park was distributed to area managers to assign to the appropriate staff member in their unit. Staff were given two weeks to complete and return the assessment. Ranger staff were encouraged to complete surveys in workgroups, although this was not always possible because of logistic and time constraints. Following completion, area level managers, who in some cases also participated in the original assessment, reviewed the surveys for consistency. Regional level managers, who have as many as 30 or 40 parks within their area of responsibility, were required to review completed assessments to validate responses and remove obvious inconsistencies (e.g. a response was provided on the condition of cultural values when no cultural values were initially identified for the reserve) or where the regional manager had a serious concern that the assessment was not accurate. This was an attempt to take a broader look at parks and account for potential pessimism or optimism between respondents. Where changes were made to individual surveys, regional level managers were required to justify any changes made and discuss the changes with staff who had completed the original assessment. Fewer than 3.5% of responses were altered by Regional Managers.

Senior managers made it clear to staff that SoP was a priority for the NSW DECC and as such, there was a 100% response rate for the surveys with almost all of these completed within the specified period. A sample of 40 reserves was then put through a validation process. Regional Directors (the senior managers for the field branches of the NSW DECC) were asked to select parks with which they were most familiar and in a round table forum, they assessed whether they believed the responses to be accurate. Generally, the panel review deemed the assessment responses to be reasonable; however, there were a small proportion that appeared to reflect the personal biases of the respondent. Highly specialized staff tended to be slightly more pessimistic about what was being achieved; perhaps in comparison to what their professional training led them to think what was possible. For example, staff with a good understanding of cultural heritage management often scored their parks more harshly, possibly due to a greater understanding of the shortcomings of their management efforts.

## Data Analysis

The purpose of this article is not to present the results of the SoP assessment. These results and analyses are

available in the 2004 State of the Parks Report (NSW DEC 2005). Here we discuss the approach to analysis that was taken and provide a sample of the types of results that were obtained. The dataset was summarized and differences in management performance were assessed using Chi Square tests with a Monte Carlo p-value. Specifically, trends in management performance were analyzed for significant association with extrinsic variables such as the type, size, and age of a park, the numbers of visitors to a park and the number of neighboring properties. These simple analyses were used for feedback to staff during the review of the process and for the SoP 2004 report (NSW DEC 2005).

The SoP 2004 data showed that 74% of the area of the NSW park system was covered by an approved or draft plan of management and that the rate of plan preparation had increased exponentially over the past decade (NSW DEC 2005). Having a draft or approved plan of management was significantly associated with better management performance in areas of planning, information availability, community consultation, monitoring and management of issues such as fire and visitor impacts (Table 6). The report also identified that while pest animals, weeds and fire management for natural and cultural values were key threats to many parks across the park system (57%, 72% and 46%, respectively), the situation was stable or improving across the area of the parks system (92%, 91% and 89%, respectively). This was an excellent result considering the significance of these threats to all landholders and that such large-scale threats are unlikely ever to be totally eradicated.

Despite efforts to standardize information collected on inputs (both the financial data and the staff time estimates), these data were deemed inconsistently reported and therefore unreliable, and discarded for the purposes of analysis. Reporting of these input data was improved for the 2007 SoP assessment and this will now permit analysis of performance in relation to resourcing levels for park management.

## Staff Review and Feedback

Eight workshops were held (two in each field branch) to provide feedback on the results of the assessment. The workshops provided an opportunity for staff to see the preliminary results and give feedback on the assessment process with a view to improving it for subsequent data collection. At the workshops, staff were presented with a summary for their field branch and how it performed in relation to the state average. The regions and areas that were performing particularly well or poorly were also identified. Overwhelmingly, staff expressed support for the information being presented and the useful insight these data gave on management performance. Feedback also highlighted problems with the assessment instrument and process that needed to be addressed. Staff were also asked how they thought the information could be used to assist park management. There was agreement that while the 2004 SoP process had gathered information that was sufficiently robust to report status and trends system-wide, it should not be used to make individual park level comparisons. With the support of staff, the assessment instrument was revised (Table 7) and the process was repeated in 2005, and again in late 2007.

After the changes were made to the assessment instrument, it was reviewed by a reference group consisting of staff selected to represent a geographic and functional cross-section of the Parks and Wildlife Group of NSW DECC. This group provided additional constructive feedback on the design of the survey and endorsed it. To familiarize staff with changes to the format and content of the assessment instrument and to highlight the response to their feedback, another nine training workshops were carried out across the state. Again, these workshops were held to enable as many staff as possible to attend, especially area and regional level managers. After attending the training, staff were immediately able to commence the 2005 SoP assessment. A minimum of two weeks was initially allowed to complete the survey; however, due to

**Table 6** Aspects of management where improved performance associated significantly with existence of a draft or approved management plan

| Aspect of management | Chi-square test results |
|---|---|
| Direction setting for management | $\chi^2 = 165.59$, d.f. $= 9$, $P < 0.000$, $n = 612$ |
| Knowledge of natural values | $\chi^2 = 42.72$, d.f. $= 9$, $P < 0.000$, $n = 595$ |
| Knowledge of historic values | $\chi^2 = 24.24$, d.f. $= 9$, $P < 0.004$, $n = 424$ |
| Knowledge of visitation values | $\chi^2 = 35.97$, d.f. $= 9$, $P < 0.000$, $n = 379$ |
| Management of fire for the protection of natural and cultural values | $\chi^2 = 24.19$, d.f. $= 9$, $P = 0.003$, $n = 522$ |
| Management of visitation impacts on the park | $\chi^2 = 26.62$, d.f. $= 9$, $P < 0.001$, $n = 358$ |
| Consultation with Aboriginal communities | $\chi^2 = 29.87$, d.f. $= 9$, $P = 0.000$, $n = 537$ |
| Consultation with the general community | $\chi^2 = 24.16$, d.f. $= 9$, $P < 0.004$, $n = 416$ |
| Establishment of monitoring programs | $\chi^2 = 51.13$, d.f. $= 9$, $P < 0.000$, $n = 613$ |

**Table 7** Issues identified by staff in the review process

| Issue | Explanation | Response |
|---|---|---|
| Assessment instrument format | The spreadsheet format for the assessment takes considerable time; an on-line format was preferred. | On-line format adopted with controls to prevent changes to wording, illogical responses, and incomplete assessments. Capacity to carry over earlier assessments was employed for the sections unlikely to change year to year. |
| Inconsistency in interpretations of assessment items. | While within area assessments were largely consistent, different interpretations existed between Regions, partly influenced by biogeographic variations. | On-line format integrated an expanded explanation 'help' function. |
| Assessment criteria did not always capture the range of appropriate responses. | Some assessment items incorporated and confounded management processes with outcomes performance. | Assessments were modified to separately assess outcomes (i.e. separately assessing processes and activities of weed management (i.e is a planned approach being implemented) and outcomes of weed management (are weed-related impacts on values declining or increasing). |
| Influence of criteria labels | The shorthand criteria labels of poor, fair, good and very good were considered to unduly influence assessments or appropriately match criteria. | Shorthand labels were removed and respondents were instead asked to check a box beside the descriptive criteria to indicate their assessment (i.e. Some important biodiversity and/or ecological values are being impaired but the continued integrity of most of these values is not currently at risk). |
| The capacity to track action | Staff sought the capacity to define whether actions proposed in earlier assessments had been undertaken or not, and why. | Additional space for this reporting was included in the revised assessment instrument. |

problems with remote internet infrastructure, the survey period was extended by four weeks. For this assessment, a more detailed and updated version of the guidelines was provided as on-line help. A coordinator was identified in each of the field branches, in addition to one based centrally, to answer questions about the survey, including how to interpret questions. Together, the training sessions, guidelines and coordinators reduced the amount of individual interpretation required for each assessment item and potentially assisted to increase the comparability of survey results.

### SoP Report Release and External Response

While the 2004 SoP survey was successful with its internal audience, it also had an external audience through the SoP 2004 report (NSW DEC 2005). This report was released in mid 2005 and immediately drew criticism from some in the media. The media focused on the extent of threats reported within the park system as a problem and not on the effectiveness of management efforts to mitigate these threats. Simplistically, the NSW DECC was criticized for not mitigating all threats in all parks. Generally, the media failed to acknowledge that the management of threats such as pest animals, weeds and fire are responsibilities of all land managers and not just NSW DECC, who managed less than 7% of the State at the time. The media also failed to report that NSW DECC was one of the few park management agencies in Australia to actually report on the effectiveness of their management and that the 2004 SoP report was praised by the IUCN World Commission on Protected Areas as a world first (NSW DEC 2005). Conversely, the peak groups for park management in NSW and some of the groups generally critical of national parks were supportive of the report. Their response was to praise the open and accountable report, which acknowledged that park management is a complex task and applauded the NSW DECC for acknowledging that while there was much to commend, there were areas that needed improvement. They used the report to call for additional funding to be devoted to park management.

## Discussion

The few negative media articles created some initial discomfort for the NSW Government, but the SoP process has enjoyed strong support of the Minister, the Director General of the NSW DECC and the Head of the Parks and Wildlife Group. This support for the project at the highest levels was crucial to ensure that the process maintained momentum. Some benefits of the process are already apparent. NSW DECC uses SoP information to report to central agencies such as Treasury on the effective delivery of services, crucial for maintaining viable funding levels for the park system. The NSW DECC has also been able to consolidate a number of disparate and repetitive reporting requirements with data collected through the SoP survey

and to link and align the SoP process and system with a number of other projects and initiatives designed to bring about a culture supportive of adaptive management.

Staff feedback workshops conducted after the 2004 assessment provided a number of suggestions for how the process could be improved which have been incorporated into subsequent assessments. Overwhelmingly, staff reported that the SoP process gave them a rare opportunity to think holistically about the management of their parks. They were interested to determine how their park was performing in relation to others within the state and suggested ways they would like to see the information used across the NSW DECC. The overall feeling from staff was that while the survey was a major time commitment (most staff took between half and one day to complete the assessment), it was a worthwhile process and did contribute to improved knowledge. In his review of continuous improvement processes, Garvin (1993) identified that creating an opportunity for reflection through a process of consistent and structured review of past performance can be a critical factor in creating a learning organization. Similarly, Argouridas and Race (2007) have argued for the importance of evidence-based reflection in learning and knowledge management within higher education. We consider this "reflective" aspect of the SoP process to be one of its most valuable features.

The examination of the impact of extrinsic factors to park management showed a number of highly significant associations. For example, performance on many aspects of park management was better in parks where a management plan had been prepared, while performance in some aspects was significantly poorer for parks with large numbers of neighbors. Such associations do not prove a causal relationship (e.g. that planning leads to improved performance); however, they can provide a basis for establishing and testing hypotheses about the drivers of effective management. These potential driving forces are currently being investigated in more detail.

NSW DECC is one of the few protected area management agencies to have assessed and reported on the effectiveness of management of their entire reserve system (c.f. Jacobson and others 2008). The handful of examples that exist from other jurisdictions around the world, were generally conducted in association with or entirely by an NGO-partner and mostly on smaller protected area systems. The scope of the NSW assessment necessitated an approach that relied heavily, but not exclusively, on qualitative assessments of performance by staff. Where the number of protected areas is smaller or where only a few protected areas within a system are targeted for assessment, a more quantitative approach is possible, such as Parks Canada's ecological integrity assessment; although we note that Parks Canada still devotes very significant expertise and resources to implement the monitoring program across their system (Leverington and others 2008).

Extensive consultation with staff during the design and implementation of the process and the explicit support of senior management are considered key factors in the success of the NSW SoP process. There has been no tradition of such evaluation systems within protected area management agencies, so the development of these systems involves a significant component of culture-change within the NSW DECC. Willingness to learn from staff feedback and respond to their concerns and suggestions is pivotal in building and maintaining support for the process. Team learning and an open environment that seeks input from all levels in an organization have been identified as important elements in building learning organizations and putting learning into practice (Garvin 1993).

Increased knowledge of the park system and its issues and challenges, strengths and weaknesses is an immediate product of SoP assessment. This is translated into heightened accountability if the results of the assessment are publicly reported. Whether this improved knowledge and enhanced accountability leads to better and more adaptive decision-making and management is yet to be conclusively demonstrated, but is currently being investigated in a follow-up case study in NSW. There is some evidence from the NSW case that the SoP process and information can assist in arguing the case for increased resources within government. The public response to the NSW SoP report shows that transparent public reporting of this information, even when the results are not universally positive, can help build understanding of and support for the NSW DECC amongst stakeholders. These are important additional benefits reported from other protected area evaluation studies (Leverington and Hockings 2004).

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