

A Review of Current Approaches to Performance Measurement in Protected Area Management



**Prepared for:
Committee on National Parks and
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Benchmarking and Best Practice Program

September 2002

**Lead Agency:
Queensland Parks and Wildlife Service**

**COMMITTEE ON NATIONAL PARKS AND
PROTECTED AREA MANAGEMENT**

BENCHMARKING AND BEST PRACTICE PROGRAM

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IN
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LEAD AGENCY
QUEENSLAND PARKS AND WILDLIFE SERVICE

SUMMARY

This is one of a series of “Benchmarking and Best Practice” reports sponsored by the Committee on National Park and Protected Area Management, which falls within the committee network supporting the Natural Resource Management Ministerial Council (and previously, the Australian and New Zealand Environment and Conservation Council). This benchmarking and best practice program seeks to actively share knowledge and information that may be adapted to achieve superior performance in member agencies.

Measuring the effectiveness of protected area management has been a focus of attention for some time. The business of protected area management does not operate within a production-line environment with tangible inputs, outputs and outcomes. Rather many outcomes are quite challenging to measure and report.

Approaches adopted by park management agencies in Australia and New Zealand, coupled with examples from around the world, are identified and reviewed. Primary survey data was obtained in December 2000 from 72 projects with a secondary survey conducted of 29 projects, supported by several focus group processes.

The logical integration of all performance measurement programs and activities conducted within an agency is a critical element of best practice and a simple model for progressing this objective is put forward. Integrated performance measurement frameworks are discussed and comparatively analysed in the report. Recent initiatives based on the development of “State of the Parks” reporting are offered as a sound direction forward.

A range of eleven strategic principles and a further twelve project principles are defined and provide the building blocks for a sound performance measurement system.

Nine major functional themes that are component parts of the business of protected area management are identified. Within each of these themes, the array of performance indicators that have been employed by agencies to measure performance are outlined and discussed.

‘Best practice tips’ are annotated throughout the report to highlight key signposts toward the achievement of highly effective performance management systems for protected area management agencies and a section is devoted to the ‘characteristics of good practice’ based on some learnings identified whilst conducting this review.

A diversity of approaches to performance measurement was found and these are comparatively reviewed in this report. Although some agencies have expended considerable energy in attempting to identify a standardised process for measuring management performance, this is still at an early stage of development.

The nature of public sector agencies themselves and the diversity of organisational characteristics, socio-political and administrative environments and related organisational drivers are not trivial matters in searching out optimal performance measurement regimes. Variations in scale, scope and objectives characterise the breadth of current approaches to the measurement of performance. There is no panacea, nor is this necessarily a prudent goal at this stage of the maturation of this discipline.

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1 Introduction

1.1 Protected Area Management Benchmarking and Best Practice Program

In 1994, ANZECC (Australian and New Zealand Environment and Conservation Council), through its Working Group on National Parks and Protected Area Management, initiated a benchmarking and best practice program for park management. This program involves investigations into key operations common to all conservation agencies and its overall objective is to gather and pool the approaches and experiences of these agencies under common themes. This has led to the identification of areas of 'best practice' and hence provides a resource that will assist and guide individual agencies to learn from, borrow and adapt ideas to improve their effectiveness.

In 2001 ANZECC was disbanded and some of its functions, including the Working Group and its benchmarking and best practice program, were transferred to the Natural Resource Management Ministerial Council (NRMC). The previous Working Group is now referred to as the Committee on National Parks and Protected Area Management and reports to NRMC through the Land, Water and Biodiversity Committee.

Because of the diversity inherent in any evaluation of performance measurement, this report, whilst part of the benchmarking and best practice suite, does not put forward a best practice model. Instead it is intended to provide an insight into the approaches currently being adopted by conservation management agencies nationally and to an extent, internationally.

1.2 Project Objectives

The objectives of this project are:

1. To describe current practices being used in performance measurement based on project examples identified from various jurisdictions in Australia and overseas.
2. To summarise and critique performance measurement activities undertaken in these projects.
3. To identify best practice principles for measuring performance in protected area management.
4. To critique performance indicators currently used in best practice protected area management performance management.
5. To identify best practice performance indicators for measuring performance in protected area management.
6. To summarise, compare and contrast performance management systems approaches being adopted in Australian and New Zealand jurisdictions.

2 Methodology

The breadth and diversity of the performance measurement issue was evident from the outset. In order to focus the project sufficiently, a scoping meeting involving Queensland Parks and Wildlife Service, Environment Australia, Tasmanian Parks and

Wildlife and University of Queensland (Gatton) staff was held in Brisbane on 4 August 2000. The outcome was the establishment of the above project objectives and the formation of a project team as listed in Attachment 7.

Data collection was for the most part based on a 'primary' and a 'secondary' questionnaire survey. These surveys were developed, piloted for effectiveness and then finalised for distribution. Survey data was supplemented by two workshops involving all ANZECC member agencies.

The primary survey (Attachment 4) was completed in December 2000 by 72 respondents primarily from ANZECC member agencies, but also included a number of projects from overseas. All respondents are listed in Attachment 3.

From the respondents to the primary survey, a subset of 29 were further surveyed in March 2001 to seek more detailed descriptions of the performance indicators and the collection methods used. This secondary survey is detailed in Attachment 5.

3 An Integrated Performance Management Model

"Indicators are chosen on the basis of the best available scientific understanding, and can be placed in a number of alternative frameworks to present and organise information." (ANZECC, Core Environmental Indicators for Reporting on the State of the Environment. Australian and New Zealand Environment Reporting Task Force, March 2000, p. 9).

From this review of performance measurement activities being undertaken by conservation management agencies, the issue that clearly resonates is the need for integration in performance measurement.

The above quote indirectly serves to highlight a key issue in relation to best practice performance measurement. The dimensions and interrelationships between functional themes in conservation management (eg. conservation of individual species, fire management, weed management, recreation management, etc.) and scale can often introduce complexity into the quest for best practice performance measurement. All agencies have an array of performance measurement activities in place, but there can often be little or no linkage between them. As such, the outcomes of some provide little or no insight into the true effectiveness of the agency or its programs as a whole.

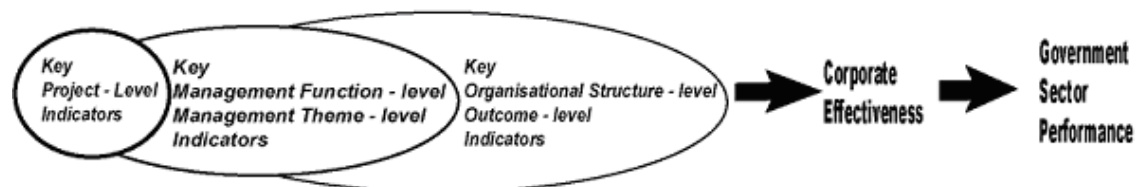
A clear finding from the information assembled in this report is that there should always be logical and holistic frameworks behind any performance measurement activity in an agency. The key questions that need to be answered when initiating any such activity is to define its objectives and then to check these against the corporate objectives of the agency.

There will always be a case for ad hoc performance measurement activities driven by objectives that may, for instance, demand forensic detail on a particular research question. However these one-off projects should never be construed as the backbone of corporate performance measurement.

In terms of corporate approaches to performance measurement, it is suggested that best practice is characterised by a truly integrated approach across an agency (and

even integrated across a sector of government) such that performance measurement indicators at the project or activity level are collected such that they ultimately contribute to informing the agency of its performance against strategic objectives.

Figure 1 : Illustrative Model of Best Practice Corporate Performance Measurement



This model may be depicted for illustrative purposes as appears in Figure 1. It seeks to integrate the dimensions of functional theme and scale so that in essence, a number of key project-level indicators inform management theme or function-level performance measurement, a key number of which in turn inform organisational structure (eg an administrative Division or Branch) or outcome-level performance measurement, a key number of which in turn inform and provide the ultimate measure of corporate effectiveness. The levels of scale and precise terminology may differ from agency to agency, but the underlying principle applies universally.

Ignoring the detail of the performance indicator methodologies currently being used by some agencies, which are still very much undergoing refinement, recent initiatives built around “State of the Parks” reporting frameworks move towards the model of an integrated performance management system that is advocated here.

4 Performance Measurement Frameworks

As indicated in the previous section, implicit in best practice performance measurement is the existence of a comprehensive and integrated framework within which an organisation positions, plans, measures and reports its achievement. The effectiveness and efficiency of this framework can be a resounding indicator of the overall success of an organisation whether in the private or public sector.

Any such framework needs to be finely geared to the political, social and economic environment in which the organisation operates. Hence the notion of a framework that could become a panacea for performance measurement across conservation agencies may not be a useful concept.

A scan was conducted across Australian and New Zealand jurisdictions to discover examples of current ‘systems’ approaches to performance measurement. From this scan four such frameworks were identified, namely:

1. Department of Conservation Te Papa Atawhai (New Zealand) - Making the Best Choices for Conservation (May 2001).
2. Parks and Wildlife Service (Tasmania) - Evaluative Management System.
3. Parks and Wildlife Commission of the Northern Territory - Managing for Outcomes in Conservation of Biodiversity.

4. Parks Victoria - State of the Parks 2000.

This discussion is limited to secondary data analysis and does not include analysis of implementation effects or critique effectiveness of the systems being presented. The systems have been implemented to varying degrees, and have been developed to meet the requirements of their sponsoring organisations. This level of contingency for diverse organisational environments is critical and consequently no one best practice model is presented. Strategic level performance management frameworks/systems should define the nexus between corporate objectives and each performance measurement activity. The concepts, driving values, and context influencing the development of individual performance measurement activities should be embedded in such systems.

A comparative analysis is presented using the following criteria to categorise the similarities and differences depicted by the frameworks identified:

Analysis Criteria	Definition
Objectives	<ul style="list-style-type: none"> classifies the level at which the performance management system is focused
Outcomes	<ul style="list-style-type: none"> classifies the articulated and intangible desired outcomes to be achieved from the objectives
Actions	<ul style="list-style-type: none"> classifies the prescription-type and models used to describe what is to be done
Implementation	<ul style="list-style-type: none"> classifies the basis for how the performance management activities are to be done
Assessment	<ul style="list-style-type: none"> classifies the type of data used for assessment of management results
Reporting	<ul style="list-style-type: none"> describes the uses of reporting produced from the performance management system
Scale	<ul style="list-style-type: none"> describes the scale of the performance management system
Feedback	<ul style="list-style-type: none"> describes the use of performance management system information for realignment, adjustment, learning and continuous improvement-type activities

This basic analysis is summarised in Table1 below. It represents a quick reference tool showing the emerging similarities and exceptions embedded in the four frameworks.

Table 1 Systems Analysis Summary

Criteria for Analysis	<i>Making the Best Choices for Conservation</i> Department of Conservation Te Papa Atawhai (New Zealand)	<i>Evaluative Management System</i> Parks and Wildlife Service (Tasmania)	<i>Managing for Outcomes in Conservation of Biodiversity</i> Parks and Wildlife Commission of the Northern Territory	<i>State of the Parks 2000</i> Parks Victoria
Objectives	<ul style="list-style-type: none"> corporate objectives especially for conservation management activities 	<ul style="list-style-type: none"> as specified in the statutory management plan for a protected area 	<ul style="list-style-type: none"> corporate priorities especially to achieve outcomes in conservation biodiversity alignment with management plan priorities 	<ul style="list-style-type: none"> corporate purpose, informing community, public accountability for resources conservation of natural values
Outcomes	<ul style="list-style-type: none"> prioritised list of conservation projects aid in decision making as to which projects are to be funded 	<ul style="list-style-type: none"> key desired outcomes of management (derived from the management objectives above) are articulated in the management plan 	<ul style="list-style-type: none"> prioritised list of conservation projects develop business case for funding efficiency of resource use 	<ul style="list-style-type: none"> highlights key environmental issues illustrates key environmental programs provides historical records of the parks system strategic priorities and resource allocation
Actions	<ul style="list-style-type: none"> mathematical model for prioritising decision making of conservation issues 	<ul style="list-style-type: none"> process-based management system with prescriptions for monitoring, evaluation, reporting and review of management integrated into the statutory management plan for the protected area 	<ul style="list-style-type: none"> prescriptive process for projects 	<ul style="list-style-type: none"> prescribed measurement system to allow for data consolidation at state level
Implementation	<ul style="list-style-type: none"> trial activities to test model and application decision-based through application of quantification model 	<ul style="list-style-type: none"> monitoring programs are undertaken to measure selected performance indicators related to the Key Desired Outcomes 	<ul style="list-style-type: none"> system-based with planning tools, supported by technology infrastructure, project management approach and audits standardised set of projects for park or group of parks 	<ul style="list-style-type: none"> process-based through data driven decision points, feedback loops and internal and external consultation

Criteria for Analysis	<i>Making the Best Choices for Conservation</i> Department of Conservation Te Papa Atawhai (New Zealand)	<i>Evaluative Management System</i> Parks and Wildlife Service (Tasmania)	<i>Managing for Outcomes in Conservation of Biodiversity</i> Parks and Wildlife Commission of the Northern Territory	<i>State of the Parks 2000</i> Parks Victoria
Assessment	<ul style="list-style-type: none"> quantifies conservation outcomes in terms of change in the state of natural heritage measured in terms of the area, representativeness, diversity and condition of natural heritage. assumes intangibles (such as cultural values) influence the features of outcomes sought rather than measuring intangibles directly does not explicitly recognise value of project for other conservation outcomes, such as recreation, education and public support assumes outcome specifications include species focused objectives cannot yet be used to specify management actions in historic resources or visitor facilities management 	<ul style="list-style-type: none"> quantitative and qualitative data about performance indicators provide the basis for reporting on the performance of management under the management plan assessments and critical comment on management performance by key stakeholders in management provide additional feedback on management performance 	<ul style="list-style-type: none"> species measurement indicators annual assessment of state of the parks with respect to threats (fire, weeds, ferals) and for threatened species and cultural management identification and reporting against milestones for all park management 	<ul style="list-style-type: none"> qualitative and quantitative measures step 1 in development of long-term broad indicators to incorporate: intrinsic viability, biodiversity values, risk impact, ecosystem change
Reporting	<ul style="list-style-type: none"> for management decision making quantify to central Government and funding agencies increases transparency and accountability to associates and the public 	<ul style="list-style-type: none"> reports on the performance of management under the management plan are prepared on a regular basis e.g. every five years recommendations are included for improving ongoing management reports are intended to inform managers, key stakeholders, and the public 	<ul style="list-style-type: none"> to management for following year's projects Annual audit of projects 	<ul style="list-style-type: none"> agency reporting requirements

Criteria for Analysis	<i>Making the Best Choices for Conservation</i> Department of Conservation Te Papa Atawhai (New Zealand)	<i>Evaluative Management System</i> Parks and Wildlife Service (Tasmania)	<i>Managing for Outcomes in Conservation of Biodiversity</i> Parks and Wildlife Commission of the Northern Territory	<i>State of the Parks 2000</i> Parks Victoria
Scale	<ul style="list-style-type: none"> all sized projects and activities 	<ul style="list-style-type: none"> protected area system can be scaled up or down 	<ul style="list-style-type: none"> projects by park or group of parks 	<ul style="list-style-type: none"> park, other protected areas and other land tenures
Feedback loops	<ul style="list-style-type: none"> conservation gains achieved from specified outcomes known to managers for decision making knowledge sharing with other agencies, councils and government departments 	<ul style="list-style-type: none"> findings and recommendations of report feed back into reviews of the management plan so as to guide and improve ongoing management. reports also provide those with management responsibility for the protected area with a more informed basis for decision-making 	<ul style="list-style-type: none"> monitor outcomes in relation to targets monitor adequacy of procedures used audits to increase transparency and accountability scrutiny by non-park scientific personnel results of audits fed into following years project planning 	<ul style="list-style-type: none"> provides a base-line measure for future management of the system evaluate effectiveness of management initiatives

5 Performance Measurement Themes

A review of current practice for performance measurement in protected area management has led to the conclusion that there is a range of common functional themes across which activities may be categorised. While the themes list here may not be comprehensive, they best represent the current performance measurement activities being undertaken.

Nine themes were identified with several projects spanning more than one theme. The themes are:

- i. **Parks Systems:** projects that evaluate holistic performance of the park system as a means of meeting corporate outcomes such as the 'conservation of natural heritage'
- ii. **Management Systems:** projects that evaluate performance in an aspect of a management
- iii. **Protecting Individual Species:** projects that evaluate performance at an individual species level
- iv. **Ecological Habitat & Ecosystem Monitoring:** projects that evaluate performance at an ecosystem level
- v. **Fire Management:** projects that evaluate performance of fire management activities
- vi. **Pests and Weeds:** projects that evaluate performance of pest or weed monitoring or control
- vii. **Habitat Rehabilitation:** projects that evaluate performance of habitat rehabilitation activities
- viii. **Human Use & Recreation:** projects that evaluate performance of programs directed at the use of areas by people, especially visitor impacts
- ix. **Visitor & Community Attitudes:** projects that assess visitor satisfaction and/or people's attitudes towards the managing authority

The spread of the projects examined during the preparation of this report is mapped as Figure 2 – Performance Measurement Themes. The matrix classification structure provided a clear description of the levels at which performance assessment was occurring and also the scales that management focused on. This provides a useful snapshot of the range of current performance measurement activities across jurisdictions. However it should be recognised that there is an inherent skewing towards natural resource management due to the focus adopted by the project team. There is no doubt that other related work exists in agencies which was not captured within this report.

Figure 2 Number of Projects Represented in Performance Measurement Themes

Theme	Parks Systems	Management Systems	Protecting Individual Species	Ecological Habitat	Fire Management	Pests & Weeds	Habitat Rehabilitation	Human Use & Recreation	Community Attitudes	Other
Scale										
Site/part of Protected Area		0	1	6	2	3	3	2		0
Protected Area		4	2	2		1	0	2	1	0
Group of Protected Areas		1		0					1	
District			0	1	0	0				
Region/Bioregion	0		4	4		1	1	2	1	
State	1	0		1	1	0		2	3	0
Nation	1	2		1				2	0	
Species Range			2		0					

Legend:

	No data captured
	Projects represented in Primary Survey Only
	Projects represented in Primary and Secondary Survey (1 or 2 best practice projects)
	Projects represented in Primary and Secondary Survey (3 or more best practice projects)

Actual number of best practice projects in sample indicated in each cell

*Some best practice projects classified in more than one cell

The dominant focus is on projects at the Site/part of protected area level and the protected area level. This could be a reflection of the data collection methodology or, it could be due to the fact that in many cases management is focused at the park level rather than at coordinating statewide performance. It may also be that data collection at this level is the most practical and achievable approach. However convenience does not always equate to efficacy in performance management. Choosing a practical collection methodology, which uses the fewest resources, and results in effective information, is the ultimate objective (USAID, 1996).

Best Practice Tip:
Convenience and ease of collection does not always equate to efficacy.

Agencies should examine each cell of this matrix as it relates to the performance measurement activities they employ and seek to address the research question 'Are our current performance measurement activities contributing to the evaluation of achievement against our strategic objectives or should current effort be re-distributed? This would assist to critically review the agency's current resource investment in performance measurement across the various scales and functional themes.

Best Practice Tip:
Agencies should address the question 'Are our current performance measurement activities contributing to the evaluation of achievement against our strategic objectives or should current effort be re-distributed?'

6 Best Practice Principles for Performance Measurement

The Best Practice Principles presented here are the building blocks of effective performance measurement. Their consideration and application when designing performance measurement projects will allow the outcomes of a measurement activity to meet stated goals. The extent to which a performance measurement project or program is aligned to these principles can be a gauge of its value for overall performance management.

The results from reviewed projects revealed several principles that underpin their success. In addition to those evident in the projects, a review of the current literature (Hockings, Stolton & Dudley, 2000) was used to fill out these principles. Further investigation of the application of these principles in practice would be valuable. A 'how to' guide for performance management professionals may be a potential outcome.

Best Practice Tip:
Incorporate as many principles as possible, as early in the project as possible.

An interesting result was the hierarchy of guiding principles. At the 'Strategic Principle' level, the principles were distinctly related to performance measurement in protected area management. A detailed breakdown to an operational or project level resulted in principles that were applicable and important to project management rather than specifically to projects that were measuring performance. These are identified as 'Project Principles'.

The following principles serve as guidelines for conducting performance measurement activities. These principles are intended for use at the project commencement phase and for initiating improvement in protected area management performance assessment. They are applicable to both government and non-government organisations.

Guiding Principle

Measuring performance is an essential component of best practice protected area management.

Strategic Principles

1. There is a clearly defined and documented purpose statement and objectives for measuring performance of protected area management.
2. The findings of measuring performance of protected area management have a formal and meaningful link into ongoing management and decision-making.
3. The aims of the project are strategically aligned with the Agency's corporate strategy, goals and culture.
4. Senior management and operational staff demonstrate a strong commitment to measuring performance of protected area management.
5. There is a strong commitment to and continuity in the resourcing, accountabilities and outputs over the life of the project.
6. Resource allocation (quantity and duration elements) for measuring performance of protected area management is sufficient to enable the purpose and objectives of the project to be achieved.
7. Internal and external stakeholder groups (including managers, operational staff, community groups) are informed about and/or involved in the project to achieve greater acceptance, ownership and commitment to the performance measurement process. The use of marketing tools can assist in some circumstances.
8. Performance measurement objectives are prioritised (based on factors such as importance to ongoing management, validity, specificity and cost-effectiveness) and reviewed at appropriate intervals to ensure relevance and usefulness.
9. The findings and recommendations of performance measurement provide a valuable resource that is used to guide ongoing decision-making and management.
10. Stakeholders are kept well informed of the findings and recommendations of performance measurement.
11. An adaptive management culture is established. Cycles of reflection and learning from performance measurement are established to achieve continuous improvement in management performance.

Project Principles

1. The project has clearly defined management objectives.
2. Performance targets for outcomes, results and actions are identified where appropriate.
3. Performance indicators are selected to be valid and cost-effective in terms of data collection and analysis.
4. All stages of the project are well planned in advance. This applies to data collection, data analysis, reporting, review and use. Timely information for management decision-making is a critical consideration.
5. Incorporate development of data management systems in the project planning stage.

6. Projects are designed and conducted with appropriate scientific rigor in methodology, data analysis and interpretation. Spatial and temporal scales of the project are appropriate to the objectives.
7. Baseline data about performance indicators are collected early so that changes over time (e.g. as a result of management actions) can be clearly documented.
8. There is consistency over time in monitoring methodology, data collection procedures and continuity of staff involvement.
9. Experts are engaged as necessary to meet identified gaps in knowledge or expertise. Peer review of the project is sought where necessary.
10. Consideration is given to identifying the causes of any changes detected in performance management results (e.g. are the changes due to management effort or another cause?).
11. Consideration is given to linkages with other projects which may allow data capture to meet multiple purposes for performance management.
12. The findings of the project and any recommendations for improving ongoing management are documented and clearly reported to managers and other stakeholders.

7 Characteristics of Good Practice

The projects identified by respondent agencies as best practice were characterised by their longevity. They were mature projects that had been and were likely to continue to operate in the long term. It has been suggested that to effectively measure performance, projects must be conducted over long periods of time to reveal actual results independent of natural variations in attributes. Contemporary business landscapes subject to instability resulting from management changes, funding arrangements and political influences, can make it difficult to implement long-term projects. Organisations should put into focus the viability and effectiveness of short-term projects and also examine criteria for successful completion of long-term projects within their business environment.

Best Practice Tip:
Long timeframes and security of resourcing can contribute to the success of performance management projects.

Short timeframes and resource constraints are issues that can significantly alter the effectiveness of performance measurement projects in the public sector. In this environment, additional consideration is required to make each project as comprehensive as possible within these limitations. One method of achieving this is to conduct basic performance measurement activities with the intention of alerting management to issues as they appear significant. The management response is then to implement detailed assessments for those key issues.

Another method to aid in increasing the efficiency of projects and potentially reducing costs is to consider using a data management system. This assists in both data storage and manipulation, saving the project team valuable time. The decision to invest in a data management system can be evaluated on the basis of:

- a cost/benefit analysis,
- the flexibility of any potential system to be used across a number of projects; and
- potential compatibility with existing data collection methods.

Best Practice Tip:
Appropriate and efficient data management systems are vital to support performance management programs (eg. Northern Territory, Queensland).

Opportunities to use indicators for more than one purpose should also be scoped. For example, direct indicator such as fin fish abundance can double as indirect indicator of the health of the marine reserve. It is advisable to use this technique where an holistic indicator is difficult to find, and where it is difficult to measure all aspects of area under investigation. This is useful especially when attempting to measure a system, for example an ecosystem or a management system.

Best Practice Tip:
Be alert to opportunities for gathering information about performance indicators through 'piggybacking' monitoring programs onto other projects.

It is also recommended that packages of indicators be used to increase the effectiveness of assessment. For example, the use of just one species indicator to provide a reliable index of the structure and function of an ecosystem is highly unlikely to be either reliable or valid. Many projects monitoring ecosystem health use a suite of indicators. For example one project measured the abundance of fin fish, the size of blue cod, the abundance and size of crayfish and the invertebrate grazer abundance to determine management effectiveness of a marine reserve.

The use of indicators that are similar to those in use for other projects allows for comparative analysis to take place. This can happen within an agency or through data and knowledge sharing across jurisdictions. Comparability aids in determining why certain trends are occurring.

Best Practice Tip:
Where possible, adopt standardised indicators that facilitate comparative analysis of performance within and across agencies.

Ensuring that, where they remain valid and appropriate, the same indicators and the same methods of data collection are used throughout the life of a monitoring project will enhance the reliability of reporting. For example using exactly the same quadrats on permanently marked transects to measure seagrass abundance over time. Standard procedures and training can help in maintaining consistency in data collection methods by all staff responsible for measurement activities.

A further consideration when choosing performance indicators is the use of appropriate and relevant indicators. For example, a project measuring weed abundance may have a number of methodological approaches that are used depending on the objectives, size and characteristics of the site. These include visual inspection, transects, photo points and aerial photography.

Prior to selecting indicators, it is recommended that small pilot projects be implemented to increase knowledge and to inform the indicator and target selection process. When selecting indicators for performance assessment, several projects stressed the importance of using formal methods (as opposed to ad hoc, informal selection processes). This can include the use of expert opinion or staff consultation. Using external stakeholders in the indicator selection process can increase the credibility and objectivity of the assessment (Jones, 2000).

Stakeholder involvement in performance measurement has been cited in many projects as being of great importance. Public involvement can help to decrease costs, especially during large-scale projects, as volunteers may be willing to assist in data collection. Inclusion can increase public awareness of protected area management issues and facilitate a propensity to embrace and support change. A resultant outcome is increased transparency and accountability for the managing agency. Stakeholder

Best Practice Tip:
Internal and external stakeholder involvement throughout a performance measurement program will improve effectiveness.

involvement can ease the process of implementation. For example, the inclusion of managers in a performance measurement project could increase the likelihood of adaptive management activities taking place in response to recommendations and outcomes.

Performance monitoring should also provide information to allow for adaptive management to take place. Opportunities for better management can be provided by supplying quality information to the decision making process.

When using performance measurement to inform decision-making, it is of vital importance that baseline information be collected either prior to commencement or during start-up phases of the performance measurement activity. Baseline information establishes a reference point so that changes that are a direct result of management are more readily detected.

Best Practice Tip:
Collection of baseline information allows for changes in management performance over time to be detected.

There was a diverse representation of direct and of indirect indicators used across projects. A substantial proportion of projects took advantage of the inherent benefits of direct indicators. Their higher levels of reliability and validity lend weight to their objectivity. As there was broad use of indirect indicators across a range of successful, mature and long-term projects, usually higher resource investment required for a direct indicator over an indirect indicator may outweigh its potential advantages in terms of rigour. In these cases, the use of 'just enough' information provided by using an indirect indicator may satisfy quality requirements.

A wide range of internal and external stakeholders forms the potential audience to performance measurement information. Hence there may be disparate demands placed on producing 'meaningful' performance measurement information in agencies. Holistic alignment of performance information across all levels of an agency, supported by a corporate systems approach to performance management will result in best practice. This needs to reflect the unique characteristics of the particular agency including social, political, budget and resource obligations.

8 Performance Indicators

Any discussion on performance indicators for protected area management is necessarily broad ranging and complex. In an attempt to facilitate any learnings in this area, a summary is provided of the attributes of performance measurement within each identified functional theme of protected area management discovered from this project. The references in brackets refer to the index of detailed information and contacts for each project held in Attachment 3 to this report.

8.1 Parks Systems

The parks systems theme includes projects that assess holistic performance of a park system. For example, the Victorian State of the Parks 2000 report (PS-02) looks at the park estate and provides a benchmark against which to gauge future management of the system. The Common Standards Monitoring project (PS-01) in the United Kingdom is also looking at the status of United Kingdom natural heritage within context of the European-wide site system. It aims to understand if management of protected areas is being effective in conserving those things for which sites have been designated.

The projects in the parks systems theme primarily use natural resource indicators with all projects using a combination of direct and indirect indicators. The indicators used by these projects include:

- Intrinsic viability (likelihood and evolution of ecosystems in parks)
- Area, shape and connectivity of parks and reserves
- Biodiversity value (proportion of bioregion protected in parks and reserves)
- Impact of risk (number of pest plants and animals and area covered by these)
- Ecosystem change (vegetation condition and change, salinity modelling and fire history)

The Victorian State of the Parks project (PS-02) stressed the importance of using formal methods such as expert advice and staff consultation when selecting indicators. Jones (2000) states that the inclusion of experts in this process adds to objectivity and credibility. This is further supported by the USAID (1996) who assert that stakeholder participation in the performance measurement process leads to increased acceptance and a greater ease of implementation.

Best Practice Tip:
Use formal methods (such as expert advice and staff consultation) when selecting indicators.

8.2 Management Systems

The management systems theme includes projects that assess an aspect of a management system. For example, the Visitor Asset Management System project (MS-04) aims to provide a comprehensive database that will assist in the efficient provision of visitor recreation facilities and services; the Evaluation of World Heritage management project (MS-07) aims to provide feedback to managers about the extent to which management objectives for the area are being met; the Biophysical mapping in Finke Gorge National Park (MS-03) to develop long-term monitoring strategies and, the Long Island-Kokomohua Marine Reserve monitoring project (MS-05) assesses the impact of marine reserve protection on marine life within the reserve.

The management systems-themed projects primarily rely on natural resource indicators with some projects measuring aspects of visitor and park users, or management capacity.

These projects used a combination of direct and indirect indicators, 40% used purely direct indicators, 10% used only indirect indicators and half (50%) used a combination. The Long Island-Kokomohua Marine Reserve monitoring project (MS-05) is an example of a project with direct indicators doubling as indirect indicators (thereby reducing the data collection effort). Direct indicators of fin fish abundance determine the fin fish population but also provide an indication of the health of the marine reserve. Indirect indicators may be more feasible to use to determine ecosystem health (Messer *et al.*, 1991).

Best Practice Tip:
Select indicators that can be used for more than one purpose. For example, direct measures doubling as indirect indicators.

Best Practice Tip:
Indirect indicators may be more feasible to use when monitoring ecosystems.

The indicators used by these projects include:

- Abundance of various indicator species

- Condition of selected natural resources (including size and weight)
- Location and distribution of species
- Visitor impact (degradation indicators - degree of degradation, water quality, erosion rate)
- Impact of prescribed management practices (eg. burning: measure species composition and abundance)
- Visitor satisfaction with services, facilities and education programs
- Management effectiveness (indirectly measured through surveys of public attitudes, views on management and general knowledge of protected areas)

The Management Evaluation of the Galapagos National Park project (MS-02) used a 'package' of indicators to increase the effectiveness of performance measurement. This is supported by the USAID (1996) who state that the optimum set of performance indicators that meet the need for management and provide useful information at a reasonable cost should be selected. MacDonald *et al.*, (1993) also state that more than one indicator should be used as it is highly unlikely that one species could serve as an index for the structure and functioning of an ecosystem.

Best Practice Tip:
Use 'packages' of indicators to increase the effectiveness of assessment.

The Fraser Island World Heritage Area Monitoring and Management Effectiveness project (MS-06) indicated that time and resource constraints could potentially affect the long-term viability of the project and also restrict the short-term reliability and accuracy in assessment activities. Landres *et al.*, (1988); Silsbee *et al.*, (1992), MacDonald *et al.*, 1993 and the New South Wales National Parks and Wildlife Service, (n.d.) all stress the importance of undertaking assessment over long periods of time. Time and resource constraints are issues that can significantly affect performance measurement projects in the public sector.

Best Practice Tip:
Effective natural resource assessment often needs to be conducted over long periods of time.

The Evaluation of World Heritage Management project (MS-07) stressed the importance of including external stakeholders in assessment activities as they added to the objectivity and credibility (Jones, 2000).

Best Practice Tip:
Inclusion of external stakeholders in the assessment process increases project objectivity and credibility.

The Fraser Island World Heritage Area Monitoring and Management Effectiveness project (MS-06) found advantages in database and infrastructure development. Use of the data management tool assisted in the storage and manipulation of data. While this solution is not suitable for all projects, the decision to invest in development of data management systems can be addressed on merit in the project planning stage.

Best Practice Tip:
Incorporate development of data management systems in the project planning stage.

8.3 Protecting Individual Species

The protecting individual species theme includes projects that assess information on an individual species. The projects represented in this theme clustered around three main areas: monitoring species; implementing recovery plans; and, developing sustainable commercial use. Some projects are looking at monitoring threatened or endangered species such as frogs (PI-05), the Eastern Bristlebird (PI-14), the Golden-shouldered Parrot (PI-06) and the Lyrebird (PI-07). Other projects such as the Cocos

Buff-banded Rail Recovery Program (PI-02) and the Norfolk Island Green Parrot Recovery Plan (PI-01) are assessing the effectiveness of Recovery Plans. The Lake Taupo Fishery Management project (PI-04) looks at the impact that fishermen have on the population, aiming to provide a sustainable fishery. Another project, the Mt Eccles Koala Relocation project (PI-08) monitors the over abundance of koalas on the eucalypt forest within Mount Eccles National Park.

All of the protecting individual species projects monitor natural resources. The majority of these projects use direct indicators (55%), a small number using indirect indicators (10%) with the remainder using a combination of direct and indirect indicators (35%). As with difficulties encountered by the projects measuring management systems projects that measure a number of direct indicators increase the accuracy of the performance measurement activity. From projects undertaken within this theme, it can be concluded that multiple indicators in combination provide more meaningful performance measurement results.

The indicators used by these projects include:

- Distribution and abundance of species (direct presence and indirect presence - scats)
- Population ecology (population size, sex and age structure)
- Population health
- Impacts on the population (disease research, habitat disturbance, fire history, feral animal and weed presence)
- Management effectiveness (presence of species in revegetated areas)

Stakeholder involvement is a key principle of performance monitoring (USAID, 1996; Bourn, 2000). The Lyrebird monitoring project (PI-07) has an ongoing ad hoc volunteer data collection program running to increase the public awareness of the issue, as well as gaining stakeholder support for the project. USAID (1996) state that the greater the participation, the greater the resulting performance change and the greater the ease of implementation of future changes based on the assessment. Through involving stakeholders, a vast majority can be provided with the most up-to-date information, thereby increasing the transparency of the organisation and decreasing the chances of uninformed protests being made against them.

Best Practice Tip:

Stakeholder involvement increases public awareness and assists in greater acceptance of the findings of performance measurement

The Frog monitoring project (PI-05) highlighted the importance of experiments and states that they permit an understanding into what happens. Experimentation also allows for the selection of more accurate performance indicators.

Best Practice Tip:

Experiments can increase knowledge about causes and effects and so enhance the information base for individual species monitoring.

8.4 Ecological Habitat & Ecosystem Monitoring

The ecological habitat and ecosystem monitoring theme includes projects that measure/gain information regarding ecosystems. Certain projects evaluate the effects of particular impacts (such as commercial use, weeds, feral animals and erosion) and the effectiveness of management in controlling these impacts. Projects include the Kingston project (EH-13), management of unnatural erosion of the Gordon River (EH-

10), changing species richness and composition in Canadian National Parks (EH-01), and monitoring of post-fire vegetation recovery in the Alpine National Park, Victoria (EH-11). Other projects involve undertaking resource assessments to be used as baselines for future monitoring projects, including the Queensland Coastal Wetlands Resource Mapping project (EH-08).

All projects in this category measure natural resources. A large proportion also measured community and stakeholder issues (40%). Most projects in this theme used direct indicators (56%) or a combination of direct and indirect indicators (33%).

The Project River Recovery (EH-03) is an example of a project selecting different indicators for different sites, depending on the size and characteristics of the site. The use of indicators contingent on defining variables (such as size, scope, purpose) to increase suitability is supported by Messer *et al.* (1991). The changing species richness and composition in the Canadian National Parks project (EH-01) used the same indicators for a number of subjects, thereby cutting costs of measurement and increasing comparability between projects. Silsbee *et al.* (1992) and MacDonald *et al.* (1993) both advocate using indicators with the same parameters for comparability across projects.

The indicators used by these projects include:

- Distribution and abundance of species (direct presence and indirect presence - scats)
- Population ecology (population size, sex and age structure, mortality, population viability, vegetation production (amount of new growth), population condition, species size)
- Community composition (presence/absence/abundance of species - both native and introduced). These indicators can be used to determine change in composition over time
- Impacts on the population (disease research, disturbance, frequency and size, fire, flood, insects, habitat fragmentation, feral animal and weed presence, vegetation change, indicator species abundance, human land-use patterns)
- Condition Indicators (erosion rate, natural rehabilitation, vegetation recovery, water quality, air quality)
- Management effectiveness (presence of species in revegetated areas, survival of indicator species after control measures, management resources (budget allocations), management plan implementation, management processes and systems)
- Public awareness (number of interpretive programs and number of attendees, change in public attitude over time)

The Fraser Island World Heritage Area Monitoring and Management Effectiveness project (EH-07) signified that a comprehensive overall study should include a wide range of themes (such as cultural resources, visitors and park users, community and stakeholder issues and natural resources). However resource and time constraints can prevent this. Faced with these constraints, it is imperative that projects select the best possible indicators.

One solution to this dilemma could be the approach taken by the Fraser Island World Heritage Area Monitoring and

Best Practice Tip:
Make the assessment as comprehensive as possible, while considering constraints.

Best Practice Tip:
Contain costs by implementing broadly based monitoring and reporting then undertake specific monitoring programs to target significant or emerging management issues.

Management Effectiveness project (EH-07). Their approach seeks to alert management to changes in species composition and abundance as they become significant. A more meaningful sampling program is then implemented for addressing each critical issue as it emerges.

Both the Fraser Island World Heritage Area Monitoring and Management Effectiveness project (EH-07) and the Mt Eccles NP Koala Relocation Program (EH-12) stress the importance of standardising data collection otherwise the results could be affected leading to inaccurate conclusions. This aims to minimise variations due to methodological effects and increases the accuracy of interpretation.

Best Practice Tip:
Standardise data collection, entry, storage, analysis and reporting procedures.

8.5 Fire Management

The fire management theme includes projects that assess fire management activities. The ACT Bushfire Fuel Management Plan (FM-01) aims to develop a plan that will ensure risk to life and property is minimised through the strategic reduction of fire fuels from priority areas. Victoria's approach to monitoring of post-fire vegetation recovery in the Alpine National Park (FM-03) assesses vegetation recovery to determine when cattle grazing could return the area without increased risk to conservation values. Another project, maintaining the grassy 'balds' of the Bunya Mountains (FM-02), is looking at what fire regimes could be implemented to prevent the encroachment of forests into the grasslands.

All the fire management projects measured natural resources. The majority of measures used are a combination of both direct and indirect indicators (83%), however some projects used solely direct indicators (17%).

The indicators used by these projects include:

- Abundance and distribution (woody species, grasslands, change in grassland area)
- Productivity (vegetation recovery post-fire - photo points)
- Geological indicators (soil depth, soil moisture)
- Fuel assessment (fixed point annual/biannual assessment, change in species composition)
- Fire history (size and frequency)
- Water quality (impacts on stream quality from fire events)
- Plan implementation (percentage of tasks identified in the management plan completed)

The monitoring of post-fire vegetation recovery in the Alpine National Park, Victoria project (FM-03) recommended undertaking both quantitative and qualitative assessment as certain aspects would be impossible to measure quantitatively. The USAID (1996) state that quantitative measures may be more effective in reporting to management as they allow for numerical observations to be made.

Best Practice Tip:
Use qualitative assessment to augment quantitative measures or where quantitative assessment is not possible.

8.6 Pests and Weeds

The pests and weeds theme includes projects that assess aspects of pest or weed monitoring or control. Some projects are looking at the success of management in restoration of ecosystems (including the Rotoiti Nature Recovery project (PW-03), the Western Shield Wildlife Recovery Program (PW-05), the Spruce Woods Provincial Park Prairie Management Plan (PW-02) and the Lyrebird distribution project (PW-04)). Other projects monitor particular pests and weeds, such as the *Mimosa pigra* control program in Kakadu National Park (PW-01).

All projects in this theme measure natural resources. The majority of projects measure these directly (57%), however some use a combination of direct and indirect indicators (29%) and few use solely indirect indicators (14%). Many projects rely on indirect indicators to monitor species that are affected by the pests and weeds.

The indicators used by these projects include:

- Distribution and abundance of species (direct presence and indirect presence - scats)
- Condition of species adversely affected (abundance, breeding success, survival, vegetation condition, visual change in condition (photos), productivity)
- Population ecology (change in population size, sex and age structure, mortality, population viability, vegetation production (amount of new growth), population condition, species size)
- Abundance of pest species (numbers trapped, number of seedlings, number of seeded plants, number of mature plants)
- Management success (control success - abundance of adversely affected species)
- Public awareness (number of interpretive programs and number of attendees at each program)

The Lyrebird monitoring project (PW-04) found the use of volunteers to collect information to increase public support for the project and a greater amount of information to be collected. This is supported by the USAID (1996) and Bourn (2000) who state that stakeholder involvement is a key principle of performance monitoring.

Best Practice Tip:
Stakeholder involvement increases public support and allows for more information to be collected.

Landres *et al.* (1988), suggests that indirect indicators should only be used when it is impossible to use direct indicators as direct indicators generally provide more accurate assessments. Several projects, including the Rotoiti Nature Recovery project (PW-03) and the Western Shield Wildlife Recovery Program (PW-05) mentioned that there were no direct means to measure what they wanted to measure, choosing indirect indicators was the only feasible choice.

8.7 Habitat Rehabilitation

The habitat rehabilitation theme includes projects that assess habitat rehabilitation activities. Some projects examined the rehabilitation of sites after an unnatural disturbance such as the Lune River Quarry Rehabilitation project (HR-04) and the management of erosion of the lower Gordon River banks project (HR03). Other projects focused on the rehabilitation of ecosystems that have been affected by pests

and weeds. These projects include the Spruce Woods Provincial Park Prairie Management Plan (HR-01) and the Rotoiti Nature Recovery project (HR-02).

All habitat rehabilitation projects used natural resource indicators. The projects used either direct indicators (45%) or a combination of direct and indirect indicators (36%). A small proportion (18%) used only indirect indicators. In these cases the indicators were to evaluate interpretation and education aspects of the projects.

The indicators used in these projects include:

- Abundance and species richness
- Population dynamics (predation levels, vegetation production, breeding success)
- Stressor indicators (erosion rate, natural rehabilitation, species composition, weed encroachment, indicator species survival rate)
- Geological indicators (survey landforms, geotechnical characterisation of banks, radiocarbon dating of banks, geophysical survey of river bed)
- Human use (grazing effects on species composition and productivity, cattle weight gain through rotational grazing program)
- Public awareness (number of interpretive programs and number of attendees at each program)
- Management effectiveness (abundance of indicator species)

The management of erosion of the lower Gordon River Banks project (HR-03) was able to assist management by providing a sound scientific basis for decision-making. This is supported by Rutgers University (1997) who suggest that performance monitoring provides information which facilitates adaptive management processes leading to better decision making. Opportunities for better management emerge as better performance information is available to the decision making process.

Best Practice Tip:
Performance monitoring should provide information that is used to improve future management performance and thus to facilitate adaptive management.

8.8 Human Use & Recreation

The human use and recreation theme includes projects that assess the use of areas by people, especially the effects of visitors. Projects monitoring the impact of visitors include the Bibbulmun Track Monitoring Program (HU-10), the Fraser Island World Heritage Area Monitoring and Management Effectiveness project (HU-04), the aerial photographs of Visitor Services Sites project (HU-05), the Lake Taupo Fishery management project (HU-02) and the Track Monitoring System (HU-07). Another project, the Visitor Asset Management System (HU-03) is aiming to provide a comprehensive database that will assist in the efficient provision of visitor recreation facilities. The CALM-managed recreation areas project (HU-09) aims to monitor their own performance by visitation levels in conjunction with supporting indicators.

The human use and recreation projects tend to use both natural resource indicators and visitors and park user indicators. The projects rely solely on direct indicators (56%) or a combination of both direct and indirect indicators (38%).

The indicators used in these projects include:

- Visitor numbers and demographics (counters, ticket sales, surveys)

- Visitor impacts (degradation - erosion, vandalism, weeds, vegetation overgrowth, vegetation trampling, undesirable use and littering, abundance and distribution of indicator species, road condition, water quality)
- Natural rehabilitation (revegetation surveys)
- Visitor satisfaction (surveys, experience, demographics)
- Economic indicators (amount spent on accommodation, transport, equipment and supplies (survey forms), economic benefit to state and regional economies to justify amount spent on management resources)
- Management performance (management plan implementation, management processes and systems)

The Aerial Photographs of Visitor Services Sites project (HU-05) has implemented measurement over time to allow for long-term incremental changes in condition to be monitored. Several sources including Landres *et al.*, (1988); Silsbee *et al.*, (1992), MacDonald *et al.*, 1993 and the New South Wales National Parks and Wildlife Service, (n.d.) stress the importance of undertaking assessment over long periods of time. The benefits can include increased effectiveness, improved reliability, and evaluation of actual changes.

Best Practice Tip:

It is better to monitor a few things well than a host of things poorly. Remember, you can't measure everything!

The Fraser Island World Heritage Area Monitoring and Management Effectiveness project (HU-04) recognised the need to select a monitoring method that is sustainable – the choice of rapid air photo assessment rather than traditional visitor impact monitoring methods was made precisely because the former was more sustainable.

Future Directions:

Benchmark investment levels for effective performance management projects.

The indicators in the Bibbulmun Track Monitoring Program (HU-10) are not only used for performance measurement, but link to strategic planning, setting priorities for management and improvement and for the development of marketing strategies. Integrating performance indicators with management and planning processes is best practice.

8.9 Visitor & Community Attitudes

The visitor and community attitudes theme includes projects that assess visitor satisfaction and/or people's attitudes towards the managing authority. Many projects have a focus on visitor experiences, such as the visitor's satisfaction with their overall visit to CALM-managed recreation areas (VC-05), the Visitor Satisfaction Monitoring project in Victoria (VC-04), the monitoring of public attitudes to the Tasmanian Wilderness World Heritage Area (VC-03) and the Lake Taupo Fishery Management project (VC-02). Many of these projects use visitor satisfaction as an indicator of management performance. The Kakadu National Park Visitor Survey Program 2000 - 2001 (VC-01) looks at the numbers of tourists, as does the Bibbulmun Track Monitoring Program (VC-06).

The majority of these projects assess visitors and park user aspects, with most using direct indicators (78%), however some use indirect indicators (18%) or a combination of direct and indirect indicators (9%).

The indicators used in these projects include:

- Visitor numbers and demographics (counters, ticket sales, surveys, age, origin, sex, travel mode, amount of money spent on accommodation, transport, equipment and supplies)
- Visitor satisfaction (survey on satisfaction with park facilities, services and recreational opportunities (eg. Ranger Guided walks, toilets, roads, interpretation signs))
- Visitor expectations and experience (survey on crowding, road conditions, campground facilities)
- Interpretation and education (survey - appropriateness and visitor needs)
- Management performance (survey public attitudes - phone survey)
- Visitor Impacts (degradation, erosion, vandalism, weeds, littering, abundance of indicator species, track maintenance)

The visitors satisfaction with their overall visit to CALM-managed recreation areas project (VC-05) found that by measuring broad parameters (as opposed to park-specific ones), the data collection can be undertaken over a broader geographical area and allows for comparative data analysis to take place. This supports Landres *et al.* (1988); Silsbee *et al.* (1992) and MacDonald *et al.* (1993) who all state that the same parameters across projects to allow for comparability.

Best Practice Tip:

Where possible use standardised measures that allow for comparative data analysis.

The Tasmanian Wilderness World Heritage Area project (VC-03) indicated that while changes in public attitude over time can be used to provide a measure of the success in achieving management objectives, it should not be used in isolation but rather as one of a suite of indicators. The USAID (1996) stress that more than one indicator should be chosen to effectively measure performance.

Best Practice Tip:

Use 'packages' of indicators to increase the effectiveness of assessment.

9 Conclusion

In recent years, measuring performance in protected area management has been identified by conservation management agencies as a significant issue for planning, reporting and decision-making. This field has also been a focus for work undertaken by the IUCN World Commission on Protected Areas and by researchers (for example, Hockings, 2000). Although considerable interest has been directed towards a standardised process for measuring performance in protected area management, this process is still at an early stage of development.

The NRM Council Committee on National Park and Protected Area Management (previously the ANZECC Working Group) sponsored this project to capture data on current practices for measuring performance among member jurisdictions thereby seeking to identify best practice and progress the knowledge and understanding of this function.

The findings of this report indicate that any discussion of performance measurement within the discipline of conservation management invariably results in a diversity of perceptions and opinion. Variations in scale, scope, objectives, organisational environments and organisational drivers characterise the breadth of projects that currently measure performance in protected area management.

The result to date has been a rich array of individual approaches varying in rigor and comprehensiveness. Given the diversity in nature and scope of the 'good' practice projects identified during this benchmarking study, rather than advocating one best practice model, current best practice approaches used by agencies in measuring performance have been identified and described, circa 2000-2001.

This report seeks to aggregate the data thus collected in a useful and logical way and thereby provide an insight into the opportunities available to better assess achievement in protected area management and continually improve the discipline.

In terms of best practice in measuring an agency's corporate effectiveness, an integrated, systems approach to performance management, as discussed in Sections 3 and 4 of the report, represents a sound goal for conservation management agencies. The development of this approach needs to be rigorously conducted within a clearly defined and objective-driven framework and has yet to fully achieved by any one agency in Australasia.

The nature of public sector agencies themselves and the diversity of organisational characteristics, socio-political and administrative environments and related organisational drivers are not trivial matters in searching out optimal performance measurement regimes. Hence the notion of a framework that could become a panacea for performance measurement across conservation agencies was not found to be a useful concept at the time of writing this report. At this stage of the maturation of the discipline, diversity is suggested as an inherent good.

Attachment 1 - Glossary of Terms

Adaptive Management - A cyclical, continuous-improvement management process which allows information concerning the past to feed back into and improve the way management is conducted in the future (IUCN, 2000).

Context - *Where are we now?* Not an analysis of management, rather it provides information that helps put management decisions into context. Look at reasons for the protected area to exist, its current status, significance, threats and opportunities (IUCN 2000).

Direct Measure - A direct measure that provides useful information about what is being monitored. For example counting the number of crocodiles in a lake to determine the population size.

Indicator - An indicator is "something that provides a clue to a matter of larger significance or makes perceptible a trend or phenomenon that is not immediately detectable" (Hammond et al, 1995)

Indirect Measure (Indicator) - An indirect measure that provides useful information about something that cannot be measured directly. For example, counting the number of cockles in an estuary to determine the health of the estuary. The cockles are an indicator of the estuary's health.

Input - *What do we need?* Provide for assessments of the adequacy of resources (staff, funds, equipment, facilities) required at the agency or site level together with considerations for the importance of partnerships (IUCN 2000).

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 in IUCN, 2000). 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 (IUCN, 2000).

Objective - Something sort or aimed at (The Oxford English Dictionary, 1989).

Outcome - *What did we achieve?* Approaches to outcome evaluation for protected area management involve long-term monitoring of the condition of the biological and cultural resources of protected areas and systems, to some extent focusing on the quality of management achievements (IUCN 2000).

Output - *What were the results?* Considers what has been done by management and examines the extent to which specific targets, work programs or plans have been implemented, to some extent focusing on the quantity of management achievements (IUCN 2000).

Performance - An organisation's achievement under certain conditions (Oxford English Dictionary, 1989).

Performance Measures - Performance measures are measures that describe how well a program is achieving its objectives (USAID Centre for Development Information and Evaluation).

Planning - *Where do we want to be and how are we going to get there?* Focuses on the appropriateness of protected area policies, management plans and design. Considers the vision for which the site or system is being planned (IUCN 2000).

Principle - a fundamental truth or law as the basis of reasoning or action (arguing from first principles; moral principles) (Oxford English Dictionary, 1989)

Process - *How do we go about it?* Provide for assessments of the standards of management systems relative to management objectives (IUCN 2000).

Protected Area - 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 (IUCN, 1994).

Target - The specific intended results to be achieved within explicit timeframes, against which actual results will be compared and assessed (Owen, 1998).

Attachment 2 - Discussion of Primary Survey Results

The data collected from the Primary Survey is summarised here as a description of the best practices evident in measuring performance measurement in protected area management.

1. Indicators and Targets

Projects that included Natural resource indicators used the greatest proportion of direct indicators (as opposed to indirect indicators), with 46% using direct indicators, 16% using indirect and 38% using a combination of direct and indirect indicators. Additional categories that demonstrated use of a high proportion of purely direct indicators were the Business and financial, and Visitors and park users categories.

In all projects a combination of indicators (selected from the Performance Measurement categories) were used. The category of Natural resources is the only category where the indicators were selected on an informal basis a relatively small proportion of the time (7%), and on a formal basis a vastly greater proportion of the time (48%). For all other categories, the method of selection of the indicator was equally distributed between informal and formal selection.

This supports the notion of indicators being selected via staff consultation. While causality cannot be assumed, there is a significant relationship evident in the formal methods used to select Natural resource indicators and the evidence indicating the selection of targets for those indicators. A high proportion of targets were selected using extrapolation of previous performance (43% of cases), and in conjunction with the use of Research, Consultants and Academic sources. In summary, the results for establishing how indicators (and their associated targets) are developed shows that performance management expertise exists, and is being used within organisations. There is also evidence of agencies seeking external expertise (from consultants, academic research, and other organisations) for considered development of their performance targets. The difficulty of developing performance indicators for Natural Resource Management has been noted previously. Meredith (1997) commented that this may be an overly negative view, the evidence from this survey suggests likewise that expertise in developing performance indicators for Natural Resource Management is growing.

2. Drivers

Much of the impetus for measuring and reporting against achievement in protected area management was aligned with the level of accountability to various stakeholders. Predominantly, the case data showed statutory reporting requirements cited as a frequent driver (65% of projects). This may indicate a level of external accountability requirements for measurement and reporting obligations. Requirements for providing information to Community stakeholders (53% of projects) and Internal reporting obligations (50% of projects) were also reported as frequent drivers. This potential need for transparency and accountability is further reinforced by the result that more than half of the projects used formal (as opposed to informal) reporting activities. These formal reporting activities are usually an annual event (47%) or every one to five years (29%).

3. Reporting

The interesting contrast in the dominant scenario of formal, annual reporting is the strong perception that the predominant users of the project performance information are Protected area managers, operational and other staff (50%). This is supported by the results depicting Community stakeholders as users of the information in less than 10% of cases, and Government groups (combined federal, state and local) in approximately 15% of cases.

Many stakeholders were recipients of information regarding the effectiveness of management efforts in protected areas. Understanding the diverse information requirements of stakeholder groups may assist in defining reporting requirements and thus improve likelihood of projects remaining a priority and receiving appropriate resourcing for continuity. At a superficial level, the high levels of maturity of the projects being examined in this report may be an indicator of some success in this field.

4. Feedback to Management

The results for Reporting by User groups show distinct trends (see Figure 2.1). Staff are users of reports in an average of 77% of projects; Government bodies (combined federal, state and local) are users of reports in an average of 25% of projects; Community groups are users of reports in an average of 43% of projects; and, reports are used in Research activities (including Education) in an average 22% of projects. The strong theme of staff being a key stakeholder group and recipients of reports reinforces the opportunity for adaptive management where the reported information then informs further action or revised activity for improvements.

With Community groups as an audience of reports in a high proportion of projects, continued consultation with this group for further development of performance measurement and reporting mechanisms is recommended. A breakdown of Government bodies show that the State Government are users of Formal reports in 50% of cases and likewise justify consideration in future development of performance indicators and reporting considerations.

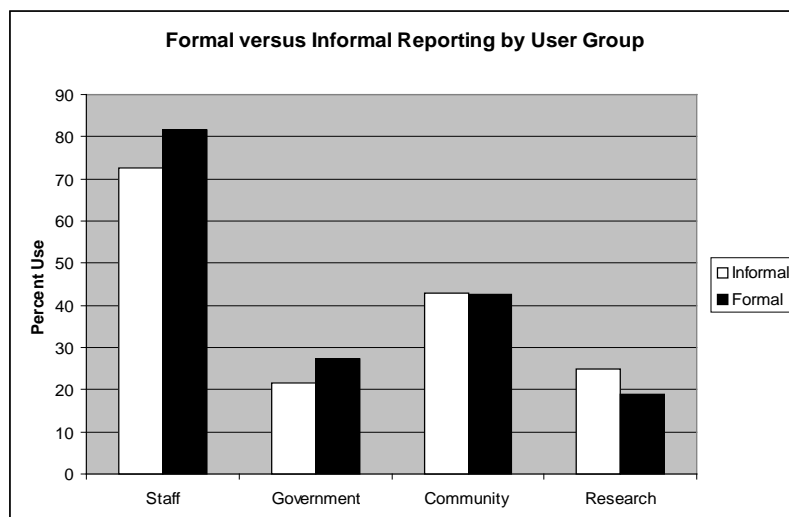


Figure 2.1

5. Uses of Performance Indicators by WCPA framework components

The World Commission on Protected Areas (WCPA) framework (Hockings, Stolton & Dudley, 2000) has provided a useful framework to investigate the status of performance management in protected areas. By breaking the management cycle into the elements of evaluation of Context, Planning, Input, Process, Output, and Outcome the level of coverage of performance indicators put forward as best practice can be examined.

By averaging the results across all WCPA framework components, the question 'What is the performance measurement information being used for?' was examined. The results showed the information is used to inform Planning activities in 82% of instances, Budgeting activities in 58% of instances, Reporting activities in 63% of instances, Evaluation activities in 91% of instances, Implementation activities in 63% of instances, and for making Recommendations in 72% of instances (see Figure 2.2). The consistently high proportions indicate a broad-based application and use of resultant performance measurement information across framework components. The opportunity to capitalise on performance measurement information in multiple scenarios is being taken up in all agencies represented in the sample.

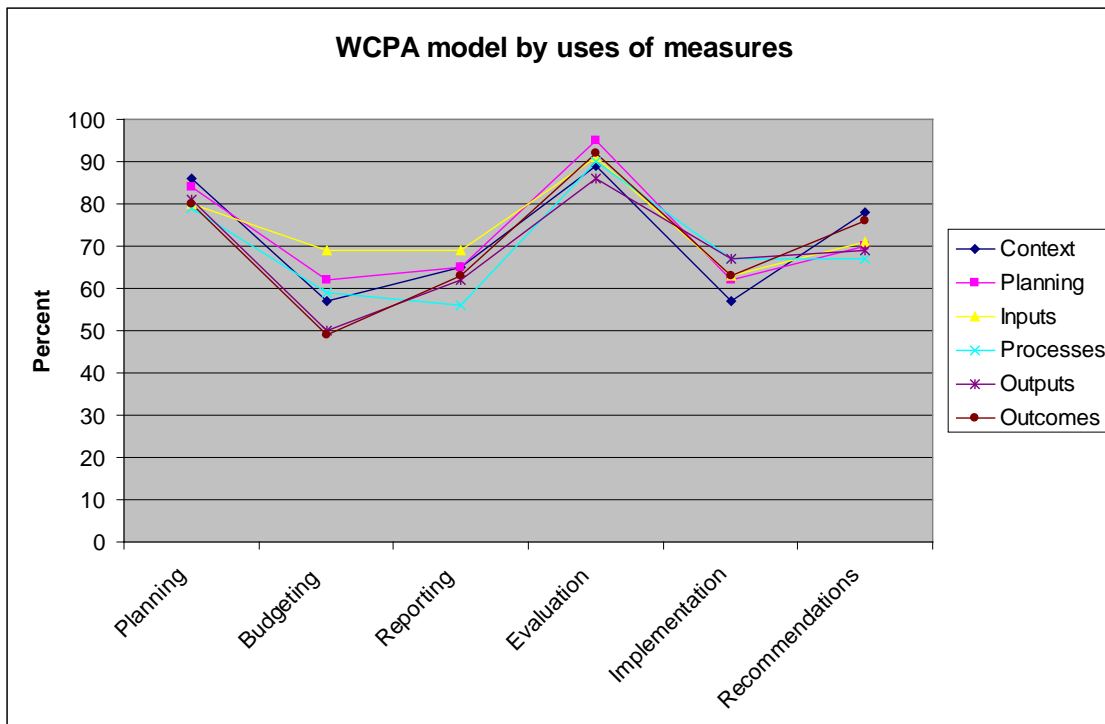


Figure 2.2

A cross-tabulation of each component of the WCPA framework with Uses of the Information attempted to reveal distinctions between these variables. As shown in Figure 2.2, the results for each WCPA component with stated Uses clustered in each instance. The analysis was unable to distinguish whether a performance indicator for any particular aspect of the WCPA framework was more (or less) likely to be aligned with what the information would be used for.

6. Users of Performance Indicators by WCPA framework components

By averaging the results across all WCPA framework components, the question ‘Who uses the performance measurement information?’ was examined. The results showed Staff were users of the information in 82% of instances, combined Government groups (Federal, State and Local) in 26% of instances, for Research in 23% of instances, and by Community stakeholder groups in 42% of instances.

Repeating the cross-tabulation method as above, each component of the WCPA framework and Users of the Information, the analysis attempted to reveal distinctions between these variables. As shown in Figure 2.3, the results for each WCPA component with Users clustered with little variance in each instance. The analysis was unable to distinguish whether a performance indicator for particular aspect of the WCPA framework was more (or less) likely to be aligned with who would use the information attained by that indicator.

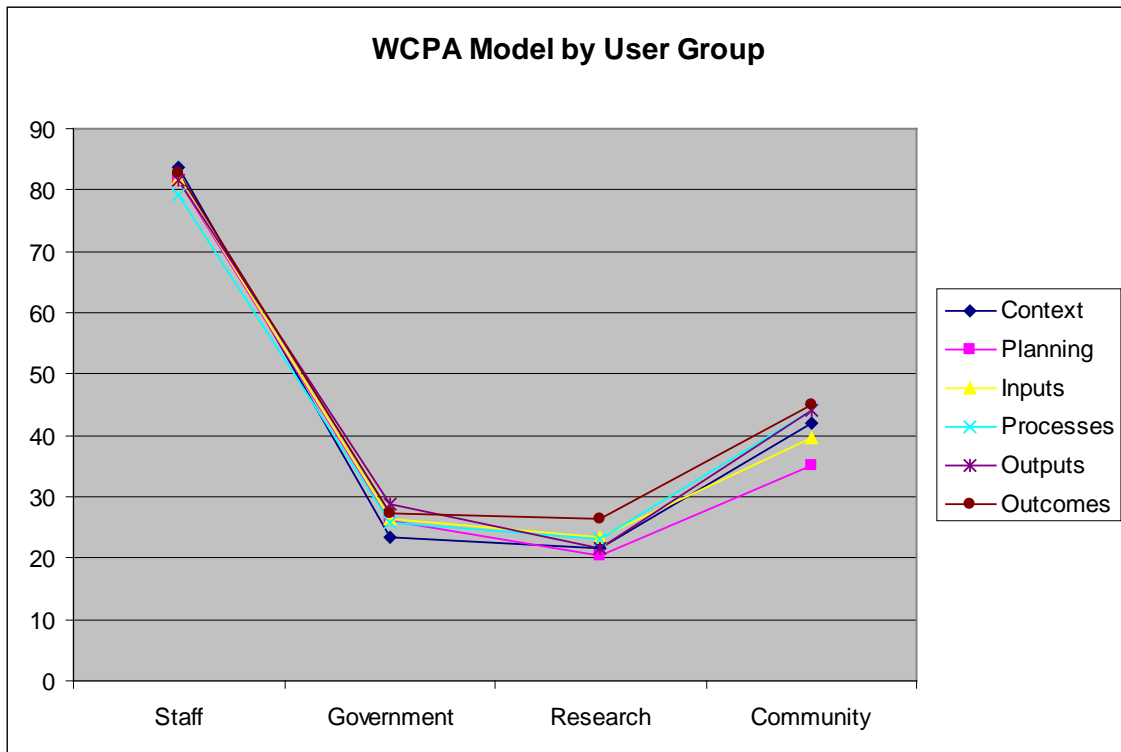




Figure 2.3

The results for analysis using the WCPA framework are inconclusive in answering the questions of what is best practice performance management by attempting to correlate components of the framework, uses of information and resultant users of information. Further investigation may help to uncover the application potential of the framework in choosing a type of performance indicator to match desired objectives.

Attachment 3 - Surveyed Projects and Contact Details

Legend:  Projects represented in Primary and Secondary Survey
 Projects represented in Primary Survey Only

Project Reference Number and Name	Objective	Scale	Responsible Organisation	Contact Person	Contact Details
Parks Systems					
(PS-01) Common Standards Monitoring	To understand if protected area management is effective.	National	Joint Nature Conservation Committee, UK	Dr James M. Williams	James.Williams@jncc.gov.uk
(PS-02) Victorian State of the Parks 2000	To communicate to the community on the state of the Victorian parks and reserves system, and provide a benchmark against which to gauge future management.	Protected Area	Parks Victoria	Linda Greenwood	lgreenwood@parks.vic.gov.au
(PS-03) Evaluation of the natural protected areas of Catalonia, Spain.	To determine the effectiveness assessment of the system of natural protected areas of Catalonia.	Region/ Bioregion	Institució Catalana d'Història Natural	Josep M. Mallarach (and Josep Germain)	mallarach@natur.ictnet.es
Management Systems					
(MS-01) Common Standards Monitoring	To understand if protected area management is effective.	National	Joint Nature Conservation Committee, UK	Dr James M. Williams	James.Williams@jncc.gov.uk
(MS-02) Evaluation of Management Performance of the Galapagos National Park	To evaluate the management of the park while revising the Management Plan.	Group of Protected Areas	Galapagos National Park Service	Felipe Cruz	felipe@fcdarwin.org.ec
(MS-03) Biophysical Mapping in Finke Gorge National Park	To describe the natural resources of Finke Gorge National Park and develop long-term monitoring strategies.	Protected Area	Parks and Wildlife Commission of the Northern Territory	Dennis Matthews	dennis.matthews@nt.gov.au
(MS-04) Visitor Asset Management System	To monitor the physical condition of visitor recreation assets and the use of visitor sites.	National	New Zealand Department of Conservation	Mike Edginton	medginton@doc.govt.nz
(MS-05) Long Island-Kokomohua Marine Reserve monitoring	To assess the recovery rate of marine life and the effectiveness of the marine reserve.	Protected Area	New Zealand Department of Conservation	Andrew Baxter	abaxter@doc.govt.nz
(MS-06) Fraser Island World Heritage Area Monitoring and Management Effectiveness Project	To establish long-term but intermittent monitoring programs for long term assessment and reporting on management effectiveness.	Protected Area	Cooperative project - University of Queensland and Queensland PW&S	Marc Hockings (James Haig and Rod Hobson)	hockings@uqg.uq.edu.au

(MS-07) Evaluation of the effectiveness of World Heritage management	To provide feedback to managers and stakeholders on the extent to which the management objectives are being achieved.	Protected Area	Parks and Wildlife Service Department of Primary Industries, Water and Environment (Tasmania)	Glenys Jones	glenys.jones@dpiwe.tas.gov.au
(MS-08) Audit on Environmental Management of Los Glaciares National Park	To identify strengths, weaknesses, opportunities and threats (SWOT analysis) in order to promote improved efficiency and effectiveness in management.	Protected Area	Auditoría General de la Nación (AGN) Gerencia de Control de Gestión Ambiental	María Andrea Gainza (Julio Guarido)	gainza@agn.gov.ar
(MS-09) Bloodvein River Monitoring Report	To identify and review the original heritage, recreational and integrity values identified within the CHRS Bloodvein River Nomination Document (1984).	Site/ Part of Protected Area	Parks and Natural Areas Branch Manitoba Conservation	Ken Schykulski	kschykulsk@gov.mb.ca
(MS-10) Western Forest Complex: Ecosystem management (WEFCOM) - conduct Rapid Assessment	To conduct 'rapid assessment' on flora, fauna and socio-economic in protected areas under the project jurisdiction.	Group of Protected Areas	Royal Forest Department	Anak Pattanavibool (Chatchawan Pisdamkham)	anak@forest.gov.th
(MS-11) Preparation of a draft Management Plan for North (Sydney) Harbour Aquatic Reserve (NHAR)	To clarify objectives of NHAR; regulate activities to achieve objectives; develop indicators to monitor achievement; and integrate with adjacent land management.	Protected Area	New South Wales Fisheries	Jane Frances	francesj@fisheries.nsw.gov.au
(MS-12) Mid-term Review: Ruby Gap Nature Park Plan of Management	To evaluate the appropriateness of and progress with each action within the Plan of Management.	Protected Area and State	Parks and Wildlife Commission of the Northern Territory	Kay Bailey (Garry Fischer)	kay.bailey@nt.gov.au
(MS-13) Parks and Wildlife Commission of the Northern Territory Weed Audit	To assess the outcomes from weed management in all parks and analyse the use of resources for the outcomes achieved	State	Parks and Wildlife Commission of the Northern Territory	Kay Bailey (Colin Wilson)	kay.bailey@nt.gov.au
(MS-14) Operating Review System	To establish auditable proactive control ensuring accountability and organisational effectiveness.	National	New Zealand Department of Conservation	John Cannell	jcannell@doc.govt.nz
(MS-15) National monthly polling	To determine New Zealanders' changing views on specific topics related to DOC's work and DOC's favourability rating.	National	New Zealand Department of Conservation	Nicola Patrick	npatrick@doc.govt.nz
(MS-16) Rapid Assessment of Park Management Performance	To establish an annual assessment of park management to guide improvements in the way parks are managed.	State	Queensland Parks and Wildlife Service	Rob Hughes	rob.hughes@env.qld.gov.au
(MS-17) QPWS Fire Management System	To Provide a framework/system for planning, implementing and reporting on fire management.	State	Queensland Parks and Wildlife Management	Rhonda Melzer	Rhonda.Melzer@env.qld.gov.au

(MS-17) Monitoring of CALM management plans by the former National Parks and Nature Conservation Authority (NPNCA)	To monitor and assess the implementation of CALM management plans.	State	Department of Conservation and Land Management, WA and the NPNCA	Daryl Moncrieff	darylm@calm.wa.gov.au
Protecting Individual Species					
(PI-01) Norfolk Island Green Parrot Recovery Plan	To secure and increase the population of a critically endangered species.	Protected Area	Environment Australia Norfolk Island National Park	Fred Howe	fred.howe@ea.gov.au
(PI-02) Cocos Buff-banded Rail (<i>Rallus philippensis andrewsi</i>) Recovery Program	To gather reliable data primarily on the population and distribution status of the species in the Cocos Islands group.	Protected Area	Parks Australia North Environment Australia	Ismail Macrae (Wendy Murray)	ismail.macrae@ea.gov.au
(PI-03) Monitoring <i>Ptychosperma bleeseri</i> in the Northern Territory of Australia	To monitor the wild population demographics to evaluate management actions and provide feedback.	Species Range	Parks and Wildlife Commission of the Northern Territory	Dave Liddle	dave.liddle@nt.gov.au
(PI-04) Lake Taupo Fishery Management—Fish Population and Angler Experience Satisfaction	To provide an ongoing satisfactory trout angling experience for recreational fishers, while maintaining sustainable populations of trout.	Region/ Bioregion	New Zealand Dept of Conservation, with Tuwharetoa Maori Trust Board & Taupo Fishery Advisory Committee.	Glenn Maclean (John Gibbs)	gmaclean@doc.govt.nz
(PI-05) Monitoring and management of declining frogs of Queensland	To monitor threatened frogs, research threats, assess the conservation status (especially of geographically localised species) and manage threats to frogs.	Species Range	Queensland Parks and Wildlife Service	Keith R. McDonald	Keith.Mcdonald@env.qld.gov.au
(PI-06) Conservation management of the Golden-shouldered Parrot	To increase the range of Golden-shouldered parrot and associated species and improve conservation management of properties.	Region/ Bioregion	Queensland Parks and Wildlife Service	Stephen Garnett	Stephen.Garnett@env.qld.gov.au
(PI-07) Lyrebird distribution and trends in the Dandenong Ranges National Park	To monitor the distribution and trends in Lyrebird populations in the Dandenong Ranges National Park in relation to predator (fox) control, revegetation and weed control programs.	Site/ Part of Protected Area	Parks Victoria	Tony Varcoe (Kevin Curran)	tvarcoe@parks.vic.gov.au
(PI-08) Mt Eccles NP Koala Relocation Program	To reduce the impact of an over abundance of koalas on the euclaypt forest within Mount Eccles National Park.	Region/ Bioregion	Parks Victoria	Zoe Wilkinson (Kym Schramm)	zwilkinson@parks.vic.gov.au
(PI-09) Western Shield Wildlife Recovery Program	To recover native fauna populations and decrease feral animal populations.	Region/ Bioregion	Western Australian Dept of Conservation and Land Mgt	Roger Armstrong	rogera@calm.gov.au

(PI-10) Sea turtle study, Cocos (Keeling) Islands	To determine species composition, size ratios, growth rates, foraging details and genetic origins of the Cocos populations of Green and Hawkesbill turtles.	District	Parks Australia North Cocos Conservancy	Wendy Murray	wendy.murray@ea.gov.au
(PI-11) Crocodile (<i>Crocodylus porosus</i>) survey program - Kakadu National Park	To monitor the health and structure of the crocodile population; to ensure the recovery of the species; and ensure no new pressures cause concern to population viability.	Protected Area	Environment Australia Kakadu National Park	Garry Lindner	garry.lindner@ea.gov.au
(PI-12) An aspect of the <i>Acacia undoolyana</i> Management Program	To assess success of management action (increase conservation status) on the stands on <i>Acacia undoolyana</i> to determine annual management action.	Species Range	Parks and Wildlife Commission of the Northern Territory	Kay Bailey (Angus Duguid)	kay.bailey@nt.gov.au
(PI-13) Central Rock-rat Monitoring - Ormiston Gorge	To monitor populations of endangered Central Rock-rat at Ormiston Gorge in the West MacDonnell Range.	Site/ Part of Protected Area	Parks and Wildlife Commission of the Northern Territory	Kay Bailey (Glenn Edwards)	kay.bailey@nt.gov.au
(PI-14) Trounson Kauri Park Mainland Island	To Restore a kauri forest ecosystem (445 ha).	Protected Area	New Zealand Department of Conservation	Mark Leach	mleach@doc.govt.nz
(PI-15) Implementation of the Recovery Plan for the northern population of the Eastern Bristlebird	To protect and recover an endangered species (<i>Dasyornis brachypterus monoides</i>).	Species Range	Environmental Protection Agency/ Queensland Parks and Wildlife Service	David Stewart	david.stewart@env.qld.gov.au
(PI-16) Monitoring of Hastings River Mouse in Lamington National Park	To gather data to ensure long term sustainability of the Lamington NP population of this vulnerable species.	Site/ Part of Protected Area	Queensland Parks and Wildlife Service	Ian Gynther	ian.gynther@env.qld.gov.au
(PI-17) The Oceania Research Project - whale and dolphin monitoring	To study the abundance, distribution and behaviour of Area V humpback whales in the Whale Management & Monitoring Area of the Hervey Bay Marine Park.	Protected Area	The Oceania Project	Wally and Trish Franklin	wally@oceania.org.au

Ecological Habitat and Ecosystem Monitoring

(EH-01) Changing species richness and composition in Canadian National Parks	To examine entire parks system in regard to changing species richness and composition in Canadian National Parks.	National	Parks Canada Agency	D.H. Rivard	don_rivard@pch.gc.ca
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(EH-02) Spruce Woods Provincial Park Prairie Management Plan	To manage the of prairie sites within Spruce Woods Provincial Park to maintain the ecological health of the sites and the overall ecological integrity of the park's landscape.	Site/ Part of Protected Area	Parks and Natural Areas Branch Manitoba Conservation	Ken Schykulski	kschykulsk@gov.mb.ca
(EH-03) Project River Recovery	To maintain habitat and ecological communities in the riverbeds and wetlands of the upper Waitaki Basin.	Region/ Bioregion	New Zealand Department of Conservation	Kerry Brown	kbrown@doc.govt.nz
(EH-04) Long Island-Kokomohua Marine Reserve monitoring	To assess the recovery rate of marine life and the effectiveness of the marine reserve.	Protected Area	New Zealand Department of Conservation	Andrew Baxter	abaxter@doc.govt.nz
(EH-05) Rotoiti Nature Recovery Project, Nelson Lakes National Park.	To restore an area of 825ha of honeydew-beech forest to as near pristine a condition as possible by reducing introduced pests and re-introducing species lost to the area.	Site/ Part of Protected Area	New Zealand Department of Conservation	Dr David Butler	dbutler@doc.govt.nz
(EH-06) Maintaining the grassy 'balds' of the Bunya Mountains, looking at various fire regimes	To decrease the invasion of species into the grasslands by evaluating different fire regimes.	Site/ Part of Protected Area	Queensland Herbarium	Russell Fairfax (Rod Fensham)	russell.fairfax@env.qld.gov.au
(EH-07) Fraser Island World Heritage Area Monitoring and Management Effectiveness Project	To establish long-term but intermittent monitoring programs for long term assessment and reporting on management effectiveness.	Protected Area	Cooperative project between University of Queensland and Queensland Parks and Wildlife Service	Marc Hockings (Marc Hockings, James Haig and Rod Hobson)	hockings@uqg.uq.edu.au
(EH-08) Queensland Coastal Wetlands Resource Mapping	To provide a baseline dataset for future Fish Habitat Area (FHA) declaration, evaluation of the habitats protected in existing FHAs (at both a regional and State level) , Ramsar site nomination and continued monitoring of these important fish habitats.	Site/ Part of Protected Area and State	Department of Primary Industries Queensland	Dr Malcolm Dunning	dunninm@dpi.qld.gov.au
(EH-09) Seagrass Habitat, Issues & Management - Great Sandy Region	To identify the present status of seagrass habitats and determine if there has been a decline in their distribution or quality, as a response to increased changes in the catchment over the last 5 years.	District	Consortium - Qld Parks and Wildlife Service, Queensland Department of Primary Industries, Environment Australia	Kirsten Wortel	kirsten.wortel@env.qld.gov.au

(EH-10) Management of unnatural erosion of the lower Gordon River banks: an experiment in applied geomorphology	To investigate and monitor geomorphic processes, both natural and anthropogenic, and their response to management action.	Region/ Bioregion	Department of Primary Industries, Water & Environment (Tasmania)	Jason Bradbury Michael Pemberton	j.bradbury@dpwie.tas.gov.au
(EH-11) Monitoring of post-fire vegetation recovery in the Alpine National Park, Victoria	To monitor the regeneration of sub-alpine vegetation after a major fire in the Alpine NP in 1998.	Site/ Part of Protected Area	Parks Victoria	Kate Millar (Dr Sally Troy)	kmillar@parks.vic.gov.au
(EH-12) Mt Eccles NP Koala Relocation Program	To reduce the impact of an over abundance of koalas on the euclaypt forest within Mount Eccles National Park.	Region/ Bioregion	Parks Victoria	Zoe Wilkinson (Kym Schramm)	zwilkinson@parks.vic.gov.au
(EH-13) Kingston project	To evaluate the effects of current timber harvesting practices in Jarrah forest on biodiversity.	Site/ Part of Protected Area	Department of Conservation & Land Management CALM Science Division	Adrian Wayne (Lachlan McCaw)	adrianw@calm.wa.gov.au
(EH-14) Western Shield Wildlife Recovery Program	To recover native fauna populations and decrease feral animal populations.	Region/ Bioregion	Western Australian Department of Conservation and Land Management	Roger Armstrong	rogera@calm.gov.au
(EH-15) Pauatahanui Inlet Cockle Monitoring	To assess performance of public agencies in the protective management of the estuary and its watershed, and to inform the public about changes in the ecological condition of the estuary.	Group of Protected Areas	New Zealand Department of Conservation	Chris Richmond (Vicky Froude)	crichmond@doc.govt.nz
(EH-16) Forest condition monitoring	To monitor the outcomes of wild animal control operations.	Group of Protected Areas	New Zealand Dept of Conservation, Waikato Conservancy.	Elizabeth Grove (John Gumbley)	egrove@doc.govt.nz
(EH-17) Wenderholm mainland island	To restore ecosystem processes so that fauna once present on the Auckland mainland can be returned to the area and can survive long term (20 years plus).	Protected Area	Auckland Regional Council	Brenda Greene (Barry Green)	bgreene@arc.govt.nz
(EH-18) Waitakere Ranges forest health monitoring	To determine whether possum control programmes are benefitting the entire forest long term.	District	Auckland Regional Council	Brenda Greene	brendag@arc.govt.nz

(EH-19) Ecosystem Health Monitoring Program	To assess the effectiveness of major investments by councils and industry in environmental protection (eg. improved sewage treatment and stormwater management) in protecting and restoring the ecosystem health of SEQ waterways.	Region/ Bioregion	QLD Envi Protection Agency; Marine Botany Group, Uni of Qld; CSIRO Marine Research; CSIRO Mathematics & Information Sciences; Qld Health Scientific Services	Dr. Angela Grice	Angela.Grice@env.qld.gov.au
(EH-20) Vegetation monitoring on Protected Areas of QPWS Burdekin District	To assess fire management of vegetation in order to refine fire management objectives and regimes.	District	Queensland Parks and Wildlife Service	Paul Williams	Paul.Williams@env.qld.gov.au
Fire Management					
(FM-01) Bushfire Fuel Management Plan	To ensure risk to life and property in the ACT from bushfire is minimised through the strategic reduction of fire fuels from priority areas.	State	Environment ACT - ACT Parks and Conservation Service	Bill Woodruff	bwoodruff@act.gov.au
(FM-02) Maintaining the grassy 'balds' of the Bunya Mountains, looking at various fire regimes	To decrease the invasion of species into the grasslands by evaluating different fire regimes.	Site/ Part of Protected Area	Queensland Herbarium	Russell Fairfax (Rod Fensham)	russell.fairfax@env.qld.gov.au
(FM-03) Monitoring of post-fire vegetation recovery in the Alpine National Park, Victoria	To monitor the regeneration of sub-alpine vegetation after a major fire in the Alpine NP in 1998.	Site/ Part of Protected Area	Parks Victoria	Kate Millar (Dr Sally Troy)	kmillar@parks.vic.gov.au
(FM-04) An aspect of the <i>Acacia undoolyana</i> Management Program	Assessment of the success of management action (to increase the conservation status) on the stands on <i>Acacia undoolyana</i> are made to determine annual management action.	Species Range	Parks and Wildlife Commission of the Northern Territory	Kay Bailey (Angus Duguid)	kay.bailey@nt.gov.au
(FM-05) Vegetation monitoring on Protected Areas of QPWS Burdekin District	To assess fire management of vegetation in order to refine fire management objectives and regimes.	District	Queensland Parks and Wildlife Service	Paul Williams	Paul.Williams@env.qld.gov.au
(FM-06) QPWS Fire Management System	To Provide a framework/system for planning, implementing and reporting on fire management.	State	Queensland Parks and Wildlife Management	Rhonda Melzer	Rhonda.Melzer@env.qld.gov.au


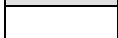
Pests and Weeds					
(PW-01) <i>Mimosa pigra</i> control program – Kakadu National Park	To assess the effectiveness of the management of <i>Mimosa pigra</i> , a highly invasive species in the wet dry tropics of Northern Australia.	Protected Area	Parks Australia (Environment Australia)	Terry Bailey	terry.bailey@ea.gov.au
(PW-02) Spruce Woods Provincial Park Prairie Management Plan	To manage the of prairie sites within Spruce Woods Provincial Park to maintain the ecological health of the sites and the overall ecological integrity of the park's landscape.	Site/ Part of Protected Area	Parks and Natural Areas Branch Manitoba Conservation	Ken Schykulski	kschykulsk@gov.mb.ca
(PW-03) Rotoiti Nature Recovery Project, Nelson Lakes National Park.	To restore an area of 825ha of honeydew-beech forest to as near pristine a condition as possible by reducing introduced pests and re-introducing species lost to the area.	Site/ Part of Protected Area	New Zealand Department of Conservation	Dr David Butler	dbutler@doc.govt.nz
(PW-04) Lyrebird distribution and Trends in the Dandenong Ranges National Park in relation to predator (fox) control, revegetation and weed control programs	To monitor the distribution and trends in Lyrebird populations in the Dandenong Ranges National Park in relation to predator (fox) control, revegetation and weed control programs in the park.	Site/ Part of Protected Area	Parks Victoria	Tony Varcoe (Kevin Curran)	tvarcoe@parks.vic.gov.au
(PW-05) Western Shield Wildlife Recovery Program	To recover native fauna populations and decrease feral animal populations.	Region/ Bioregion	Western Australian Department of Conservation and Land Management	Roger Armstrong	rogera@calm.gov.au
(PW-06) Parks and Wildlife Commission of the Northern Territory Weed Audit	To assess the outcomes from weed management in all parks and analyse the use of resources for the outcomes achieved.	State	Parks and Wildlife Commission of the Northern Territory	Kay Bailey (Colin Wilson)	kay.bailey@nt.gov.au
(PW-07) Trounson Kauri Park Mainland Island	To Restore a kauri forest ecosystem (445 ha).	Protected Area	New Zealand Department of Conservation	Mark Leach	mleach@doc.govt.nz
(PW-08) Wenderholm mainland island	To restore ecosystem processes so that fauna once present on the Auckland mainland can be returned to the area and can survive long term (20 years plus).	Protected Area	Auckland Regional Council	Brenda Greene (Barry Green)	bgreene@arc.govt.nz
(PW-09) Waitakere Ranges forest health monitoring	To determine whether possum control programmes are benefitting the entire forest long term.	District	Auckland Regional Council	Brenda Greene	brendag@arc.govt.nz

Habitat Rehabilitation					
(HR-01) Spruce Woods Provincial Park Prairie Management Plan	To manage the of prairie sites within Spruce Woods Provincial Park to maintain the ecological health of the sites and the overall ecological integrity of the park's landscape.	Site/ Part of Protected Area	Parks and Natural Areas Branch Manitoba Conservation	Ken Schykulski	kschykulsk@gov.mb.ca
(HR-02) Rotoiti Nature Recovery Project, Nelson Lakes National Park.	To restore an area of 825ha of honeydew-beech forest to as near pristine a condition as possible by reducing introduced pests and re-introducing species lost to the area.	Site/ Part of Protected Area	New Zealand Department of Conservation	Dr David Butler	dbutler@doc.govt.nz
(HR-03) Management of unnatural erosion of the lower Gordon River banks: an experiment in applied geomorphology	To investigate and monitor geomorphic processes, both natural and anthropogenic, and their response to management action.	Region/ Bioregion	Department of Primary Industries, Water & Environment (Tasmania)	Jason Bradbury Michael Pemberton	j.bradbury@dpiwie.tas.gov.au
(HR-04) Lune River Quarry Rehabilitation	To assess the success of different rehabilitation methods in a karst environment and how these may differ from mine restoration in 'normal' drainage regimes.	Site/ Part of Protected Area	Department of Primary Industries, Water & Environment (Tasmania)	Ian Houshold	
(HR-05) Trounson Kauri Park Mainland Island	To Restore a kauri forest ecosystem (445 ha).	Protected Area	New Zealand Department of Conservation	Mark Leach	mleach@doc.govt.nz
(HR-06) Rehabilitation trials of sheet eroded country in Central Plateau, Tasmanian Wilderness World Heritage Area	To determine the relative effectiveness of different rehabilitation techniques.	Site/ Part of Protected Area	Earth Science Section Nature Conservation Branch Department of Primary Industries Water and Environment (Tasmania)	Michael Comfort	Michael.Comfort@dpiwie.tas.gov.au
(HR-07) Monitoring of post-fire vegetation recovery in the Alpine National Park, Victoria	To monitor the regeneration of sub-alpine vegetation after a major fire in the Alpine NP in 1998.	Site/ Part of Protected Area	Parks Victoria	Kate Millar (Dr Sally Troy)	kmillar@parks.vic.gov.au
Human Use and Recreation					
(HU-01) Changing species richness and composition in Canadian National Parks	To examine entire parks system in regard to changing species richness and composition in Canadian National Parks.	National	Parks Canada Agency	D.H. Rivard	don_rivard@pch.gc.ca

(HU-02) Lake Taupo Fishery Management—Fish Population and Angler Experience Satisfaction.	To provide an ongoing satisfactory trout angling experience for recreational fishers, while maintaining sustainable populations of trout.	Region/ Bioregion	New Zealand Department of Conservation, in consultation with Tuwharetoa Maori Trust Board and Taupo Fishery Advisory Committee.	Glenn Maclean (John Gibbs)	gmaclean@doc.govt.nz
(HU-03) Visitor Asset Management System	To monitor the physical condition of visitor recreation assets and the use of visitor sites.	National	New Zealand Department of Conservation	Mike Edginton	medginton@doc.govt.nz
(HU-04) Fraser Island World Heritage Area Monitoring and Management Effectiveness Project	To establish long-term but intermittent monitoring programs for long term assessment and reporting on management effectiveness.	Protected Area	Cooperative project between University of Queensland and Queensland Parks and Wildlife Service	Marc Hockings (Marc Hockings, James Haig and Rod Hobson)	hockings@uqg.uq.edu.au
(HU-05) Aerial photographs of Visitor Services Sites	To provide a means of detecting long-term changes in the condition of high-use areas of the Tasmanian Wilderness World Heritage Area.	Site/ Part of Protected Area	Parks and Wildlife Service Department of Primary Industries, Water and Environment (Tasmania)	Glenys Jones	glenys.jones@dpiwe.tas.gov.au
(HU-06) Management of unnatural erosion of the lower Gordon River banks: an experiment in applied geomorphology	To investigate and monitor geomorphic processes, both natural and anthropogenic, and their response to management action.	Region/ Bioregion	Department of Primary Industries, Water & Environment (Tasmania)	Jason Bradbury (Michael Pemberton)	j.bradbury@dpiwie.tas.gov.au
(HU-07) Track Monitoring System	To assess the biophysical impacts of recreational walking.	Protected Area	Parks and Wildlife Service, Tasmania	Grant Dixon (Phil Wyatt)	grantd@dpiwe.tas.gov.au
(HU-08) Kingston project	To evaluate the effects of current timber harvesting practices in Jarrah forest on biodiversity.	Site/ Part of Protected Area	Dept of Conservation & Land Management CALM Science Division	Adrian Wayne (Lachlan McCaw)	adrianw@calm.wa.gov.au
(HU-09) The number of visits to CALM-managed recreation areas	To determining the number of visits to CALM-managed areas.	State	Department of Conservation and Land Management	Kate Hassall (Luisa Liddicoat)	kateh@calm.wa.gov.au
(HU-10) Bibbulmun Track Monitoring Program	To assess success of the Bibbulmun Track management, marketing and maintenance programs.	State	Western Australian Department of Conservation and Land Management	Annie Keating	anniek@calm.wa.gov.au

(HU-11) Preparation of a draft Management Plan for North (Sydney) Harbour Aquatic Reserve (NHAR)	To clarify the objectives of NHAR; regulate activities to achieve those objectives; develop performance indicators to monitor objective achievement; and integrate management of NHAR with adjacent land management as far as practicable.	Protected Area	New South Wales Fisheries	Jane Frances	francesj@fisheries.nsw.gov.au
(HU-12) Queensland Parks and Wildlife Service Community Survey	To monitor people's level of knowledge of parks and their management and broad visitation data.	State	Queensland Parks and Wildlife Service	Melitta Marr (Terry Harper)	melitta.marr@env.qld.gov.au
(HU-13) Site Assessment and Evaluation of visitor sites: Five Rocks Conservation Park Byfield	To encourage continuous improvement of site management by developing a logical, transparent and responsive technique for assessing visitor sites.	Site/ Part of Protected Area	Queensland Parks and Wildlife Service	Neil Kershaw	neil.kershaw.env.qld.gov.au
Visitor and Community Attitudes					
(VC-01) Kakadu National Park Visitor Survey Program 2000 – 2001	To update the understanding of visitor numbers, characteristics, activities and experiences in the Park for future Park planning and management.	Protected Area	Environment Australia Kakadu National Park	Tanja Brugmann	Tanja.Brugmann@ea.gov.au
(VC-02) Lake Taupo Fishery Management—Fish Population and Angler Experience Satisfaction	To provide an ongoing satisfactory trout angling experience for recreational fishers, while maintaining sustainable populations of trout.	Region/ Bioregion	New Zealand Dept of Conservation, with Tuwharetoa Maori Trust Board and Taupo Fishery Advisory Committee	Glenn Maclean (John Gibbs)	gmaclean@doc.govt.nz
(VC-03) Monitoring of public attitudes to the Tasmanian Wilderness World Heritage Area	To track changes in the level of public awareness, knowledge and support for the Tasmanian Wilderness in order to reveal the extent to which the objectives of management are being achieved.	State	Parks and Wildlife Service Department of Primary Industries, Water and Environment (Tasmania)	Glenys Jones	glenys.jones@dpiwe.tas.gov.au
(VC-04) Visitor Satisfaction Monitoring	To detect and report on trends or changes in visitor satisfaction and suggest areas for service and facility improvements in visitor areas.	Group of Protected Areas	Parks Victoria	Dino Zanon	dzanon@parks.vic.gov.au
(VC-05) Visitors satisfaction with their overall visit to CALM-managed recreation areas	To determine visitors overall level of satisfaction with their visit.	State	Department of Conservation and Land Management	Kate Hassall Luisa Liddicoat	kateh@calm.wa.gov.au

(VC-06) Bibbulmun Track Monitoring Program	To assess success of the Bibbulmun Track management, marketing and maintenance programs.	State	Western Australian Department of Conservation and Land Management	Annie Keating	anniek@calm.wa.gov.au
(VC-07) National monthly polling	To determine New Zealanders' changing views on specific topics related to DOC's work and DOC's favourability rating.	National	New Zealand Department of Conservation	Nicola Patrick	npatrick@doc.govt.nz
(VC-08) Queensland Parks and Wildlife Service (QPWS) Community Survey	To monitor people's level of knowledge of parks and their management and broad visitation data.	State	Queensland Parks and Wildlife Service	Melitta Marr (Terry Harper)	melitta.marr@env.qld.gov.au
(VC-09) Fish Habitat Area Signage Trial	To evaluate the effectiveness of a new signage strategy.	Group of Protected Areas	Department of Primary Industries (Queensland Fisheries Service)	Scott McKinnon	mckinns@dpi.qld.gov.au

Legend:  Projects represented in Primary and Secondary Survey
 Projects represented in Primary Survey Only

Attachment 4 - Primary Survey Questionnaire

ANZECC WORKING GROUP ON NATIONAL PARK AND PROTECTED AREA MANAGEMENT

MEASURING PERFORMANCE IN PROTECTED AREA MANAGEMENT - SURVEY

Why we encourage you to take part in this survey:

The purpose of this survey is to collect examples of the different ways that organisations measure (monitor and/or evaluate) and report on their performance in protected area management.

This information will be used to benchmark current best practices and to develop recommendations that will assist organisations such as yours to accurately measure their performance in protected area management. Further information is available at the ANZECC Working Group on National Parks and Protected Area Management Website
<http://www.biodiversity.environment.gov.au/protecte/anzecc/index1.htm>.

As your feedback will play a crucial role in this outcome, we urge you to complete this survey by the closing date of 31 December 2000.

Why measurement of performance is important to your organisation:

Measurement of performance is recognised as an important aspect of management, regardless of the organisation or what is actually managed. For example, annual budget reports can provide indicators of how well a company performs financially while transport organisations may use travel times and numbers of complaints as measures of their service delivery.

Measuring performance in protected area management is rapidly gaining recognition as a critical issue that needs to be addressed by protected management organisations. The aim of this project is to develop recommendations to aid measurement of performance in protected area management through examination of 'best practice' measures and reporting processes. A special focus of this project is the measurement of performance for natural resource management.

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE COMMENCING THIS SURVEY

For the selection of example projects please note:

- Projects reported must be beyond the conceptual stage and implemented to some extent.
- The examples provided should measure the performance of some aspect of protected area management.
- While the interrelationships between natural and cultural resources and other aspects of protected area management are recognised, we are particularly interested in projects that relate to natural resource management.
- Examples should be performing well and suitable for making recommendations to other protected area managers (ie. examples of agency best/good practice).
- Projects may be conducted by other agencies within the same country/state.
- Each project team member is responsible for providing 5-15 example projects from government protected area management agencies within the country/state.
- At least one example for a non-government organisation should also be provided.

For the completion of the survey please note:

- This survey is intended for use as a printed hardcopy. An electronic version (Microsoft Word 97) of this survey is available and electronic responses are preferred if possible.
- For most questions there is a grey check box where we would like your responses. Tick the box or boxes that are **MOST ACCURATE**.
- Some questions have multiple components and require additional boxes to be ticked for each initial response.
- For every question, provide detailed information about your check box response in the shaded text box . **PROVIDE DETAILS FOR EVERY QUESTION.**
- **MULTIPLE RESPONSES ARE ALLOWED.** Where applicable, mark all responses and explain their relative importance in the text box provided.
- **RESPOND TO ALL QUESTIONS.**

**PLEASE RETURN COMPLETED SURVEYS BY 31 DECEMBER 2000 TO
SIMON BANKS
P.O. BOX 155
BRISBANE ALBERT STREET
QLD 4002**

1.0. PROJECT DETAILS	
<i>1.1. Project title</i>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<i>1.2. Contact details of survey respondent (Name, ph, email)</i>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<i>1.3. Contact details of project manager (Name, ph, email)</i>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<i>1.4. Organisation responsible for the project</i>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

2.0. PROJECT BACKGROUND	
<i>2.1. What is the project about?</i>	
<input type="checkbox"/> Monitoring <input type="checkbox"/> Evaluation or assessment <input type="checkbox"/> Reporting <input type="checkbox"/> Other	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<i>2.2. What is the purpose of the project?</i>	
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	
<i>2.3. What were the organisational drivers that initiated this project?</i>	
<input type="checkbox"/> Statutory, strategy or policy	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

<p>obligation</p> <ul style="list-style-type: none"> <input type="checkbox"/> Internal reporting obligation <input type="checkbox"/> External reporting obligation <input type="checkbox"/> Obligation to community and other stakeholders <input type="checkbox"/> Obligation to other state government organisations <input type="checkbox"/> Whole of government obligation <input type="checkbox"/> Obligation to commonwealth government organisations <input type="checkbox"/> Obligation to international organisations <input type="checkbox"/> Other 	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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2.4. What are the ongoing organisational drivers of this project?

<ul style="list-style-type: none"> <input type="checkbox"/> Statutory, strategy or policy obligation <input type="checkbox"/> Internal reporting obligation <input type="checkbox"/> External reporting obligation <input type="checkbox"/> Obligation to community and other stakeholders <input type="checkbox"/> Obligation to other state government organisations <input type="checkbox"/> Whole of government obligation <input type="checkbox"/> Obligation to commonwealth government organisations <input type="checkbox"/> Obligation to international organisations <input type="checkbox"/> Other 	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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2.5. What resources are invested into the project?

<p>Full-time equivalents <input style="width: 100px;" type="text"/> FTE</p> <p>Average annual operating expenditure \$ <input style="width: 100px;" type="text"/></p> <p>Average annual labour expenditure \$ <input style="width: 100px;" type="text"/></p> <p>Average annual total expenditure</p>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
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\$ _____	
2.6. Which component(s) in the WCPA framework does the project measure? (See Attachment 1)	
<input type="checkbox"/> Context <input type="checkbox"/> Planning <input type="checkbox"/> Inputs <input type="checkbox"/> Processes <input type="checkbox"/> Outputs <input type="checkbox"/> Outcomes <input type="checkbox"/> Other	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>

3.0. PROJECT STATUS	
3.1. What is the project status?	
<input type="checkbox"/> Currently being established <input type="checkbox"/> Established and ongoing <input type="checkbox"/> Established and occasional (ie. subject to resource availability) <input type="checkbox"/> Cancelled <input type="checkbox"/> Completed <input type="checkbox"/> Other	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
3.2. How long has the project been operating?	
<input type="checkbox"/> <6 months <input type="checkbox"/> 6-12 months <input type="checkbox"/> 1-2 years <input type="checkbox"/> 2-5 years <input type="checkbox"/> 5-10 years <input type="checkbox"/> >10 years <input type="checkbox"/> Other	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
3.3. What is the expected duration of the project?	

- <6 months
- 6-12 months
- 1-2 years
- 2-5 years
- 5-10 years
- >10 years
- Other

3.4. What is the geographic extent of the project?

- Site or part of protected area
- Protected area
- Group of protected areas
- District
- Region
- State
- Nation
- Species range or part thereof
- Other

4.0. MEASURES

4.1. What is measured? Select how each measure is made (D = Direct measures ; I = Indirect measures (ie. indicators)) and how it was chosen (F = Formal or detailed selection; I = Informal or undetailed selection).

What measure?	How made?			How chosen?	
<input type="checkbox"/> Natural resources	<input type="checkbox"/> D	<input type="checkbox"/> I	<input type="checkbox"/> D&I	<input type="checkbox"/> F	<input type="checkbox"/> I
<input type="checkbox"/> Cultural resources	<input type="checkbox"/> D	<input type="checkbox"/> I	<input type="checkbox"/> D&I	<input type="checkbox"/> F	<input type="checkbox"/> I
<input type="checkbox"/> Visitors and park users	<input type="checkbox"/> D	<input type="checkbox"/> I	<input type="checkbox"/> D&I	<input type="checkbox"/> F	<input type="checkbox"/> I
<input type="checkbox"/> Interpretation and education	<input type="checkbox"/> D	<input type="checkbox"/> I	<input type="checkbox"/> D&I	<input type="checkbox"/> F	<input type="checkbox"/> I
<input type="checkbox"/> Community and stakeholder issues	<input type="checkbox"/> D	<input type="checkbox"/> I	<input type="checkbox"/> D&I	<input type="checkbox"/> F	<input type="checkbox"/> I
<input type="checkbox"/> Management capacity (eg. human resources, records)	<input type="checkbox"/> D	<input type="checkbox"/> I	<input type="checkbox"/> D&I	<input type="checkbox"/> F	<input type="checkbox"/> I
<input type="checkbox"/> Business and financial performance (eg. cost recovery, asset management)	<input type="checkbox"/> D	<input type="checkbox"/> I	<input type="checkbox"/> D&I	<input type="checkbox"/> F	<input type="checkbox"/> I
<input type="checkbox"/> Other					

4.2. How were the measures/indicators selected?

- Research
- Consultants report/input
- Academic report/input
- Staff consultation
- Community consultation
- Measured for other purposes within the organisation
- Measured by other organisations
- Other

4.3. *At what scale is data collected?*

- Site or part of protected area
- Protected area
- Group of protected areas
- District
- Region
- State
- Nation
- Species
- Other

4.4. *How frequently is data collected?*

- Opportunistically
- Daily
- Weekly
- Monthly
- Quarterly
- Biennially
- Annually
- Every 1-5 years
- Other

5.0. TARGETS

5.1. *Are there output and/or outcome targets for the measures?*

- Output (eg. 10 management plans prepared per annum)
- Outcome (eg. management plans are effective in terms of achieving objectives)
- Other

5.2. How were targets selected?

- Extrapolation of previous performance/historical results
- Research
- Consultants report/input
- Academic report/input
- Staff consultation
- Community consultation
- Measured for other purposes within the organisation
- Measured by other organisations
- Currently under development
- Other

5.3. Who assesses management performance in relation to the targets?

- Internal (ie. within the responsible organisation)
- External
- Other

6.0. REPORTING

6.1. How are results from the measures reported?

- Opportunistic reporting
- Informal reporting mechanisms
- Formal reporting mechanisms
- Other

6.2. What is the frequency of reporting?

- Opportunistically
- Daily
- Weekly
- Monthly
- Quarterly
- Biennially
- Annually

<input type="checkbox"/> Every 1-5 years <input type="checkbox"/> Other	
<p>6.3. Who uses the information?</p> <input type="checkbox"/> Operational staff in the managing organisation <input type="checkbox"/> Protected area managers in the managing organisation <input type="checkbox"/> Other staff in the managing organisation (eg. planners, specialists) <input type="checkbox"/> Local government <input type="checkbox"/> State government <input type="checkbox"/> Federal government <input type="checkbox"/> Educational institute <input type="checkbox"/> Research institute <input type="checkbox"/> Community group <input type="checkbox"/> Industry group <input type="checkbox"/> Public <input type="checkbox"/> Other	

7.0. FEEDBACK TO MANAGEMENT			
<p>7.1. How is the information used to improve park management? Select who uses the information (I = Internal (ie. within the responsible organisation); E = External).</p>			
<input type="checkbox"/> Planning <input type="checkbox"/> Budgeting <input type="checkbox"/> Reporting <input type="checkbox"/> Evaluation/Monitoring <input type="checkbox"/> Implementation <input type="checkbox"/> Developing recommendations <input type="checkbox"/> Other	<input type="checkbox"/> I <input type="checkbox"/> I <input type="checkbox"/> I <input type="checkbox"/> I <input type="checkbox"/> I <input type="checkbox"/> I <input type="checkbox"/> I	<input type="checkbox"/> E <input type="checkbox"/> E <input type="checkbox"/> E <input type="checkbox"/> E <input type="checkbox"/> E <input type="checkbox"/> E <input type="checkbox"/> E	<input type="checkbox"/> I&E <input type="checkbox"/> I&E <input type="checkbox"/> I&E <input type="checkbox"/> I&E <input type="checkbox"/> I&E <input type="checkbox"/> I&E <input type="checkbox"/> I&E
<p>7.2. What aspects of management have benefited from this project?</p> <input type="checkbox"/> Planning			

- Budgeting
- Reporting
- Evaluation/Monitoring
- Implementation
- Developing recommendations
- Other

7.3. Are there any guiding principles or aspects of the project that underpin the success of this project in improving management?

Thankyou for your time!

Attachment 1: Summary of the World Commission on Protected Areas (WCPA) Framework for Evaluating Management Effectiveness

Assessment of the effectiveness of management requires both monitoring and evaluation. Various stages of the management cycle can be monitored and evaluated (Figure 1). Ideally, systems for assessing management effectiveness of protected areas will incorporate components that cover each of the elements of evaluation outlined below. Further information is available at the WCPA Management Effectiveness Task Force Website at <http://www.nrsm.uq.edu.au/wcpa/metf/>.

Context - *Where are we now?* Not an analysis of management, rather it provides information that helps put management decisions into context. Looks at reasons for the protected area to exist, its current status, significance, threats and opportunities.

Planning - *Where do we want to be and how are we going to get there?* Focuses on the appropriateness of protected area policies, management plans and design. Considers the vision for which the site or system is being planned.

Input - *What do we need?* Provide for assessments of the adequacy of resources (staff, funds, equipment, facilities) required at the agency or site level together with considerations for the importance of partnerships.

Processes - *How do we go about it?* Provide for assessments of the standards of management systems relative to management objectives.

Output - *What were the results?* Considers what has been done by management and examines the extent to which specific targets, work programs or plans have been implemented, to some extent focusing on the quantity of management achievements.

Outcomes - *What did we achieve?* Approaches to outcome evaluation involve long-term monitoring of the condition of the biological and cultural resources of protected areas and systems, to some extent focusing on the quality of management achievements

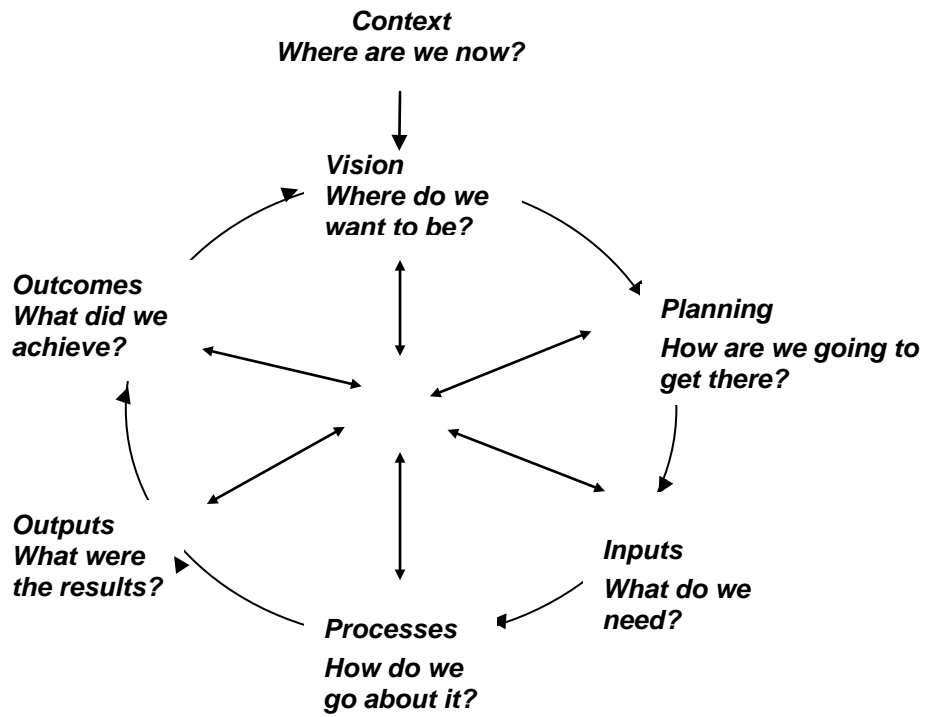


Figure 1: The management cycle and evaluation

Attachment 5 - Secondary Survey Questionnaire

ANZECC WORKING GROUP ON NATIONAL PARK AND PROTECTED AREA MANAGEMENT

MEASURING PERFORMANCE IN PROTECTED AREA MANAGEMENT - FOLLOW UP SURVEY

Following the ANZECC project team meeting (26-27 February), it was decided that additional information was required concerning the project measures and the methods used to collect the measures. A range of projects considered to be good examples of performance measurement were identified where further information is needed.

This information will be used to further assist in benchmarking current best practices and to develop recommendations that will assist organisations such as yours to measure their performance of protected area management. The additional information on measures will also provide a useful guide on current measurement activities to other conservation management agencies.

Please fill out the following questions with as much detail as possible.

When completing the measures section, please place one measure per row.

As your feedback will play a crucial role in this outcome, we urge you to complete this survey by **31 March 2001**.
Please return the completed survey to: Kylie.Stower@env.qld.gov.au

1.0. PROJECT DETAILS			
1.1. <i>Project title</i>		_____	
1.2. <i>Contact details of survey respondent (Name, ph, email)</i>		_____	
1.4. <i>Organisation responsible for the project</i>		_____	
2.0. MEASURES			
What type of measure was it?	<i>What was the measure?</i>	<i>How were the measures collected?</i>	<i>Additional information/comments</i>
<input checked="" type="checkbox"/> Direct <input type="checkbox"/> Indirect (indicators)	Crocodile abundance	Counted the number of crocodiles using replicate spotlight surveys along each river	The four major rivers in the park were surveyed - two have a direct correlation (ie numbers counted are a strong indication of numbers present).
<input type="checkbox"/> Direct <input checked="" type="checkbox"/> Indirect (indicators)	Abundance and size of cockles as an indicator of estuary health	Replicate quadrats to estimate abundance Measured shell dimensions to estimate cockle size	Measuring changes in the abundance and size distribution of cockles in different parts of the Pauatahanui Inlet at three yearly intervals, as an indicator of the condition of the estuary.

<input type="checkbox"/> Direct <input type="checkbox"/> Indirect (indicators)			
<input type="checkbox"/> Direct <input type="checkbox"/> Indirect (indicators)			
<input type="checkbox"/> Direct <input type="checkbox"/> Indirect (indicators)			
<input type="checkbox"/> Direct <input type="checkbox"/> Indirect (indicators)			
<input type="checkbox"/> Direct <input type="checkbox"/> Indirect (indicators)			

Attachment 6 - Bibliography

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Attachment 7 - Project Team Contact Details

Agency	Representative	Contact Details
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