

What's Working, What's Not: The Monitoring and Reporting System for Tasmania's National Parks and Reserves

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Abstract—This paper describes the Australian State of Tasmania's management effectiveness Monitoring and Reporting System for national parks and reserves. This jurisdictional performance measurement system is designed to provide all interested parties with reliable factual information and measured evidence about reserve management achievements, progress and challenges. Key features of the system are that it is outcomes-focused, evidence-based, operationally practical, and transparent to the public. The system fosters an organizational culture of measuring and demonstrating the results achieved from investment of funds in reserve management. It encourages an adaptive management approach and supports the management agency to operate as effectively and efficiently as is practicable. Online reporting of quality information about management performance enhances public sector transparency and accountability, and facilitates informed public engagement in sound adaptive management of national parks and reserves. The approaches, methods and tools developed for Tasmania's Monitoring and Reporting System are potentially suitable for uptake and application elsewhere.

Introduction

Management effectiveness evaluation is recognized globally as a key strategic priority for protected areas (e.g. International Union for Conservation of Nature (IUCN) World Parks Congress Durban 2003; World Conservation Congress Barcelona 2008; United Nations Environment Programme (UNEP) Convention on Biological Diversity Programme of Works on Protected Areas COP7 Decision VII/28).

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Management effectiveness evaluation is important for (i) guiding improvements in management through adaptive management processes; (ii) supporting reporting for accountability and transparency; (iii) informing the allocation and prioritization of resources; and (iv) fostering an informed and engaged constituency (Leverington et al 2008; Hockings 2008).

In Australia, performance audits of national parks management have identified the need for government agencies to establish robust monitoring and reporting systems so that managers and decision-makers can better understand how management is performing with respect to objectives and so make informed decisions to guide the delivery of planned outcomes (Auditor-General NSW 2004; Auditor-General Queensland 2010).

Growing community expectations for transparency and accountability in public sector performance are reflected through increasing calls and requirements for government departments to monitor and report on their performance. In particular, there is growing emphasis on reporting on the effectiveness of management in achieving objectives. For example, in Special Report No 72 on Public Sector Performance Information, the Auditor-General Tasmania 2008 states: 'In the business world, the success of an enterprise is largely judged on its profitability. In the public sector, profitability is generally less significant than the effective and efficient achievement of objectives and efficient use of resources. Accordingly, non-financial performance reporting is a vital element in keeping the community informed.' Public sector reporting of reliable factual information about management performance assists stakeholders and the broader community to understand what is being achieved from investment of public funds, and supports transparency and accountability.

The Challenge for Government Agencies

It is important for national parks management agencies to establish performance monitoring and reporting systems to better understand how management is progressing with respect to objectives and to provide transparency and accountability. Despite clear needs for performance measurement systems, government agencies have struggled to find practical and robust ways of meeting those needs. Too often, monitoring and reporting systems have failed to prove their worth to staff, stakeholders, funders and/or decision-makers. Indeed it is rare to find a performance monitoring and reporting system for protected areas that has endured over the long term.

Part of the problem may lie with the issue succinctly summed up by the nineteenth century teacher/philosopher William Pollard who wrote: "Information is a source of learning, but unless it is organized, processed and available to the right people in a format for decision making, it is a burden, not a benefit." (I'll refer to this issue as Pollard's polemic.) The challenge for governments is to develop performance measurement systems that are sound, practical and useful.

Background to this Initiative

With almost half of the State of Tasmania protected in public national parks and reserves, Tasmania's protected area system is amongst the best in the world. The government management agency for Tasmania's national parks and reserves – the Parks and Wildlife Service – recognizes that reserve managers, stakeholders and the broader community need reliable information about how management is performing.

In 2007, the Parks and Wildlife Service embarked on an ambitious initiative to develop a state-wide jurisdictional management effectiveness Monitoring and Reporting System for Tasmania's entire national parks and reserves estate. This initiative built on over a decade's experience in developing the evidence-based evaluation and adaptive management system for the Tasmanian Wilderness World Heritage Area (Jones 2009; Jones 2005; Parks and Wildlife Service 2004). Table 1 presents a timeline of the background history and key milestones in Tasmania's development of evaluation and the Monitoring and Reporting System.

Objective

The overall objective of this initiative was: "To develop a practical performance monitoring and reporting system that generates measured evidence of management progress, achievements and challenges across Tasmania's national parks and reserves."

Key Considerations

As project manager for developing the Monitoring and Reporting System, I wanted to ensure that we built on the strengths of the evidence-based adaptive management process we had established for the Tasmanian Wilderness World Heritage Area. In particular, the adaptive management cycle (Figure 1) had proved its worth in: (i) providing an integrated approach to achieving long-term desired outcomes; (ii) communicating and making clear the role of management effectiveness monitoring, evaluation and reporting in the adaptive management process; and (iii) supporting continuous organizational learning and improvement. The adaptive management cycle figure has been widely cited and adopted by others (e.g. CSIRO Marine and Atmospheric Research at <http://www.cmar.csiro.au/research/mse/>).

I also wanted to ensure that Tasmania's evaluation system would avoid perceived weaknesses and risks associated with some prevailing models of management effectiveness evaluation and State of Parks Reporting programs. The above considerations gave rise to the following set of guiding principles for Tasmania's Monitoring and Reporting System.

The resulting system should be: outcomes-focused, evidence-based, transparent to the public, relevant to the ongoing needs of the management agency and key audiences for performance information about management of Tasmania's national parks and reserves, operationally practical and scalable, and resilient to institutional changes.

For example, the system should:

- let staff of the management agency and others with responsibilities for parks management know how management was performing with respect to the agency's formal responsibilities for reserve management – in particular the legislated management objectives in Schedule 1 of Tasmania's National Parks and Reserves Management Act 2002 – and also take account of other enduring mandates including State Party responsibilities under international conservation agreements such as the World Heritage Convention;
- provide information and measured evidence about management progress, achievements and challenges that would be relevant and meaningful to staff, stakeholders and the broader community;
- establish a system that was resilient to institutional changes – such as changes in key staff, Ministers or government; departmental re-structures; budgetary changes, etc.);
- provide feedback about the effectiveness of specific major initiatives (such as large budget projects) as well as state-wide performance indicators;
- forge an organizational culture of measuring evidence to evaluate results;
- deliver performance reports that would gain high levels of credibility with key audiences, including natural resource scientists and experts in natural and cultural heritage.

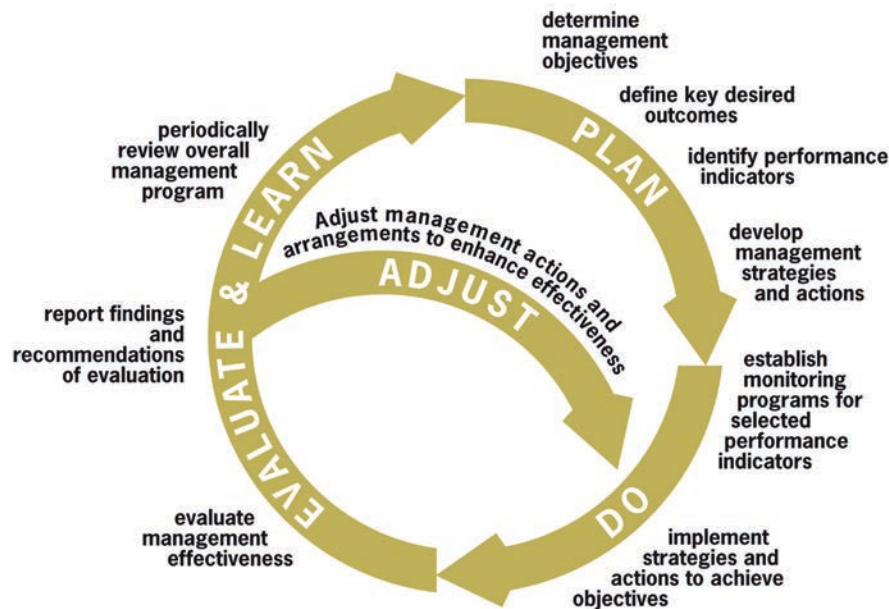
In addition, the following factors were identified as being critical to the success of the project in gaining the requisite level of staff and agency support to achieve agency commitment to building and implementing the system. The Monitoring and Reporting System would need to:

- be seen by the management agency as being relevant and useful – for example, relevant to ongoing strategic directions as well as relevant to on-ground operational programs, and useful for supporting a variety of agency reporting requirements.
- engage staff at all levels (Hockings et al 2009).
- look and feel intuitive to staff and other users – for example, it was recognised that the system would need to have a simple 'front end' that was user-friendly and could be quickly understood and grasped by a wide range of audiences.
- ensure that staff across the agency were provided with the necessary professional guidance, assistance, tools, and ongoing training and support they needed to systematically apply and implement the system to an appropriately high standard that would deliver performance reports which reflected well on the agency and government (e.g. by building community trust and regard for the agency's authenticity and integrity).
- be able to be integrated into the organisation's ongoing management systems, plans, projects and processes (including budgetary processes).

Table 1—Timeline of milestones leading to the Monitoring and Reporting System

Date	Milestones in Tasmania's development of management effectiveness evaluation
1992	First statutory management plan for the Tasmanian Wilderness World Heritage Area (Parks and Wildlife Service, 1992) ➤ Plan prescribed that a management effectiveness evaluation system be developed for the Tasmanian Wilderness World Heritage Area.
1999	Second edition of the management plan for the Tasmanian Wilderness World Heritage Area (Parks and Wildlife Service, 1999) ➤ An evaluation framework was integrated into the plan with clear statements of 'Key Desired Outcomes' articulated against the objectives. ➤ Plan prescribed that a <i>State of the Tasmanian Wilderness World Heritage Area Report</i> be developed to evaluate management effectiveness for the Area.
2004	<i>State of the Tasmanian Wilderness World Heritage Area Report No. 1</i> (Parks and Wildlife Service, 2004) ➤ Publication of the report marked the first comprehensive evaluation of management effectiveness for the World Heritage Area ➤ Report was recognised through the Australasian Evaluation Society Award for best publication in evaluation
2006	Parks and Wildlife Service commits to building a management effectiveness monitoring and reporting system for Tasmania's entire national parks and reserves estate (<i>Parks and Wildlife Service Strategic Plan 2006-2008</i>)
2007	Project Plan for development of the state-wide Monitoring and Reporting System approved
2010	PWS draft report on the proposed Monitoring and Reporting System released for agency and advisory committee comment, and external peer review. ➤ Feedback from key stakeholders and external peer reviewers was positive. ➤ Parks and Wildlife Service approved development of a pilot demonstration of the Monitoring and Reporting System.
2011	Pilot demonstration of Stage 1 of the system built and operating successfully on the department's Intranet.
2012	Department commits to building and implementing the Monitoring and Reporting System as an agency priority (<i>DPIPWE Corporate Plan 2011-2014</i>)
2013	Parks and Wildlife Service's final report on the Monitoring and Reporting System published (Parks and Wildlife Service, 2013a)
2014	Monitoring and Reporting System is progressively being built and implemented as resources permit. When fully operational, the Monitoring and Reporting System will be accessible to the public on the Parks and Wildlife Service website (www.parks.tas.gov.au)

The adaptive management cycle



Source: Jones (2005, 2009)

Figure 1—The adaptive management cycle.

Process of Development

Development of the Monitoring and Reporting System was informed by the management agency's formal responsibilities for reserve management and by key stakeholders' identified needs for performance information. These dual foundations were aimed at ensuring that the resulting system would be – and would remain – relevant to staff and stakeholders, and therefore resilient to institutional change.

In brief, the process of development involved thoughtful consideration and concept development; targeted literature searches; identification of key audiences for performance information; extensive staff and stakeholder consultation processes (including 17 Needs Analysis Workshops) to identify staff and stakeholder needs for performance information; synthesis of the project inputs; development of a draft framework for the Monitoring and Reporting System; presentation and discussion of the proposed framework and system with others; refinement and improvement of the system; development of reporting templates to support the system; practical 'road-testing' of key components of the system including preparation of examples of the various types of reports; development of detailed operational guidelines for implementation of the system; preparation of a draft report outlining the proposed system; review of the draft report by agency, management advisory committees, and external peer reviewers; minor adjustments to the system to take account of feedback and suggestions received; development of a pilot demonstration of Stage 1 of the Monitoring and Reporting System on the department's intranet as proof of concept; briefings and demonstrations of the pilot system and reports

to gain agency support for building and implementing the system; preparation of the proposed final report outlining the system; agency commitment in the Department's Corporate Plan to build and implement the system; agency approval for publication of the final report outlining the Monitoring and Reporting System for Tasmania's National Parks and Reserves; graphic design and publication of the final report (Parks and Wildlife Service 2013a).

Workshops and Consultation Processes

Workshops and consultation processes for the initiative focused on the following four key audiences for information about management performance for Tasmania's national parks and reserves: (i) reserve managers, (ii) specialists and experts in reserve values and issues, (iii) community stakeholders, and (iv) government/major funding partners.

The following focus questions were addressed during workshops and consultation processes:

1. What are the key things that would tell you that Tasmania's national parks and reserves were being well managed?
2. Where would you realistically expect to see improvements or changes if reserve management was going well?
3. Where would you realistically expect to see things getting worse or changing if reserve management was not going well?

The responses to the first question assisted in identifying key topics of interest to staff and stakeholders for assessing the performance of management for Tasmania's national parks and reserves. The responses to the second and third questions assisted in identifying 'indicators of change,' i.e. indicators that were expected to change under improving and worsening performance scenarios. These indicators suggested high priorities for monitoring programs to detect changes or trends in management performance. Examples of workshop outputs are provided in Figure 2.

The software application Mindjet MindManager was used to record participants' inputs to the Needs Analysis Workshops. The software enabled participants' responses

to the key focus questions to be captured immediately in electronic form and projected 'live' through a data projector onto a screen so that all participants could see what was being recorded during the workshop. This enabled everyone to participate in real-time editing and refining of the workshop findings through interactive group discussion.

The use of open-ended questions, an efficient interactive workshop process, and real-time recording of the workshop inputs fostered genuine engagement and constructive contribution by participants, and generally gave rise to interesting and thoughtful conversations about measuring park management performance. Even when stakeholders sometimes had divergent views about whether something was 'good'

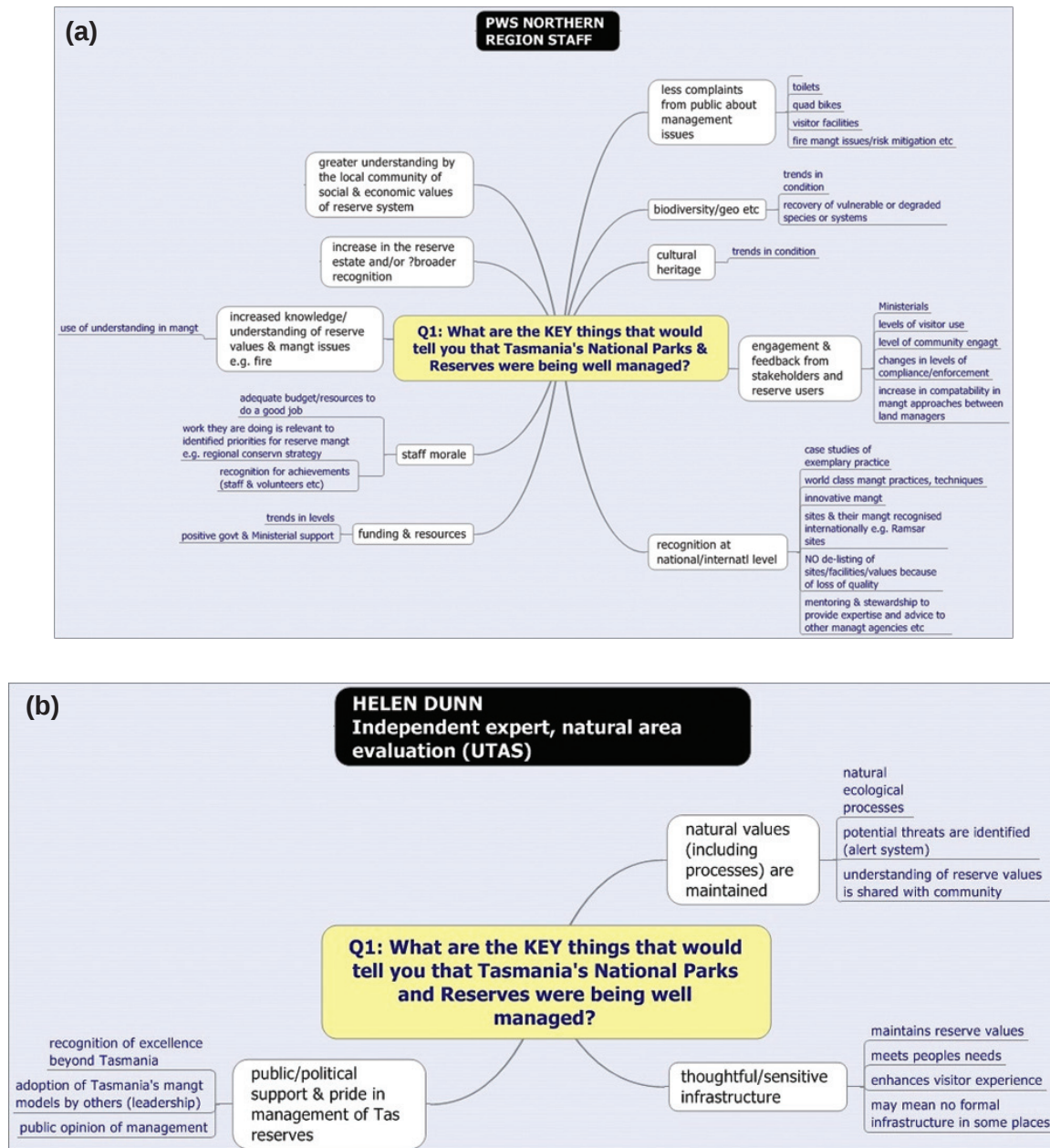


Figure 2—Examples of workshop outputs: (a) Parks and Wildlife Service staff (Northern Region); (b) Independent expert in natural area evaluation (University of Tasmania). (Source: Parks and Wildlife Service, 2013a)

or 'bad' (e.g. tourism developments in national parks), they could often agree that measuring a performance indicator such as 'the level and nature of tourism development' would give everyone the information they needed to assess how management was performing regardless of their personal views about the matter.

The workshop findings revealed that some types of performance information are of interest to all stakeholders, while some types are of unique or special interest to one or two stakeholder groups. Figure 3 shows stakeholders' overlapping needs for performance information. Development of Tasmania's Monitoring and Reporting System attempted to address the identified needs for performance information of all key stakeholder groups.

The Framework of the Monitoring and Reporting System

The detailed inputs to workshops and consultation processes were grouped and synthesized into discrete topics with a common theme. The findings revealed that in order to understand how management of Tasmania's national parks and reserves is performing, the management agency and stakeholders need factual information about the following six major arenas:

1. **Management context and arrangements** (e.g. information about the reserve estate, legislation and policy mandates, governance arrangements, funding for management, etc.)

2. Condition of reserves and reserve values (e.g. information about the condition of ecosystems and natural diversity, environmental quality, wilderness quality, Aboriginal and historical cultural heritage, etc.)
3. Management of threats, risks and impacts (e.g. information about the management of illegal activities, fire, weeds, diseases, feral animals, erosion, damaging/unsustainable activities, new and emerging issues, etc.)
4. Management of tourism, recreation and other uses (e.g. information about visitor numbers and activities, visitor satisfaction, infrastructure, public health and safety, sensitivity and sustainability of human use, etc.)
5. Community engagement and support (e.g. information about public awareness and support; community feedback; media profile; communication and education; community involvement; public and political advocacy and support, etc.)
6. Management systems, processes and tools (e.g. information about management plans, policies and processes for reserve management; information management; research and monitoring; collaboration and linkages with others; organisational workforce and staff morale, etc.).

These six performance arenas and associated component key performance areas (KPA) establish the framework for the Monitoring and Reporting System for Tasmania's National Parks and Reserves (see Table 2).



Figure 3—Stakeholders' overlapping needs for performance information. (Source: Parks and Wildlife Service, 2013a)

Table 2—Framework of the Monitoring and Reporting System

Arenas	Key Performance Areas (KPs)
1. Management context and arrangements	1.1 Tasmania's national parks and reserves estate 1.2 Value and contribution of Tasmania's national parks and reserves 1.3 Legislation and policy framework for management 1.4 Governance arrangements and organisational structure 1.5 Strategic priorities and long-term outlook 1.6 Funding and allocation of resources 1.7 Achievements, progress and challenges 1.8 Standard of reserve management practice
2. Condition of reserves and reserve values	2.1 Significance and integrity of Tasmania's national parks and reserves and reserve values 2.2 Key strategies for conservation and rehabilitation 2.3 Identification and understanding of the natural and cultural heritage 2.4 Ecosystems and natural diversity 2.5 Environmental quality 2.6 Wilderness areas and wilderness quality 2.7 Aboriginal cultural heritage 2.8 Historical cultural heritage
3. Management of threats, risks and impacts	3.1 Nature and significance of key threats, risks and impacts 3.2 Key strategies for protection 3.3 Law enforcement and compliance 3.4 Fire management 3.5 Weeds 3.6 Feral and introduced animals 3.7 Diseases 3.8 Erosion and sea-level rise 3.9 Climate change adaptation 3.10 Damaging and/or unsustainable activities and practices 3.11 Other threats, risks and impacts including new and emerging issues

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Table 2—Framework of the Monitoring and Reporting System (Continued).

Arenas	Key Performance Areas (KPA's)
4. Management of tourism, recreation and other uses	4.1 Level and nature of tourism, recreation and other uses 4.2 Key strategies for tourism, recreation and other uses 4.3 Visitor numbers and activities 4.4 Visitor satisfaction, feedback and perceptions of change 4.5 Public health and safety 4.6 Infrastructure and built assets 4.7 Natural resource utilisation and other uses 4.8 Sensitivity and sustainability of human use
5. Community engagement and support	5.1 Public awareness and support for Tasmania's national parks and reserves 5.2 Key strategies for community engagement and support 5.3 Public acceptance and cooperation with reserve management 5.4 Community feedback 5.5 Media profile 5.6 Communication, education and presentation of the natural and cultural heritage 5.7 Community involvement and contribution 5.8 Public and political advocacy and support for the managing agency
6. Management systems, processes and tools	6.1 Statutory management plans, non-statutory plans and other key strategies 6.2 Implementation of organisational strategic and business plans 6.3 Effectiveness of reserve management plans, major projects and strategies 6.4 Policies, processes and standards for reserve management 6.5 Information management and decision-making, including for controversial issues 6.6 Research and monitoring 6.7 Adaptive management and continuous improvement 6.8 Collaboration and linkages with others 6.9 Workforce and staff profile 6.10 Staff morale and organisational culture

Source: Parks and Wildlife Service, 2013a

Types of Performance Reports

Tasmania's Monitoring and Reporting System is designed to deliver four types of online performance reports:

- **Status and Trends Reports** provide a brief state-wide overview of how reserve management is performing for each Key Performance Area (KPA) of ongoing interest for tracking management effectiveness. Each report presents best available information and supporting evidence (where this exists). Status and Trends Reports are ongoing and regularly updated. Examples of Status and Trends Reports are provided in Parks and Wildlife Service 2013a.
- **Reference Information** provides up-to-date information that supports users' understanding of management performance but is not itself measured, e.g. legislation and policy framework for management, governance arrangements and organisational structure.
- **Periodic Evaluation Reports** are occasional reports on the evaluated effectiveness of specific reserve management plans in achieving the planned outcomes. These reports examine the extent to which the statements of Key Desired Outcomes (KDOs) identified in the management plan have been achieved. An example of a Periodic Evaluation Report is the State of the Tasmanian Wilderness World Heritage Area Report (Parks and Wildlife Service 2004) which provides a comprehensive evaluation of management effectiveness under the statutory management plan for the Area. Periodic Evaluation Reports for most reserves in Tasmania will be much simpler and briefer than this example.

- **Evaluated Case Study Reports** provide an in-depth evaluation of the monitored effectiveness of significant projects in achieving the project objectives, and may also be used for reporting on the monitored condition of selected reserve values and/or issues. Case studies for evaluation should normally be identified during the planning phase of a project to ensure the monitoring and evaluation components are appropriately designed and integrated into project implementation. Examples of Evaluated Case Study Reports include the Macquarie Island Pest Eradication Project (Parks and Wildlife Service 2013b) and the Needwonnee Aboriginal Walk, Melaleuca (Parks and Wildlife Service 2013c).

The different types of reports serve different purposes and enable performance to be examined at a range of scales ranging from project effectiveness to state-wide performance. The relationships between the levels and types of reports generated by the Monitoring and Reporting System are shown in Figure 4.

The framework of the Monitoring and Reporting system provides a simple front-end entry point for users to the on-line reporting system. Users can quickly and easily navigate down through the hierarchical structure to the topics they are interested in and access the level of information that is of interest to them. For example, those seeking a deeper level of understanding can 'drill down' through links in the reports to more detailed information and supporting evidence including measured data.

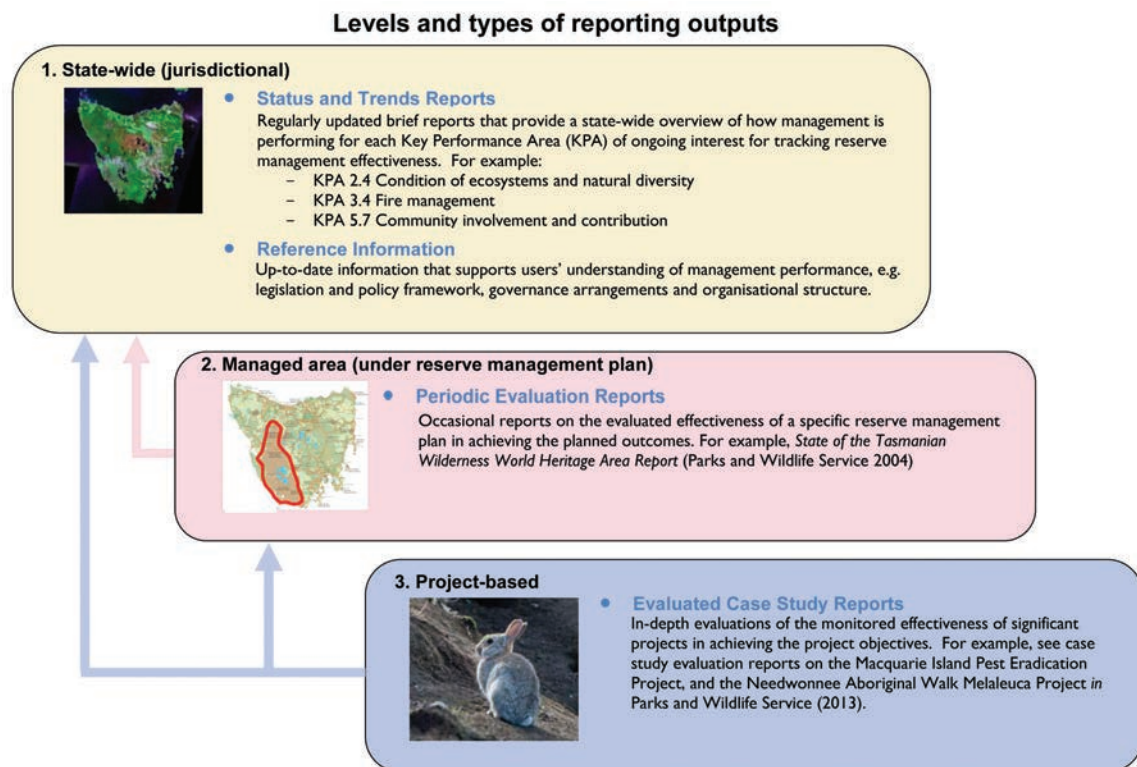


Figure 4—Levels and types of reports generated by the Monitoring and Reporting System. (Source: Parks and Wildlife Service, 2013a)

Implementation

At the time of writing (June 2014), the first stage of Tasmania's Monitoring and Reporting System has been built and is operating successfully on the agency's intranet. The system is progressively being built and when fully operational will be accessible to the public on the Parks and Wildlife Service website (www.parks.tas.gov.au). As resources permit, priority monitoring and evaluation activities are being implemented and new reports are regularly being added to the system. Each new or updated report helps to build the system and to grow the organizational culture of measuring evidence to demonstrate results.

Benefits

Tasmania's Monitoring and Reporting System encourages an adaptive management approach which supports the management agency to operate as effectively and efficiently as is practicable. Factual feedback about performance helps guide informed decision-making to optimize the achievement of the intended results.

The system progressively builds a structured repository of factual information and measured evidence about reserve management effectiveness. This resource not only supports the management agency to better understand how management is performing but also enables the agency to reliably communicate news of management achievements, progress and challenges with staff, stakeholders and the broader community. By providing accurate information about reserve management matters of interest to the community, the Monitoring and Reporting System supports all interested parties to become informed and to participate meaningfully in relevant processes for management planning and decision-making for national parks and reserves.

The Monitoring and Reporting System provides an informed basis for:

- Understanding areas of strengths and weaknesses in reserve management;
- Recognising and showcasing management achievements and giving due recognition to the people behind those achievements;
- Identifying opportunities for improvement;
- Informing and guiding management directions and priorities to better achieve the desired results;
- Making wise decisions—including well-targeted allocations of staff and funding resources—to optimize the returns on investment in management of tasmania's national parks and reserves;
- Guiding strategic investment of resources in monitoring programs to evaluate the effectiveness of management for tasmania's national parks and reserves;
- Building community understanding and informed involvement in reserve management;
- Increasing staff and stakeholder understanding and engagement in adaptive management processes — in particular the system is encouraging staff to think in new ways about how they approach their work, with a growing emphasis on identifying desired outcomes and developing monitoring programs to measure the results achieved;

- Supporting the agency to coordinate, streamline and meet multiple agency performance reporting requirements reliably and efficiently;
- Organising, linking and aligning various aspects of the agency's work (e.G. Management plans, business planning and reporting) through a common unifying framework that reflects legislative responsibilities and the expectations of stakeholders and the community;
- Accelerating organisational learning and improvement;
- Supporting collaborative and partnership approaches to reserve management (e.G. For cross-tenure strategies);
- Enhancing the delivery of long-term desired outcomes for tasmania's national parks and reserves;
- Building community trust, confidence and pride in management of Tasmania's national parks and reserves.

Discussion

Key Drivers for Tasmania's Management Effectiveness Evaluation System

Key drivers for development of a management effectiveness evaluation system for Tasmania's national parks and reserves included:

- Management advisory committees advocated for an evaluative approach to management and provided firm ongoing encouragement and support for management effectiveness monitoring, evaluation and reporting initiatives.
- Management planners within the Parks and Wildlife Service recognised that unless we had factual feedback about what was working and what wasn't, management was essentially 'flying blind' and having to rely on educated guesses and intuition to shape management strategies, directions and priorities rather than being guided by factual evidence about how management was actually performing in achieving its objectives and goals.
- Formal agreements in some cases required the management agency to report on the results achieved from investment of funds in management programs, e.g. federal/state government agreements on joint funding arrangements for management of Tasmania's World Heritage Areas.
- Increasing calls at all levels for improved transparency and quality performance reporting by the public sector.
- Senior executive officers for Tasmania's national parks and reserves committed (through agency strategic and corporate plans) to develop, build and implement an evidence-based jurisdictional performance monitoring and reporting system for Tasmania's national parks and reserves.

Additional drivers that could potentially accelerate adoption of evidence-based evaluation and adaptive management approaches include:

- Strong commitment 'from those at the top' to evidence-based adaptive management approaches (e.g. Whole-of-Government, Government and/or agency commitment).
- Strategic commitment and resources for developing and maintaining an evidence-based performance monitoring and reporting system for national parks and reserves (e.g. for a jurisdictional 'State of Parks Monitoring and Reporting System').

- Investment and ongoing allocation of reliable adequate resources for measuring evidence to evaluate results ('METER programs')
- Increasing use of funding arrangements and partnerships that include requirements for measuring and reporting evidence of the results achieved from investment of funds.
- Increasing expectations for Departmental annual reports to provide links from summary statements of the agency's achievements, progress, and challenges to more detailed online information and measured evidence of management effectiveness.
- Legislation which not only includes clear statements of the objectives for reserve management but also includes requirements for regular public reporting of measured evidence of management effectiveness against those objectives.

The Project Journey

There is sometimes a misconception that developing a simple system is a simple matter. In fact, developing a robust simple system is often highly challenging and commonly involves high levels of complexity during the middle phases of development. As American physician/author Oliver Wendell Holmes observed: "I would not give a fig for the simplicity on this side of complexity, but I would give my life for the simplicity on the other side of complexity." Figure 5 depicts the project journey for development of Tasmania's Monitoring and Reporting System.

Acceptance by Staff

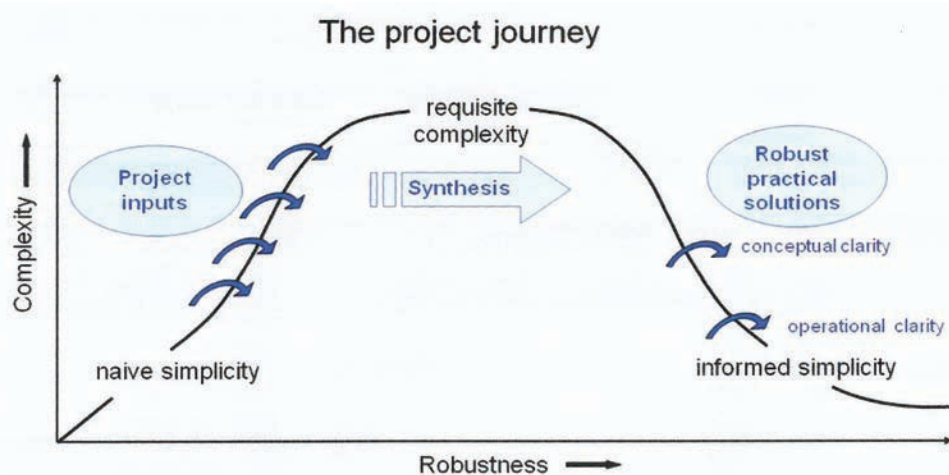
Staff familiarity with evaluation was low at the commencement of this initiative and attitudes toward evaluation were wary and uncertain at all levels of the agency. Understanding and acceptance of evaluation has progressively

grown over time as staff and managers have become more familiar with—and less fearful of—evaluation as used in an adaptive management context.

During development of the Monitoring and Reporting System, genuine consultation processes took account of staff and stakeholder inputs. This helped to build trust and provided some level of comfort that the developing system would be relevant to staff and stakeholder needs. These processes also helped to raise staff and stakeholders' understanding of evaluation, its purposes and benefits. Practical 'road testing' of the proposed reporting templates for the system also involved working closely and collaboratively with staff of key programs to ensure the templates were operationally practical and accepted.

Another important aspect of gaining staff support was to begin building the system by working with staff who were 'willing and able' to participate in evaluation. These were typically staff who were quick to recognize the benefits of demonstrating the results achieved from investment of resources in their programs. These staff were often highly motivated and achieving good results. This meant that the first evaluation reports produced tended to demonstrate high performing projects and programs. The recognition of good results by these evaluations provided positive feedback to the staff involved and helped allay others' fears about evaluation. It also gave encouragement for the agency to continue building and broadening the evaluation program. There was also growing agency realisation that evaluation reports could provide a valuable product for showcasing and communicating the agency's outstanding achievements.

Through taking a slow and collaborative approach, the Monitoring and Reporting System is now generally well-accepted by staff and managers. The focus is always on building an organisational culture of measuring evidence of management effectiveness to inform continuous learning and improvement. Should a management program not deliver the anticipated results, the focus turns to considering opportunities, options and proposed actions for improving



Modified from Cresswell (2009) and Lefroy et al (2009) after an original concept by Ward (2005).

Figure 5—The project journey. Developing robust yet practical solutions to challenging problems often requires high levels of complexity during the developmental phase of the project; however the ultimate goal is to remove unnecessary complexity and deliver a simple system that is robust, practical and useful. (Source: Parks and Wildlife Service, 2013a)

performance. Occasional set-backs and unanticipated results must be viewed as just a normal part of being a learning organization. By focusing on what the evidence is telling us, and reporting the findings of evaluations in a way that is factually accurate and supportive of adaptive management responses, Tasmania's Monitoring and Reporting System has (to date) avoided delivering any unwelcome surprises for staff or decision-makers.

Resources

Tasmania's Monitoring and Reporting System has been designed to be readily scalable so that implementation can proceed under a range of budgetary environments. With low levels of staffing and funding resources, it is possible to make slow and steady progress in building a management effectiveness monitoring and reporting system that is supported by limited measured evidence. Nonetheless the effectiveness of some management programs can be monitored and documented using relatively simple techniques such as a camera to take 'before' and 'after' photos.

With moderate levels of resources and appropriate professional staff capacity, there can be faster development and roll-out of a more comprehensive monitoring and reporting system that is supported by more and better quality evidence of management effectiveness, including more examples of evaluated case study projects.

With higher levels of Government and agency commitment and priority for evidence-based evaluation and adaptive management, it is possible to build a robust management effectiveness monitoring and reporting system that is supported by scientifically credible evidence including measured results of long-term ecological monitoring programs. Adequate, secure ongoing resources and professional capacity are necessary to support a robust evidence-based jurisdictional State of Parks Monitoring and Reporting System.

Even under very constrained resourcing environments, much can be achieved by capable, committed staff supported by key managers and stakeholders. For example, development of Tasmania's Monitoring and Reporting System has been achieved with minimal financial resources and only one assigned position to lead the project and coordinate inputs from staff and specialists across the agency. Additional staffing resources would be desirable.

Monitoring Activities

In general, reporting activities are relatively cheap to implement but monitoring activities are expensive. It is therefore essential to give careful consideration to prioritising monitoring activities. It makes sense to monitor and evaluate the effectiveness of significant initiatives and major budget projects. For instance, the Tasmania Parks and Wildlife Service evaluated the effectiveness of a major (\$25 million) project of immense conservation significance which aimed to eradicate feral rabbits, rats and mice from Macquarie Island World Heritage Area (Parks and Wildlife Service 2013b). We also evaluated the effectiveness of an innovative project working with indigenous people to develop an Aboriginal interpretive walk (Parks and Wildlife Service 2013c).

Priority is also given to monitoring activities that will assist the management agency to make informed decisions

for the management of critical on-ground issues (such as fire management), and to guide the achievement of important strategic planning goals. For example, effectiveness monitoring and evaluation is progressively being integrated into all new reserve management plans to evaluate the effectiveness of management under the plan. For example, see Coningham Nature Recreation Management Statement (Parks and Wildlife Service 2009).

Photo monitoring activities (such as fixed point photo-monitoring sequences and aerial photographic imagery) have proved to be a particularly economical and powerful way of demonstrating visible changes in the condition of selected sites and landscapes over time. For example, Figure 6 shows the changes over time in the condition of vegetation on Macquarie Island World Heritage Area caused by feral rabbits and the subsequent commencement of recovery in vegetation condition following successful management measures to eradicate feral rabbits and rodents from Macquarie Island (Parks and Wildlife Service, 2013b).

Scientifically credible long-term ecological monitoring programs are especially important for evidence-based adaptive management of national parks and reserves (Lindenmeyer and Gibbons 2012). These programs are generally heavily reliant on governments to provide the necessary long-term strategic commitment and security of resources for professional staffing capacity to undertake monitoring and research activities (including data analysis and information management).

Organizational Culture

Adaptive management can thrive in an organizational culture that values continuous learning and improvement. From the outset, governments and agencies that are considering adopting an evaluative approach to management must understand and accept the reality that not every management program will be a glowing success story. It takes a certain level of organizational maturity to recognize that learning from both successes and failures is an integral part of being an authentic learning organization.

If an organization is committed to continuous learning and improvement, it will not feel threatened by evaluation. In the event of a less-than-satisfactory result, the organization will not seek to hide or disguise the results, but will calmly and rationally analyze the factors that have contributed to the result and make the necessary adjustments or decisions to improve ongoing performance. In the process, it will learn something that helps it to perform better in future. This is the essence of sound adaptive management. Those organizations that are unable or unwilling to admit to shortcomings or failures are not yet ready to willingly embark on the journey that is evidence-based adaptive management.

Conclusions and Key Messages

Tasmania's Monitoring and Reporting System for National Parks and Reserves provides a practical model of evidence-based jurisdictional performance monitoring and reporting that is well suited to government. The system addresses the management agency's formal responsibilities for reserve management and delivers reliable factual information that is relevant and meaningful to staff, stakeholders and the



Figure 6—Photo-monitoring of vegetation condition on Macquarie Island World Heritage Area. Photo (a) shows healthy tussock grasslands in 1990 prior to impacts; photo (b) shows widespread dead and dying vegetation in 2006 as a result of overgrazing by feral rabbits; photo (c) shows the vegetation starting to recover in 2010 following successful management measures to remove rabbits and rodents from Macquarie Island. (Source: Parks and Wildlife Service, 2013a; photos: PWS/Jenny Scott (UTas).

broader community. By providing all interested parties with detailed accurate information and measured evidence about management achievements, progress and challenges, the Monitoring and Reporting System supports informed, effective and transparent management of national parks and reserves.

The following suggestions are offered with a view to supporting broader uptake and practical application of evidence-based evaluation and adaptive management for conservation management and public policy.

Strategic Commitment

- Make a bold strategic commitment to evidence-based adaptive management. For example:
 - ◊ Adopt the adaptive management cycle at all levels (Figure 1).
 - ◊ Invest in developing a strategic performance monitoring and reporting system to support informed, effective and transparent management of national parks and reserves.

Organizational Culture

- Understand that developing a robust management effectiveness monitoring and reporting system takes time, careful planning, and long-term strategic commitment.

Expectations for Measuring Results

- Establish expectations and requirements for measuring and demonstrating the results achieved from investment of resources in management of national parks and reserves (e.g. via funding arrangements and/or legislation).

Professional Capacity in Performance Measurement

- Build in-house professional capacity in performance monitoring, evaluation and reporting. For example:
 - ◊ Employ at least one science and/or statistics trained professional to lead, coordinate and provide quality assurance for a robust monitoring and reporting system.
 - ◊ Provide editorial support to staff as appropriate to ensure that all performance reports are of an appropriately high and consistent standard suitable for government publication.

Resources

- Allocate an ongoing percentage (e.g. 5-10%) of resources to measuring evidence to evaluate results ('METER programs').
- Establish a steady ongoing program of monitoring, evaluation and reporting to support continuous online

reporting on performance as well as the production of major periodic evaluation reports. This helps to avoid major fluctuations in staffing and resourcing requirements which can be difficult for government agencies to manage reliably through normal budget processes and cycles.

Development and Implementation

- Remember 'Pollard's polemic' and ensure that no matter how complex a system or its datasets may be, it is essential to have a 'simple front end' that can be quickly grasped and understood by a broad range of audiences (including decision-makers and funders).
- Develop a strategic framework for management effectiveness monitoring and reporting that is aligned to relatively stable enduring mandates (such as legislation and/or long-term funding arrangements) and stakeholders' identified needs for performance information. These dual foundations will enhance the resilience of the system to institutional changes.
- Integrate effectiveness monitoring and evaluation into management plans, strategies and major projects at the planning stage.
- Start simply and build from one success to the next. For example, work with the willing and able to establish early examples of evaluation reports that demonstrate how the evaluation system works in practice.
- Remember you can't monitor everything! Prioritise monitoring activities to address the most important matters and questions.
- Where possible, use photos and images to tell the story of management, including what was done, what was achieved, and to give acknowledgement to the people behind the program.
- A user-friendly website and hierarchically structured reporting helps everyone to find the information they are looking for quickly and easily.

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