



Department of
Environment and Conservation

Our environment, our future



DEC Nature Conservation Service

Biodiversity

Standard Operating Procedure

Preparation, review and amendment of monitoring protocols

SOP No: 1.2

Prepared by:

Resource Condition Monitoring Team
(Significant Native Species and Ecological Communities)

Prepared for:

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Approved by: Melanie Smith Date: 8/4/09
 Melanie Smith
 Senior Botanist, DEC Species and Communities Branch

Approved by: Dr Peter Mawson Date: 7/4/09
 Dr Peter Mawson
 Principal Zoologist, DEC Species and Communities Branch

Approved by: Val English Date: 7/4/2009
 Val English
 Principal Ecologist, DEC Species and Communities Branch

Approved by: Dr Ken Atkins Date: 4/5/09
 Dr Ken Atkins
 Manager, DEC Species and Communities Branch

Approved by: Gordon Wyre Date: 13 August 2009
 Gordon Wyre
 Director Nature Conservation

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4. Melanie Smith, Senior Botanist, DEC Species and Communities Branch

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1 Purpose

This Standard Operating Procedure (SOP) outlines the process for preparing new and amending existing Monitoring Protocols (MoPs) used to monitor significant native species and ecological communities, and the process for having these reviewed. A MoP should be created when a new monitoring project is to be undertaken or when an existing monitoring project has not been fully documented. MoPs document detailed study plans that explain how data are to be collected, managed, analysed and reported. As such, they are a key component of quality assurance for natural resource monitoring programs. This can also make them time consuming to write, so for this reason, MoPs are most suited to long-term monitoring projects.

For a monitoring protocol to be technically sound and of high quality, it should be reviewed by suitably qualified people with appropriate experience. A review process rather than an approval process is in place in order to provide assistance and advice at a project level, which eliminates the need for an authoritative body to be convened and administered. MoPs are to be reviewed following the procedure detailed in Section 4.

2 Scope

This SOP applies to MoPs developed by the Department of Environment and Conservation (DEC) for monitoring significant native species and ecological communities.

Monitoring protocols may be authored by DEC staff, NRM groups, consultants, researchers and any other people monitoring significant native species and ecological communities. However, other agencies may have their own processes in place for reviewing MoPs and DEC review may not be required or appropriate for their operations.

3 Definitions

Amendment: A change to a procedure that may involve a major or minor revision.

Author: The writer or compiler of the MoP.

Chief Investigator: Person identified in a DEC Animal Ethics Committee Approved project that is responsible for the project. They may also be referred to as the project leader.

Monitoring Protocols (MoPs): Detailed study plans that explain how data are to be collected, managed, analysed and reported. MoPs are a key component of quality assurance for natural resource monitoring programs and are particularly important for long-term monitoring projects in order to ensure continuity of projects following staff changes. They are accompanied by Standard Operating Procedures (that have been approved according to SOP 1.1).

Project leader: Person responsible for a monitoring project. For DEC Animal Ethics Committee approved projects this would be the Chief Investigator.

Review: Process by which a procedure is assessed for clarity and technical soundness such as whether data collected are consistent and of a high quality.

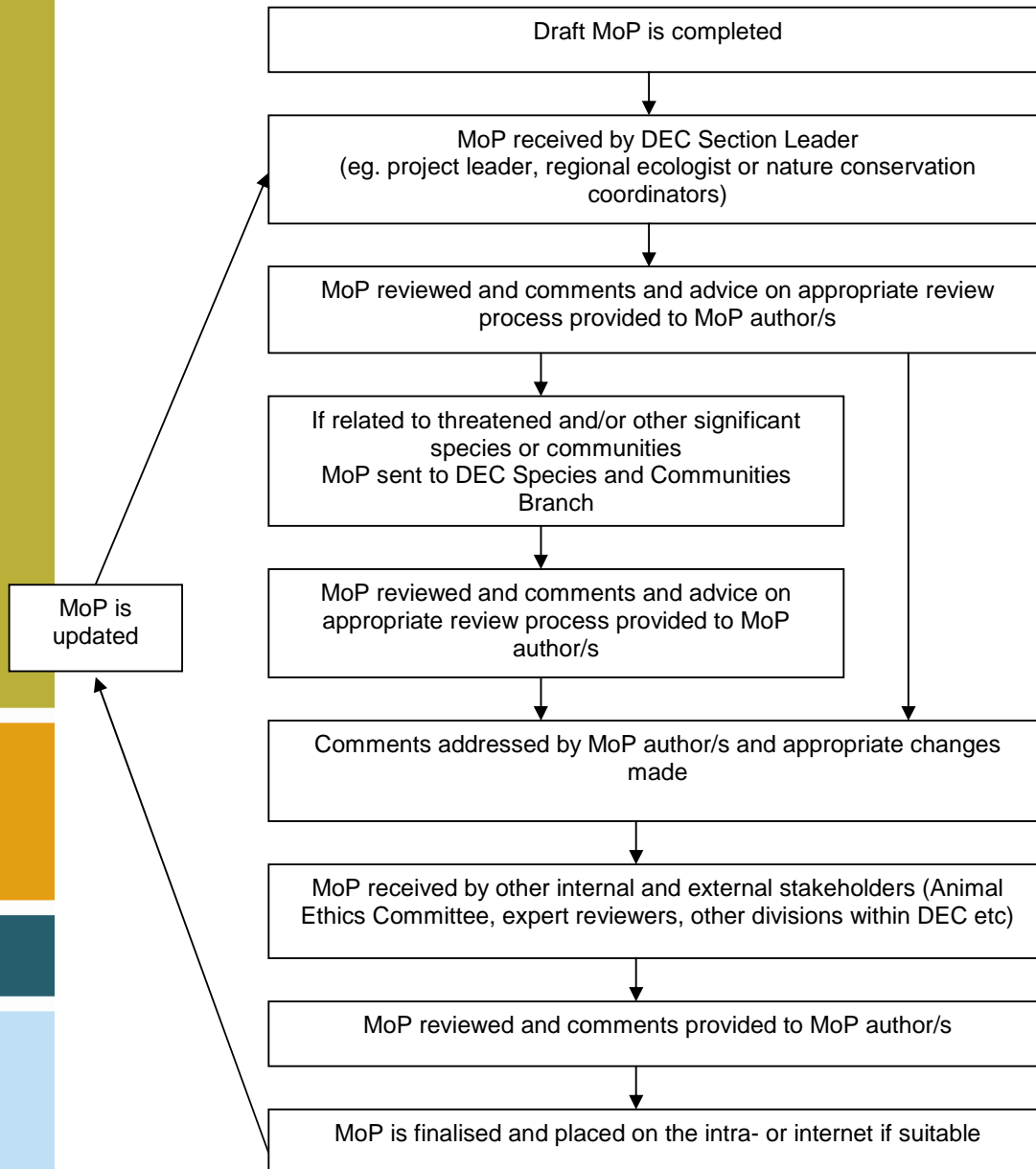
Standard Operating Procedure (SOP): Presents details on how specific aspects of the components described in a monitoring procedure will be carried out. They are written in the form of instructions, with step-by-step details of how to carry out each procedure.

Section Leader: The relevant person in charge of the Section. In Species and Communities Branch, this is the Principal Ecologist, Senior Botanist or Principal Zoologist or Branch Manager (positions current as at April 2009). In DEC this can be the Project Leader, Nature Conservation Coordinator, District or Regional Manager or other equivalent position.

4 Procedure Outline

The following diagram summarises the procedures described in the following sections for DEC review and updating of monitoring protocols.

Figure 1: Summary flow diagram for DEC review and updating procedures for monitoring protocols.



4.1 Preparing or amending a Monitoring Protocol

4.1.1 Identifying the need for a new Monitoring Protocol

It is important that the purpose for writing a MoP is understood. MoPs provide an invaluable framework for long-term, in-depth monitoring projects that have a high level of detailed requirements. MoPs need to provide full details on project design, data collection and management, analyses of data and reporting requirements (Oakley *et al.* 2003).

MoPs need to be written when a detailed plan is needed to monitor:

- a significant species or community;

- the response of a significant species or community to management actions; and/or
- a taxonomic group.

It is recommended that a MoP be written for long-term monitoring projects (i.e. greater than 2 years). For a MoP to be of use it should reflect a clear understanding of what, why, how and where a project will monitor. It is essential that these aspects of a project be clearly articulated to personnel involved with the project, and also people outside of the project.

MoPs do not need to be written for monitoring projects of a short duration and which are not expected to be continued or repeated. For instance, if a footpath is to be constructed through a section of vegetation, a visit to the site before and after the construction may be necessary to record the condition and note any significant changes or damage to the vegetation. No further monitoring is needed unless there is a broader management objective.

MoPs must refer to detailed procedures outlined in SOPs. These may already exist and should be available on the website <http://www.dec.wa.gov.au> (from June 2009), or may need to be created to support the project.

4.1.2 Amending an existing Monitoring Protocol

A great deal of work goes into designing monitoring protocols. It is therefore expected that the information documented by the MoP will not change significantly over time. However, it is possible that minor amendments may be required as new and different information becomes available.

In most cases MoPs do not need to be amended if the SOPs to which they refer are changed. This is because the MoP documents background information about why certain approaches were taken whereas the SOP document procedures which are likely to change more frequently over time. In other words, the purpose of the study does not change but how data are collected might.

Where amendments are required, these should be made in a timely manner. Amendments do not need to be made by the original author of the MoP although collaboration is encouraged. Details of amendments and versions need to be tracked in the Revision History Log contained within the MoP.

Amendments should be accompanied by appropriate reviews to ensure that the changes are necessary improvements and that they do not unnecessarily affect the continuity of monitoring data collection or its analysis. Reviews should pay particular attention to clarity and technical soundness of any amendments. All amendments to MoPs should be reviewed via the same process as new MoPs.

4.1.3 Authorship of Monitoring Protocols

MoPs may be authored by DEC staff, NRM groups, consultants, researchers and any other people monitoring native species and ecological communities. However, only MoPs used to monitor native species and ecological communities authored by staff within the DEC need to be submitted for review using the process outlined in this SOP, although other authors may submit MoPs for DEC comment if desired..

4.1.4 Format and Content

There is a wide variety of monitoring projects for which a MoP may be written. Oakley *et al.* (2003) provides advice on the content of monitoring protocols and suggest the following headings (which can be modified as necessary).

- 1 Introduction
- 2 Protocol constituents
- 3 Background and Objectives
 - 3.1 Background and history
 - 3.2 Rationale for selecting this resource to monitor
 - 3.3 Measurable objectives
- 4 Sampling Design
 - 4.1 Rationale for selecting this sampling design over others
 - 4.2 Site Selection
 - 4.2.1 Criteria for selection
 - 4.2.2 Procedures for selecting sampling locations
 - 4.3 Sampling frequency and replication

- 4.4 Recommended number and location of sampling sites
- 4.5 Recommended frequency and timing of sampling
- 4.6 Level of change that can be detected for the amount/type of sampling being instituted
- 5 Field Methods
 - 5.1 Field season preparations and equipment setup
 - 5.2 Sequence of events during field season
 - 5.3 Details of taking measurements, with example field forms
 - 5.4 Post-collection processing of samples
 - 5.5 End-of-season procedures
- 6 Data Handling, Analysis and Reporting
 - 6.1 Metadata procedures
 - 6.2 Overview of database design
 - 6.3 Data entry, verification and editing
 - 6.4 Recommendations for routine data summaries and statistical analyses to detect change
 - 6.5 Recommended reporting schedule
 - 6.6 Recommended methods for long-term trend analysis
 - 6.7 Data archival procedures
- 7 Personnel Requirements and Training
 - 7.1 Roles and responsibilities
 - 7.2 Qualifications
 - 7.3 Training procedures
- 8 Operational Requirements
 - 8.1 Annual workload and field schedule
 - 8.2 Facility and equipment needs
 - 8.3 Startup costs and budget considerations
- 9 References
- 10 Appendix

A template has been developed which provides appropriate headings as suggested by Oakley *et al.* (2003). The template should be available on the website <http://www.dec.wa.gov.au> (from June 2009) and its use is recommended. Modification to the template may be necessary to suit different needs. Authors should consult existing MoPs to guide the content and level of detail required.

4.1.5 Naming and Citing Monitoring Protocols

The title of the MoP should include the subject (i.e. species, ecological community or project) of the monitoring and the site (i.e. south west, a specific nature reserve etc) where monitoring is to be undertaken. For MoPs written for threatened ecological communities, the title should also include the object of the monitoring (i.e. weeds, fire response, dieback, grazing etc). A section on how to cite the MoP in other documents should be included on the cover page.

4.1.6 Storing and Sharing documents

To ensure that documents are more easily stored, located, reviewed and placed on a website as necessary, they should be named in a compatible format. The format for this convention is:

subject_site_object_versionnumber_date

An example is: TEC_Billeranga_System_impact_of_grazing_V1.8_20080825

The title should be written in either camel case (where the first letter of each word is capitalized) or in the format above. The above example written in camel case would appear as:

TECBillerangaSystemImpactOfGrazingV1.8_20080825

4.2 Classifying and Reviewing the Monitoring Protocol

There are two main purposes of review:

1. to obtain expert advice; and
2. to obtain input from stakeholders affected by the MoP.

Expert advisers and stakeholders play a role in reviewing the MoP by providing comments and advice

on how it may be improved.

Monitoring protocols will be classified and reviewed using guidance contained in the following subsections. Once the method of review and potential reviewers have been selected, reviewers will be contacted to determine their availability to provide comment within a nominated timeframe (up to six weeks is suggested). If available, they will be sent the MoP accompanied by the covering letter and reviewer questions in Appendix I. All comments must be sent back to the MoP author who will incorporate comments and distribute the revised document to all reviewers.

Review of MoPs may involve:

- DEC Regional Services (eg project leader, regional ecologist or nature conservation coordinators);
- DEC Nature Conservation Division (eg Species and Communities Branch, Nature Protection Branch);
- DEC Science Division;
- other DEC Divisions, where specialist expertise may be relevant to the MoP;
- DEC Animal Ethics Committee; and/or
- Selected experts (eg chosen for familiarity with the monitoring techniques, taxa or TECs).

4.2.1 DEC Review

All MoPs prepared for use within DEC need to be reviewed by the project leader supervising the project for which the MoP has been written, and the DEC Regional Leader for Nature Conservation/Regional Ecologist if the MoP is district/region-specific. This may be dependent on support and resources available in the region.

If a DEC or externally written MoP relates to threatened and/or other significant species or communities it must be submitted to the relevant Species and Communities Branch (SCB) section leader (i.e. flora, fauna and/or ecological communities). If the MoP applies to more than one subject area, then it may be sent to more than one person, with each recipient being advised of the other recipients. They will review the MoP as custodians of the corporate threatened and priority flora, fauna and TEC databases to ensure all opportunities for data aggregation are investigated. They will also provide advice on the appropriate review process depending on the broadness of the MoP's application and implications for stakeholders involved.

MoPs may be submitted for review to the following address:

Species and Communities Branch
Department of Environment and Conservation,
Locked Bag 104
BENTLEY DELIVERY CENTRE WA 6983

If the MoP involves scientific research it should be reviewed by DEC's Science Division. Each DEC region has a Science Ambassador whom will refer MoPs to the appropriate staff in Science Division. Other divisions within DEC, such as Fire Management and Regional Services, may need to review the MoP if it relates to their services. Cross-regional and controversial MoPs need to be reviewed by all internal stakeholders.

Internal reviewers have up to six weeks to provide comments after which it will be assumed that they have no comments to make.

4.2.2 Director Nature Conservation Review

Review by the Director of Nature Conservation (DNC) may only be required in cases where the MoP may be controversial, politically sensitive or have far-reaching impacts/implications. DNC review of MoPs relating to threatened and/or other significant species or communities will be at the discretion of the relevant SCB section leader or manager, and DNC review of any other MoPs will be at the discretion of the relevant Regional Leader for Nature Conservation.

4.2.3 Expert Review

Expert review will be required if the proposed monitoring protocol is:

- technical and requires expert knowledge;
- widely significant involving or affecting several stakeholders; or

- controversial or politically sensitive.

The DEC AEC may also request that the MoP be reviewed by experts for any of the above reasons.

MoPs should be sent out for review accompanied by Appendix 1, via email or hardcopy depending on external reviewer preferences. External reviewers should be given a deadline to provide comments. A maximum six week deadline is recommended.

4.2.4 Animal Ethics Committee Review Required

Review by the DEC AEC will be required where the MoP involves the use of animals. Fish and invertebrates are exceptions to this requirement, although projects involving these groups are still encouraged to seek review by the DEC AEC. MoPs should be submitted with an accompanying application for Approval to Undertake Research Involving Vertebrate Animals.

Approval of projects from the DEC AEC cannot be obtained out-of-session and must be submitted for consideration at one of the committee's five regular meetings during a year.

MoPs and applications for AEC review must be sent to:

Executive Officer, AEC
Department of Environment and Conservation,
Locked Bag 104
BENTLEY DELIVERY CENTRE WA 6983
or
E-mail: animaethics@dec.wa.gov.au

Once the project is approved by the DEC AEC, the Executive Officer will send a copy of the completed MoP to the Web Administrator for inclusion on the intranet and/or Resource Centre as instructed by the Principal Zoologist.

4.3 Deployment

4.3.1 Implement Changes to Databases

When a new MoP is approved, or an existing MoP is amended, the type of data that are collected may change as a result. These changes need to be reflected in the databases used to hold the monitoring data. The title and version number of the MoP should be noted in the relevant part of the databases (where there is capacity for this) and/or recorded in the relevant metadata statement/s. This will mean that data collected during the project are connected to the version of the MoP that guided the data collection.

4.3.2 Broadcast Email

Emails will be sent by the relevant SCB section leaders to notify staff and stakeholders of the availability of MoPs on the internet or intranet.

4.3.3 Allocation of a Version Number

The version number will be allocated by the author of the MoP. Version numbers increase incrementally by hundredths (e.g. version 1.1, version 1.2, ...etc) for minor changes. Major revisions should be designated with the next whole number (e.g. version 2.0, 3.0, 4.0 ...). The revision history log must be filled in whenever an alteration to the version number is made (including approval for the first time)

4.3.4 Publish on Internet or Intranet

It is intended that MoPs should be made available to the public via the internet or if restricted, should be available via the DEC intranet. MoP authors should decide whether the MoP is for internal or external use. The MoP author should provide the reviewed MoP to Strategic Development and Corporate Affairs for addition to either website with the appropriate level of access.

4.4 Monitoring Protocol Deletion

Monitoring evolves over time as techniques, technology and business processes change. Changes to

MoPs are likely to be infrequent as noted under Section 3.1.2: Amending an existing Monitoring Protocol. MoPs that are considered no longer valid should be withdrawn from the internet or intranet. If changes are made to a MoP which affects data collection (e.g. change in technique), previous versions of the MoP that are relevant to data collection will be retained in archive. Note, a MoP may be retained at the end of the planned monitoring period if there is the likelihood of further monitoring (planned or opportunistic) occurring, or where the MoP may be applicable to other programs.

4.5 Archiving

MoPs relating to significant or threatened species and ecological communities will be archived at DEC Species and Communities Branch in Kensington. All other MoPs will be archived at the appropriate DEC Regional/District offices.

The archived MoP must be filed in the appropriate DEC Corporate File (e.g. if it relates to a particular threatened ecological community it must be filed in that TEC's corporate file) and accompanied by a note explaining that is now an archived MoP, and is no longer being used but is relevant to data collected before the date of replacement by the new MoP version.

5 Timeline for approval

A minimum of 8 weeks should be allowed for the review of a MoP from submission to the completion of the final draft incorporating comments.

Projects that require approval from the Animal Ethics Committee will be constrained by committee meeting dates. It should be noted that applications submitted to the AEC Executive Officer after October will not be considered until the following year because the committee will only be considering Annual Reports at this time.

6 References

OAKLEY, K.L., THOMAS, L.P. and FANCY, S.G. (2003). Guidelines for long-term monitoring protocols. *Wildlife Society Bulletin* 31(4): 1000–1003

7 Appendix I Reviewer questions and letter template

Standard Questions for Reviewers of Monitoring Protocols for Significant Native Species and Ecological Communities

The following questions should be considered by reviewers of MoPs:

MoP Title		
Purpose	Is the purpose of the MoP clearly stated?	Yes [] No []
	Is it required/justified?	Yes [] No []
	If possible, comment on whether the proposed MoP is based on, duplicates or complements existing MoPs.	
Research and experimental design	Is the sampling and experimental design appropriate and sufficient to meet project objectives and ensure statistical validity?	Yes [] No []
	Is the data going to be in a format suitable for inclusion into the DEC corporate databases?	Yes [] No []
Policy and Legislation	Is the MoP compliant with relevant legislation and policies?	Yes [] No []
Stakeholders	Have the needs of stakeholders been considered and incorporated as appropriate into the MoP?	Yes [] No []
Field and laboratory methodology	Are field and laboratory method clearly and completely described and sufficient to meet project objectives?	Yes [] No []
Technical content	Is the MoP consistent with accepted technical practice in the relevant area?	Yes [] No []
	If not, does the proposed activity provide an acceptable alternative methodology?	Yes [] No []
Statistical analysis	Are analytical and statistical procedures sufficiently identified and appropriate?	Yes [] No []
	Do the procedures represent best practice?	Yes [] No []
References	Are references provided that support the use of the procedures as a standard?	Yes [] No []
If an amendment to and existing MoP	Is the amendment justified?	Yes [] No []
	Have the implications of the amendment been considered and satisfactorily addressed?	Yes [] No []
	Is the amendment an improvement on the existing version?	Yes [] No []
Feasibility	Is this project feasible in terms of staffing, budgeting and scheduling?	Yes [] No []
Recommendation	Should the MoP be approved?	Yes [] No []
	If not, why not?	
Confidentiality	Do you wish your name to be kept confidential?	Yes [] No []

Insert your ref
Insert our ref
enquiries
phone
fax
email

NAME
ADDRESS

**REQUEST TO REVIEW A MONITORING PROTOCOL –
{TITLE}**

Thank you for agreeing to review the enclosed draft Monitoring Protocol titled "{TITLE}".

Monitoring Protocols are detailed study plans that explain how data are to be collected, managed, analysed and reported. As such, they are a key component of quality assurance for natural resource monitoring programs. For a monitoring protocol to be technically sound and of high quality, review by suitably qualified people with appropriate experience is desirable.

Reviewers' names will be kept confidential unless they indicate that this is not necessary.

We would appreciate your response by {Date}. However if you are unable to complete the report in that time could you please contact me.

Thank you once again.

Yours sincerely,

{NAME}

{BRANCH}

Date