LAND FOR WILDLIFE
VOLUNTARY NATURE CONSERVATION

Wildlife Notes

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT
Information Notes for the *Land for Wildlife* Scheme in Western Australia

No.9 July 2001

Photographic Monitoring of Vegetation

Keywords:	management, evaluation, monitoring
Location:	national
Author:	B.M.J. (Penny) Hussey

INTRODUCTION

All managers need to keep records, so that they can assess how they are doing, and adjust management if necessary. Records of things like stocking rates, fertiliser application - and of course cash flow - are a necessary part of managing a farming business. But the records of how the land itself is coping with management are not always taken, because they are less easy to quantify. To do this, it is advisable to **monitor,** that is, to observe and keep a record of change in something over time. The results of monitoring can be used to **evaluate** performance.

Monitoring is the process of undertaking periodical assessments or surveys, recording the results, and periodically comparing and evaluating them to determine the effectiveness of actions or the progress of projects. How frequently this is done, and in what form, will vary according to what is being measured and the purpose of the monitoring.

Monitoring is important for two main reasons: it provides feedback on the effectiveness of management actions - and hence whether these actions need to be modified - and it enables the determination of whether the natural resource is stable, improving or declining. So that this can be done, the records need to be consistent, comparable, and easily interpreted by any interested person.

Direct seeding trial

A *January 1991*

Site prior to any work. Note cairn at right poking up above wild oats. (York)

B *September 1997*

Shrubby habitat island established.

Note:
I the problem of lack of exact correspondonce in the photos caused by not using specific sighter posts
2 seed sown at 1.5 kg/ha, 15 species established. 78% vegetation cover.

AIMS - WHY SHOULD WE MONITOR VEGETATION?

As land managers, it is necessary to understand how and why the land and its vegetation is behaving over time, and the human memory is not as accurate as we would like to think! Monitoring can help to:

- record changes over time
- relate these changes to climate/environment/ management events
- document the effect of management actions
- document the extent and severity of (and then recovery after) extreme events eg flood, fire, williwilli, frost or hailstorm
- develop a benchmark against which future performance can be measured
- use the information gained to determine management actions
- show up a problem when it is still small
- support funding applications - and then demonstrate how the grants are being used

which all adds up to

- developing a better understanding of cause and effect in managing vegetation.

For monitoring vegetation, either remnant vegetation or replanting, a simple yet very useful method is to take a series of photographs, called 'photopoint monitoring'.

WHAT IS PHOTOPOINT MONITORING?

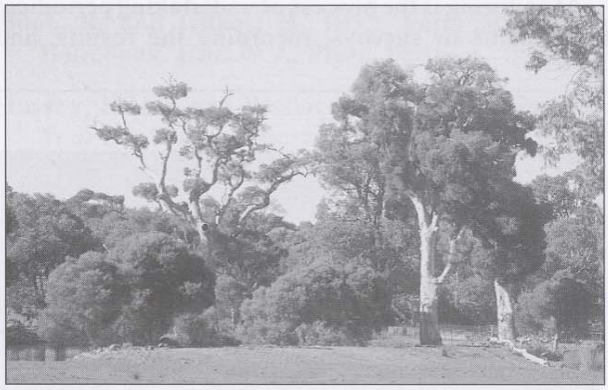
A snapshot is a record of a particular site at a particular time. Any picture tells a story, but to get a good monitoring photo takes a little bit of thought.

Photos are best used for monitoring relatively slow changes to vegetation. They will build up into a valuable record to hand on to new owners, or to the next generation of the family. Evidence of good management may also be useful when dealing with financial institutions! What photos do not do is give exact details of species and sites, so each photo needs a precise set of notes to go with it.

Monitoring long term changes

A *October 1986*

B *October 1992*



C *June 2000*

Recognisable trees can be used as reference points. It was originally thought that the tree on the left was about to die (Toodyay)

Note:

1. *the two feature trees (stout paperbark,* Melaleuca preissiana*) have hardly changed in size or health over these 14 years*
2. *the shrubby* Melaleuca hamulosa *have become quite dense*
3. *a planted flooded gum,* Eucalyptus rudis, *is beginning to obscure the photopoint.*

WHEN TO USE PHOTOPOINTS

Use photopoints to take the guesswork out of recalling how the country used to look.

- fencing to remove stock
- fire
- storm events - flood/wind/hail/frost
- weed control
- feral animal (eg rabbit) control
- revegetation - both direct seeding and planting
- effect of landcare works, such as banks and drains
- changes in water table
- wind and water erosion

SETTING UP THE PHOTOPOINT

Which site/s to choose?

The aim of doing photo monitoring is to use the photographs as an easy method of comparison to record change over time so, when you take the initial photo, have clear in your mind what change you expect, eg saline area revegetated, weeds replaced by native vegetation etc.

Your photo site needs to illustrate a distinct feature, for example:

- exact location of *Phytophthora* Dieback front
- boundary between burnt/unburnt vegetation
- extent of salt/waterlogging/erosion/weed/rabbit affected area
- good example of particular vegetation community
- the growth and health of one particular representative plant
- direct seeding or revegetation site
- strand line on flood bank

So the location should be carefully chosen to illustrate that ONE FEATURE. (The more specific the photo is, the easier will be the interpretation of a sequence of photos.)

Choose a recognisable site

You, and perhaps somebody else, will need to return to the site in future years, therefore, the site must be clearly recognisable. Either use a particular tree, fence post or range of hills for a guide or, better still, mark the site with stakes.

If appropriate, locate the site fairly close to a track for ease of access.

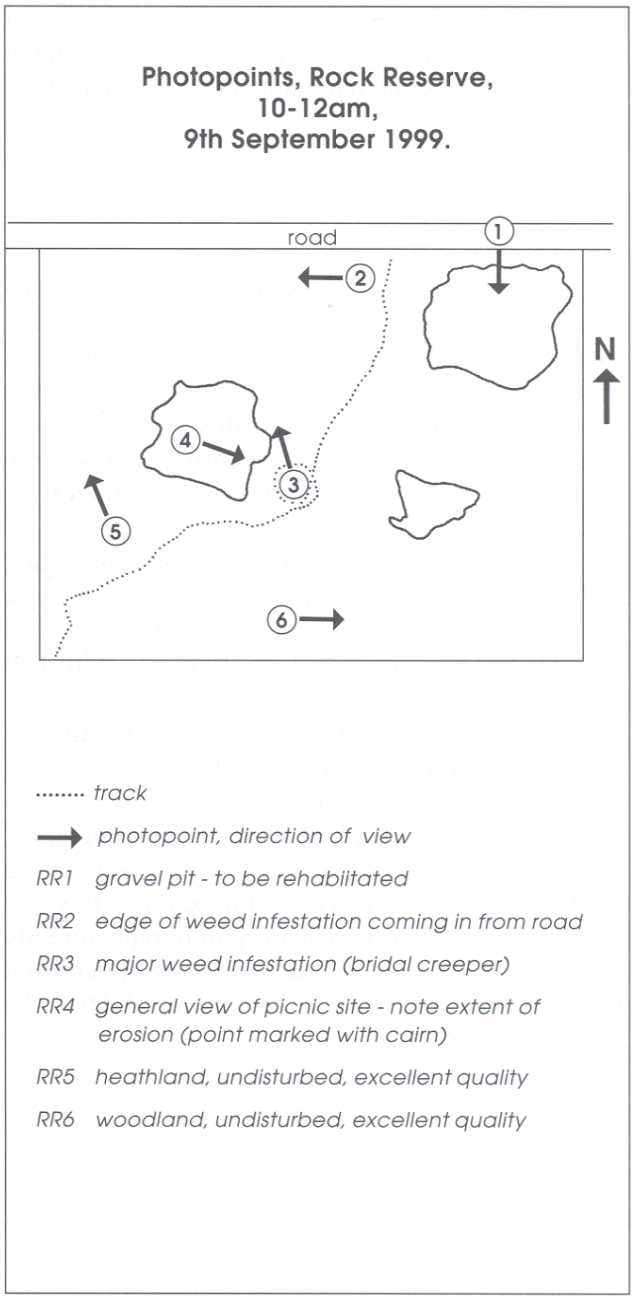
Set it up so that the view from the camera to the point of interest is uncluttered - remember, young tree/shrub vegetation will get taller as it grows.

Note site on map

Locate the site on the main map you are using so that future observers can easily return.

Locate the position and direction of view of each photo on a mudmap (or overlay on an aerial photo), especially if you are taking more than one picture in a particular piece of bushland.

Example of photopoint map for a small reserve



Mark the site

If using a fence post, rock or tree as a marker, it should be identified in some way - paint is the most long-lasting (but remember that smooth-barked eucalypts shed their bark, so marks on a tree trunk are not permanent).

If the site is on private land, or away from interference by vandals, permanent marker posts can be used. Place 2 posts (eg star droppers) 10m apart in the direction the photo is to be taken, the first is the camera post, the second the sighter post.

Mark the sighter post with a code number that is specific to that site. An aluminum tag could be used for a label, but it must be firmly fixed, so that it cannot be removed, by ravens for example. Paint could be used on a fence post or star picket, or waterproof marker pen on a dropper.

If vandalism is a possibility, put a small marker peg close to the large one. These probably will not be removed and so help in relocating the exact site of the photo.

Take the photo

Lean a databoard against the sighter post. The easiest to use is a clipboard with paper on which is written the site number and date. The writing needs to be large enough to be read on the developed photo.

Some cameras have the capability of recording the date on the photograph. For monitoring photographs, this can be useful, as long as it does not detract from an important feature of the photo.

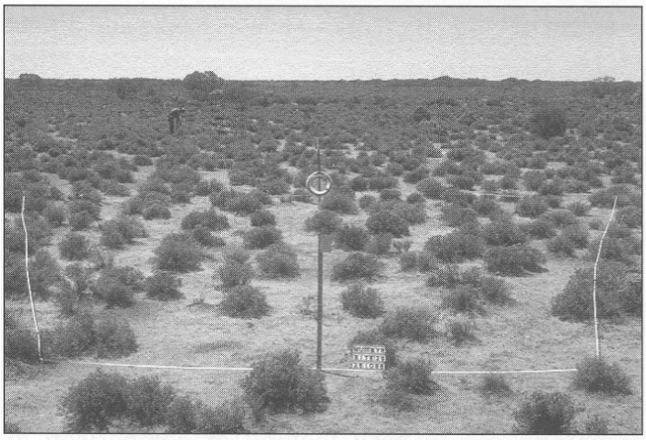
Use a camera with a standard lens, 50mm or 55mm, as this is closest to the image as seen by human eyes. Do not use a wide angle or a telephoto lens, as this alters the perspective of the photo and makes it difficult to repeat.

Sometimes an elevated position, eg standing on the back of a utility, can give the best results, especially if you wish to show understorey density.

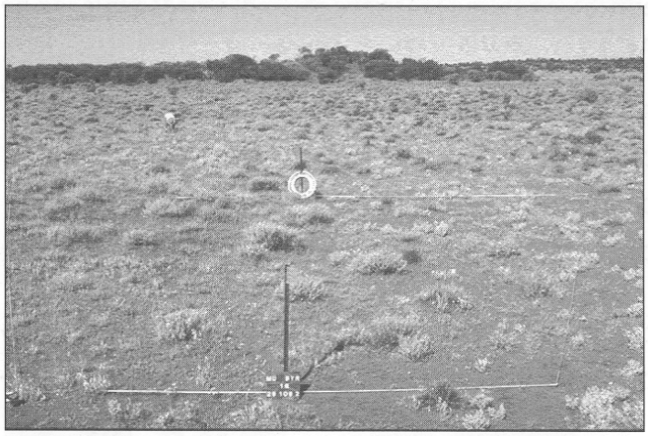
Try to choose a clear, sunny day for photography, as this will give good shadow patterns for estimating the density of woodland cover, for example. It is best to have the sun at an angle to the photograph; directly in front of, or directly behind the photographer is not advisable as it will reduce the amount of detail the photograph can show.

Rangeland Monitoring sites

AG WEST's Rangeland Management Branch has, for many years, used photopoint sites to monitor range condition. Some are simple photopoints, such as described here, others are much more detailed, as they include exact measurements of plant species present and soil condition, For further details contact AGWEST.



A *1987*



B *1992*

Note:
1 the two sighter posts, one with a label
2 the databoard
3 a specific area outlined with tape, so that the growth of each individual plant can be monitored.

Nb:
Photos A and B are different sites

What to record in your field notebook

When you start taking the sequence of photos for a particular site, or a specific project, start by recording:

- date, time, weather
- location
- management history of the site, eg when cleared, when fenced, when planted, last fire, when gravel extraction ceased, etc

For each photo, record:

- reason for taking that photo
- slope, aspect, soil type, soil condition, eg litter layer, algal crusts etc.
- erosion, salinity, stock pads, ringbarking or other grazing damage
- list dominant plants
- note any relevant fauna information

Example of a notebook page

Code number	*GH2*
Date	*7/9/95*
Weather	*clear, sunny, no wind*
Location	*Gooseberry Hill*
Purpose of photo	*to record effectiveness of bridal creeper control*
Site observations	*fire occurred on 3/1/94. Infestation is under Marri. Regenerating Marri and Balgas only plants of concern when spraying. Roundup used at label strength.*

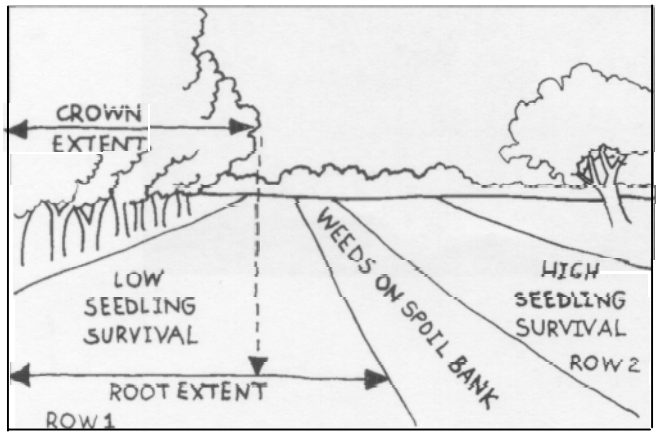
Photopoints in bushland habitat

If you wish to show changes in bushland, it is very useful to make a tracing of the photo and annotate it with plant species information and notes of the specific feature you wish to watch out for.

Photopoints in revegetation projects

These should be specifically related to the planting or seeding plan for that project so that they can show eg:

- growth rate of a particular species
- effectiveness of a particular weed control treatment
- change at soil type boundary, etc.



DIRECT SEEDING TRIAL, WOODGENILLUP.
Note - site preparation: scalping
-weeds on intervening spoil bank
- depression caused by competition from existing trees.

Using photos for evaluating projects

To use photopoints for evaluation, it is necessary to systematically compare the elements shown in the photographs with performance against the objectives of the project. To do this properly, the photos need to be combined with quantitative (measured) information taken at the time of photography and recorded in the field notebook. For example:

- count the number of surviving seedlings
- measure the height of seedlings
- list the species of plants appearing after fires
- record the number of bird species using a bush corridor.

FURTHER INFORMATION

Photopoints are only one type of monitoring tool, more detailed survey and recording can be done if time permits. Contact *Land for Wildlife,* or refer to the publications below.

ACKNOWLEDGEMENTS

Many thanks to Ken Atkins, Claire Hall and Peter Mawson for helpful comments on earlier versions of the text.

FURTHER READING

Hunt, N. and Gilkes, B. 1992. Farm Monitoring Handbook. Uni. W.A. Press, Perth.

Hussey, B.M.J. and Wallace, K.J. 1993. *Managing Your Bushland.* Department of Conservation and Land Management, Perth.

Keighery, B. 1994. *Bushland Plant Survey: a guide to plant community survey for the community.* Wildflower Society of WA, Nedlands.

About the author

Penny Hussey *is Land for Wildlife* Coordinator at CALM Wildlife Branch, Kensington.

Published by the Department of Conservation and Land Management, Perth.
All correspondence should be addressed to: The Editor 'Wildlife Notes', CALM Wildlife Branch, Locked Bag 104, Bentley Delivery Centre, WA 6983. Phone: (08) 9334 0530, Fax (08) 9334 0278

Design and Desktop publishing by Louise C. Burch Graphic Designer.