

C. Monitor the effects of management

Steps 10 to 15

Monitoring is the repeated assessment of a particular feature at selected sites. It can be used to measure natural change over time or to record the results of management activities.

Keeping records also allows comparison and evaluation between sites over time. The results of monitoring can show whether species, habitats and ecological communities are being adequately conserved. The analysis helps determine whether changes should be made to management aims or activities, in this case, for grassy ecosystems.

The results of monitoring are likely to benefit not only the landholder directly, but others as well, as they provide information to advance the knowledge base about the impacts of management on grassy ecosystems. Management that is recommended today is based on such work in the past, and new information continually helps to improve those recommendations.

Steps 10–15 describe optional methods of monitoring and keeping records. In many cases, more than one monitoring option may be used. At the simplest level, photos can be taken annually at set points to record events such as management changes or observations of interest. Presence of particular plants can be monitored to see if they are changing in abundance and distribution. There are more complex methods that require a greater level of expertise, but provide greater detail about what is occurring. Find out more about these methods by referring to the contacts listed in the reference section.

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PROCESS	STEP	RESULTS
Record when particular activities were undertaken	10 Record activities that have been undertaken	Historical record is maintained to assist in interpreting changes that occur over time
Maintain photographic records of how areas have changed over time	11 Photograph reference points	Events, particular areas or species are documented in a photographic record
Record changes that have occurred in the abundance and distribution of particular species or groups of species	12 Monitor vegetation composition and abundance	Records are maintained of changes in abundance of species or groups of species in selected areas
Identify changes to habitat and vegetation condition	13 Monitor vegetation condition	Records are maintained of changes in vegetation condition in selected areas
	14 Monitor fauna habitat	Records are maintained of changes in fauna habitat in selected areas
	15 Monitor single plant species distribution and abundance	Records are maintained of changes in distribution in selected areas



Monitoring

- Will detect positive or negative short or long term changes that require management intervention.
- Identifies whether management activities are producing the desired results.
- Assists the land manager with future planning and management.

Monitoring can be undertaken in many ways. It is important to identify why a feature is being monitored, and to ensure that the information that is gathered is useful to answer the particular question being asked. It is more likely that a simple method of monitoring is maintained over a suitable period of time than a complex, time consuming and expensive method. The method chosen depends on what information is required. Methods that can be used to answer particular questions are presented in Table L.



It is not practical to describe in this kit how to monitor animal species. Many species have to be trapped to monitor distribution and abundance and methods vary depending on the species. Generally a licence and specialist skills are required to undertake such work. A simple guide to monitoring bird species is provided in the booklet, *Bringing Birds Back*, which is available for free from Greening Australia.

The effects of seasonal conditions and recent management activities will cause significant variations in the results of monitoring. For example, very wet years will yield different results from very dry years and there will be different results from monitoring an area immediately after it has been closely grazed as opposed to an area that has not been grazed for some time. Guidelines for undertaking monitoring are presented in Table M.

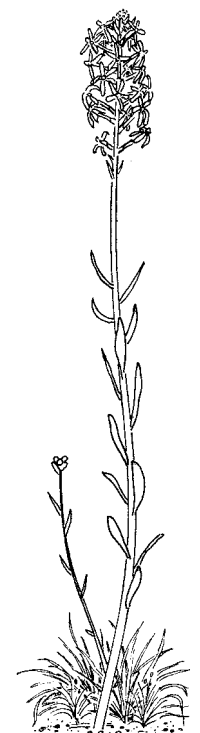


Table L: Choosing a monitoring method

Questions to answer	Relevant monitoring method
Has a particular action occurred?	<ul style="list-style-type: none"> • Record of activities undertaken (Step 10) • Photo reference points (Step 11)
Has a weed species spread or diminished?	<ul style="list-style-type: none"> • Photo reference points (Step 11) • Single species distribution and abundance (Step 15)
Does a particular species still occur in a site (eg threatened species)?	<ul style="list-style-type: none"> • Photo reference points (Step 11) • Single species distribution and abundance (Step 15)
Is there a long-term change in structure, biomass and/or condition?	<ul style="list-style-type: none"> • Photo reference points (Step 11) • Vegetation condition monitoring (Step 13) • Habitat condition monitoring (Step 14)
Are there any changes in relative richness and cover of native and introduced plants?	<ul style="list-style-type: none"> • Vegetation composition and abundance (Step 12) • Vegetation condition monitoring (Step 13) • Single species distribution and abundance (Step 15)
Is habitat for selected species being maintained?	<ul style="list-style-type: none"> • Photo reference points (Step 11) • Habitat condition monitoring (Step 14)
Is there a change in plant species richness or abundance?	<ul style="list-style-type: none"> • Single plant species distribution and abundance (Step 15)

Table M: Monitoring for conservation management

What to monitor	<p>Monitor vegetation and fauna habitat because these can show the health of the ecosystem on a site and potential for the range of animals likely to live there.</p> <p>What is monitored depends on the questions being asked (Table L).</p>
When to monitor	<p>At regular intervals. Repeat activities at the same time each year so that comparisons between areas are more meaningful.</p> <p>Annually or less often. Timing depends on the method used and what is being monitored.</p> <p>Over several years for trends to become apparent. Single years results can be misleading. For example, grassland vegetation can be affected in the short-term by recent management activities and seasonal variability. A site surveyed in drought reveals fewer species than a similar survey in a wetter season.</p> <p>A rough guide for the frequency of monitoring is to determine whether changes to the subject being monitored are likely to be slow or rapid. If the change is slow, monitor every few years. For example, changes to habitat provided by trees may be slow because the growth or the amount of fallen timber only changes over a period of years. If change is rapid, monitor more often. For example, the results of weed control may show up quickly and monthly or seasonal monitoring may be appropriate.</p>
Where to monitor	<p>This partly depends on what is being monitored:</p> <p>In management units where the aims are to increase some particular qualities;</p> <p>In management units where there are particular problems, such as a serious weed invasion.</p>
How to monitor	<p>Use the same method each time, so that results can be compared.</p> <p>Use a monitoring technique that matches the land managers' ability, aims, desired results and available resources. At first, monitor one or two features of the site. Over time, it is possible to add to the monitoring program.</p> <p>Clearly identify the monitoring points on the site to ensure that the monitoring site can be easily located again.</p> <p>Identify the monitoring locations on the map and include photographs, sketches and notes in case the identifying markers on the site are lost.</p>
Recording results of monitoring	<p>Records need to be kept of activities, issues relating to the site and incidental events (for example, bushfire or trampling) regardless of the monitoring method used. Other useful records include photographs, weather data, graphs and analyses of the monitored information.</p> <p>These records will assist with periodic review of the management plan. An analysis of the information can show whether management activities have been applied, were appropriate and if so, whether the desired results were achieved.</p> <p>Make notes of what is being monitored and why this is taking place, so that other people can understand it and follow the methods used and the results recorded.</p>
Interpreting results of monitoring	<p>Compare new data with earlier data on a regular basis.</p> <p>Interpret or obtain advice on the possible reasons for change.</p>

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