

CHAPTER 4

CONSERVATION OF TEMPERATE NATIVE GRASSLANDS

Conservation Objectives for Temperate Native Grasslands

At present all native grassland communities would be considered to be 'Critically Endangered' or 'Endangered' across their range (adopting the taxon ratings of IUCN 1994). The massive depletion in area and fundamental changes in environment and management that have occurred since 1770 means that even without further loss these communities will always be threatened. The goal of grassland conservation should reflect this reality.

Goal

Improve the status of native grassland communities to Conservation Dependent through permanent or long-term protection and management across their range.

Immediate Objectives

- Increased area of high priority native grassland permanently protected in conservation reserves;
- Increased area of high priority native grassland on private land protected by covenants or long-term management agreements;
- Increased area of high priority native grassland on public land protected by long-term management agreements;
- Improved management of native grassland areas across all land tenures;
- Increased community involvement in the management of native grasslands;
- Increased knowledge of the distribution and composition of native grassland remnants, especially on private lands; and
- Recognition of native grassland conservation in regional landuse planning and conservation strategies.

Best Practice

A systematic and comprehensive conservation program for temperate native grasslands will include five main elements:

- Knowledge gathering and processing;
- Priority setting;
- Strategic planning;
- The means for conservation; and
- Stewardship and management.

Few grassland conservation programs adequately address all these elements.

Without a comprehensive approach effective long-term conservation of high quality grassland remnants will be unlikely to be achieved and on-ground outcomes are likely to be limited or short-lived.

A discussion of the individual elements required for grassland conservation follows.

Knowledge

Successful surveys do more than catalogue species and sites: they provide the basis for conservation action. In designing (or commissioning) surveys, therefore, defining the ultimate objective of the program is of paramount importance. Surveys will generally only be relevant for actions at the same scale. A bioregional program may fail to meet local information needs and may similarly not account for variations across land tenures. Similarly, a survey of roadside remnants is likely to be misleading if the results are interpreted in relation to private land.

Surveys of temperate native grasslands should identify and define species, vegetation associations, communities and features that are worthy of conservation. In addition they should either assign a level of conservation priority to sites or provide a framework for making such assessments. Surveys should also be predictive of what may occur on unsurveyed sites through analysis of flora and fauna with regard to environment and management (see Lunt 1995).

The most influential surveys for temperate grasslands have been:

- 'Landmark' surveys at the state or national level that provide inspiration for broadscale action and engender community interest (eg. Hyde 1995; Kirkpatrick *et al* 1988; McDougall & Kirkpatrick 1994).
- Bioregional or sub-regional surveys incorporating all land tenures that provide the basis for developing reserve systems or for determining conservation priorities and strategies (eg. Benson *et al* 1996; Robertson 1998; Diez & Foreman 1997; Sharp & Shorthouse 1996; Rehwinkel 1997).
- Targeted surveys for particular features or programs (eg. Maher & Baker-Gabb 1993; Barlow 1996).

Comprehensive survey coverage is an unattainable goal although it can be approached where surveys are conducted in a limited area over several years (eg. Sharp & Shorthouse 1996; McDougall *et al* 1991, 1992). Accordingly all surveys must clearly state limitations and provide accurate assessments of spatial and temporal gaps. Statements that imply completeness (where this is not the case) will reduce public confidence in the results and may also lead to the loss of important remnants that are omitted.

Sporadic flowering of grassland species and poor knowledge of recovery of species and communities following disturbance makes reliance on survey data problematic. Ideally, surveys should be updated over a period of years but this is seldom practical. Accordingly, conservation priorities may develop over time. A corollary of this is that all areas of native grassy vegetation should be regarded as significant (if threatened with irreversible change) until demonstrated to be otherwise. Development of full inventories of sites or species should not be regarded as a prerequisite for action or for assigning priority: this will only delay protection, perhaps indefinitely. Rather, inventories should be viewed as tools for assisting with the development of management strategies or for refining reserve systems following the protection of initial priority sites.

The value of surveys will be dependent in large part on how the results are communicated to those most affected. Detailed and comprehensive maps can make a substantial contribution to the effectiveness of communicating the location and the scarcity of high quality remnants (ie. Diez & Foreman 1997).

Surveys that have been most successful in leading to conservation outcomes have been those linked to, or followed by, ongoing extension programs. The Trust for Nature (Victoria) has consistently linked surveys of private land with regional programs (including Grassland Stewards) to good effect. Similarly, the instigation of WWF projects in the Monaro and South Australian Mid-North followed extensive surveys of those regions and provided opportunities to fulfil the recommendations of those reports and seek protection for identified sites.

Integrated research programs, such as the Victorian Research Advisory Group and the ACT Grasslands Recovery Plan Research Program, can be efficient mechanisms for gaining and ultimately disseminating knowledge of the distribution, composition and management of native grassland systems.

BEST PRACTICE – KNOWLEDGE

The most effective grassland surveys:

Include all land tenures;

Include both flora and fauna values;

Are predictive of what may occur on other (unsurveyed) sites;

Identify those sites, communities and species that are the most significant for conservation; and

Are part of a broad strategy and linked to extension programs.

The current knowledge of the distribution and composition of remnant native grasslands in all regions is sufficient to commence specific actions to protect high priority sites. The development of full inventories of sites or species is not a prerequisite for conservation action or for setting priorities.

Priorities

The conservation (or biological) significance of a site is a scientific and social concept that can be determined on objective criteria. Setting priorities for conservation, however, is a practical process determined by the overall conservation objectives.

Assigning conservation priority to a site or a set of sites can only be resolved in the overall context of the sites that exist and the attributes they possess. In essence, 'priority' is a measure of how much the protection of that site or feature contributes to achieving immediate objectives and the overall conservation goal. In particular, if this site is not protected (or indeed if it is destroyed entirely) can these values still be adequately protected with the remaining sites? This notion of *irreplaceability* provides a useful basis for the design of reserve systems and the determination of conservation priorities (Pressey *et al*, 1995).

At a regional level, priorities will be based on the information available and on the major conservation themes operating. A number of approaches are possible including the use of focal species (Lambeck 1999), umbrella species (NSW NPWS *in prep*), iterative ranking according to threatened flora (Kirkpatrick 1983; McDougall & Kirkpatrick 1994), and the presence of particular features or communities (eg. Gippsland Red Gum Woodlands).

The Department of Natural Resources and Environment in Victoria is developing Guidelines for assigning priority to native grassland sites with funding from the National Reserve System Program (Grassland Significant Sites Documentation Project, see Muir 1996).

Similarly, as part of the program for developing the National Reserve System, DNRE have commissioned desktop studies to identify those sites that can make the most important contributions to protected area networks for the Volcanic Plain and Victorian Riverina Bioregions (Ross 1999; Todd 1998). The aim of these projects is to identify candidate areas for establishment as public land protected areas, and to identify core areas or clusters, comprising both public and private land, for complementary management to maximise protection of biodiversity.

The ACT Recovery Plan (ACT Government 1997a) ranks sites according to whether they constitute 'core areas' required for a comprehensive, representative and adequate reserve system and discusses appropriate protection mechanisms in that context.

Depending on the criteria used, absolute conservation significance may be strongly related to land tenure or site type. For example, the vast majority of native grasslands with high floral diversity on the Victorian Volcanic Plain are found on public land. The conservation values, actions and messages applicable to these small regularly burnt sites will be quite different to those for larger grazed sites on private land, the protection and management of which is also essential to overall biodiversity conservation in this region. Accordingly, except where a program is aimed at a particular feature or land tenure, priorities should reflect the range of conservation values, actions and messages required in a region.

In most grassland regions, virtually all remnants are of conservation significance. The statement that some are of a higher priority may have some bearing on the conservation of 'lower' priority sites either by diminishing enthusiasm for their protection or by encouraging the view that low priority sites are expendable. The language used in assigning and describing priority can therefore be important.

Native grassland conservation programs should aim to address the protection of sites that are the highest priority for conservation in the region or for the community or species concerned (eg. Prober & Thiele 1998). The priorities selected must be on a 'no regrets' basis. There is unlikely to be sufficient capacity in any region to protect all known native grassland sites through active means. The protection of the highest priority sites may provide impetus and inspiration for protection of the remainder.

The degree or immediacy of threats facing a site or a class of sites may be a factor in determining conservation priority but should not drive actions. The type and level of threat will, however, be an important component in determining appropriate mechanisms for protection.

BEST PRACTICE – PRIORITIES

Although all remaining areas of native grassland are valuable there is unlikely to be sufficient capacity in any region to protect all known native grassland sites through active means. Therefore conservation priorities should be determined based on the contribution particular areas make to achieving immediate objectives and the overall conservation goal.

Native grassland conservation programs should aim to address the protection of sites that are the highest priority for conservation in the region or for the community or species concerned.

A variety of approaches can be used to assign priority including focal species, umbrella species, iterative ranking based on threatened flora and fauna and the presence of particular features or communities.

Priorities should reflect the range of conservation values, actions and messages required in a region.

Strategy

Lambeck (1999) provides a comprehensive summary of the two broad approaches to nature conservation in production landscapes: General Enhancement and Strategic Enhancement:

General enhancement, which attempts to maximise the number of indigenous species retained or, alternatively, to minimise the number lost within constraints imposed by other landuse objectives.

Strategic enhancement, which aims to ensure the persistence of particular species, groups of species, or all species that currently occur in a landscape ...

The objective of the first type of approach – to maximise the number of species retained, or to minimise the number lost – is an open-ended objective. It ... does not specify targets which can be used to assess success or failure. ...

Approaches based on retaining or reintroducing specified components of the biota can be considered to be 'strategic' because they require specification of the landscape elements and management regimes that are required to meet a specific objective. They are more rigorous because they have quantifiable outcomes by which we can judge the effectiveness of our actions.

Native grassland communities have been so fragmented and diminished that their conservation depends upon particular elements and features being specifically targeted.

Adoption of Strategic Enhancement approach requires a certain level of knowledge of the biota. Accordingly, while the application of this approach is to be favored for temperate native grasslands, it is dependent on the existence of identified priorities based on surveys.

A strategy sets out how priority sites and features are to be protected and targets achieved. The approach followed will be strongly dependent on the distribution and tenure of sites involved and the threats operating on those sites. The strategy will outline the organisation(s) that will take a lead role, the partnerships required, the barriers to be overcome, specific outcomes for the program and the resources (including people) required.

Clear objectives must be identified for native grassland conservation and applied to all grassland programs (see *Conservation Objectives*, above). Strategies should include measurable indicators of success, with targets set to measure how projects address the immediate objectives of native grassland conservation.

In future all projects for the conservation of native grasslands should include clear evaluation criteria based on indicators from regional and state biodiversity strategies, action plans and the Natural Heritage Trust. Specifically, these criteria should relate to how these projects address the immediate objectives of native grassland conservation. Performance measures could therefore include the total area protected, number of management agreements completed, areas fenced, populations of significant species protected, managers of high priority sites met with, and so forth. These measures should be assessed in relation to the project's stated aims and with regard to the total area of grassland remaining and total number of relevant sites.

The exact mix of approaches taken to achieve conservation objectives for temperate native grasslands will depend in large part on the threats that are operating within the region concerned. In systems where the threat of outright destruction is minimal, but integrated, ongoing management is important then the major requirement will be the development of a suitable framework for protection and providing appropriate incentives to facilitate its adoption (eg. Grassy White Box Woodlands, Gippsland Red Gum Woodlands). In other regions, landscape scale processes and development are such that even protected remnants will be threatened or their values diminished unless there is adequate recognition given to nature conservation values in regional landuse planning.

Whatever approach is taken the fundamental basis for the strategy should be how priority sites and features will be protected in the long-term. All aspects of the strategy, including further survey, research and extension, should be directed at achieving that overall goal.

Recovery plans developed for lowland grasslands in the ACT (ACT Government 1997a) and being developed for Plains-wanderer (NSW NPWS *in prep*) provide model approaches for written conservation strategies. They aim for the protection of priority sites, include specific outcomes for different types of sites, how those outcomes will be achieved and what further actions are required. Similarly, the Trust for Nature (Victoria) Grassland Stewards program has followed a comprehensive and successful strategy to identify and protect areas of native grassland and grassy woodland on private land.

The community should be closely involved in the development of all strategies as many of the actions will either be performed by them or require their support. Strategies should also recognise that building relationships, trust and capacity within the community all take time.

Two outcomes are necessary for permanent protection of remnants:

- A change in the land status, tenure or property rights of the land through reservation, purchase, covenants, or other permanent management agreements; and
- Effective management of the land in perpetuity.

The protection of priority sites and features will establish 'icons' for native grassland conservation in grassland regions. These icons can then be used to promote native grassland conservation and appropriate management (see below *Kuma Nature Reserve*) and act as a catalyst for grassland conservation in the broader landscape. Icons are a tangible sign that native grasslands have value and are valued.

The conservation 'message' from icons must be consistent with the general message for conservation throughout the grassy landscape. This suggests that a range of sites will be required to ensure that all values, management styles and tenures are represented.

The protection of relatively intact remnants is fundamental to grassland conservation in all regions. High quality remnants provide the only sanctuaries for many rare and threatened species, a reference point for restoration programs, a source of genetic material, and an opportunity to study grassland ecology. They may also have substantial aesthetic values. A high proportion of such remnants is found on road and rail reserves, cemeteries, Travelling Stock Reserves and on Commonwealth land: significant nature conservation gains could be achieved by reviewing the status and management objectives of these areas. It will be essential, therefore, to institute mechanisms for long-term conservation on public land as a major part of the overall grassland strategy.

Crosthwaite (1997a) estimates that very few privately owned properties in south-eastern Australia (300-500) support native grassland with high conservation values. The number of these sites that would be a high priority for conservation is likely to be fewer still. This analysis is consistent with bioregional studies (eg. Maher 1997; Todd 1998; Ross 1999; Benson *et al* 1996; Robertson 1998). If high priority sites on private land were afforded long-term protection through acquisition or binding management agreements, they would make a substantial contribution to achieving the overall goal for native grassland conservation. As the absolute number of priority sites on private land in any one region is quite low, specific actions can and should be developed to identify and protect these areas within an overall strategy.

BEST PRACTICE – STRATEGY

Grassland conservation programs should adopt a Strategic Approach to biodiversity conservation through concentrating on achieving protection for priority sites.

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Means

The means to achieve conservation objectives are:

- a) People – active involvement of land managers and the community through targeted education and extension.
- b) Mechanisms to achieve the change in property rights or land status (eg. purchase, covenant, management agreement, regulation, reservation).
- c) Incentives to undertake and maintain management for conservation purposes.

People

Well-delivered extension programs are fundamental to the success of all elements of grassland conservation, from collecting and disseminating knowledge to promoting the acquisition of reserves. However, extension programs must be directed towards achieving tangible outcomes if they are to be ultimately successful.

There are a number of excellent extension programs for native grasslands in south-eastern Australia. In general these are operated by organisations that are either non-government or at arms-length from government such as WWF, Greening Australia and Trust for Nature (Victoria). In most of the areas where these extension programs are operating, knowledge of conservation is low and there are few government extension programs. Indeed, it could be argued that these programs are most successful in areas where 'competing' advice is lacking. These non-government extension services have become more important in light of cuts to government extension staff in many regions.

Extension officers have just as significant a role to play with regard to public land. In particular, they can assist in identifying key sites and obtaining the support of local communities for land acquisition and covenanting programs and seek enforceable management agreements with government and semi-government bodies to protect native grasslands on public land.

There is no doubt that extension is a specialist job and that an understanding of community dynamics and personality types is essential. There also appears to be some value in using local people as extension officers. This will not always be true, as much will depend upon the standing of that person in their local community. In any case, the benefits of being local are not a substitute for good extension skills.

Grassland extension programs should run for a minimum of three years although experience has shown that longer periods will often be needed to secure long-term conservation and to ensure that knowledge is transferred to the community and to responsible authorities. Trust, local knowledge and continuity of advice should be maintained by ensuring that the same extension officer is employed throughout.

All extension programs should include a component of incentives for conservation action.

It is vitally important that extension officers act outside their 'comfort zone' of landholders who are already 'converted' and who actively seek information. Extension programs must seek to influence the management and protection of all high priority sites rather than just those that are readily protected.

Greening Australia has developed a program called "Learning from farmers" whereby conservation minded farmers encourage other landholders to adopt similar practices. The Tasmanian recovery plan process is considering a similar scheme in which landholders that manage grasslands under a conservation management agreement would be employed as 'mentors' in their local community. These mentors would be supported by ecologists and provide an important information exchange between landholders and government agencies. It is proposed that the concept of mentoring in a partnership with professional conservation managers could replace direct liaison with government representatives.

Similarly, the Grassy White Box Woodland project of Community Solutions has recently employed four local landholders as Action Liaison Officers (ALOs). The ALOs are the primary contact point for land managers requiring advice and assistance in identifying and assessing remnants, developing management strategies to integrate conservation within whole farm management, and for incentives available for conservation actions.

Broadscale education and media programs will not protect remnants in themselves. However, they can be useful in extension programs in:

- Achieving political support for grassland conservation at all levels;
- Establishing contact with owners of remnants; and
- Generating community support for individual programs or sites.

In the past decade a wealth of written material has been produced on native grasslands and their management. These include popular texts and field guides (Kirkpatrick *et al* 1995; Lunt *et al* 1998; Marriot & Marriot 1998; Eddy *et al* 1998), management guidelines (Barlow 1998; DCE & VNPA 1992; Diez & Foreman 1996; Dorrough 1996) and many pamphlets and information sheets. There is still perhaps a need for further information that is specific to certain regions (notably the Riverina). A more pressing need though is for this information to be delivered effectively to landholders and government agencies.

BEST PRACTICE – PEOPLE

Well-delivered extension programs are fundamental to the success of all elements of grassland conservation.

Extension programs should aim to generate long-term protection for high priority sites on both public and private land.

Grassland extension programs should run for a minimum of three years although longer periods will often be needed to secure long-term conservation and to ensure that knowledge is transferred to the community.

All extension programs should have access to suitable incentives for maintaining or adopting conservation management.

Extension is a specialist job requiring an understanding of community dynamics and personality types.

LESSONS FROM GRASSLAND EXTENSION PROGRAMS

- Whether you are trying to influence a farmer, a local government, semi-government organisation or a politician, only talk to them about native grasslands in the grassland concerned. *“If you can make them see the native grassland once, they can’t NOT SEE IT in the future”.*
- Use ‘cold calling’ (contacting owners directly without prior contact) where necessary to target owners with significant remnants
- Always ask people what they know first. Ask the owner about the site: find out what they know about it, how they manage it and why they have kept it.
- Use maps showing the original and current distribution of native vegetation as tools to demonstrate the importance of remnants.
- Develop appropriate extension messages that are targeted for native grassland and native pasture.
- Farmers may have very low knowledge about native flora, BUT conservationists know less about farming. Some understanding of the rural industry and farm life is essential.
- Build capacity within communities by “training the trainers”. Use other groups such as Landcare and Field Naturalists as a means of educating the community and spreading conservation messages.
- There is general lack of trust between ‘the conservationists’, ‘the government’ and ‘the farmers’.
- Where grasslands have been destroyed through poor management or deliberate destruction use this in a positive way to teach the community about grasslands and encourage protection of other remnants.
- Actions speak louder than words. The motivational and educational value of on-ground projects should not be underestimated.
- Promote the characteristics and naturalness of treeless grasslands by highlighting the rich variety of forbs and grasses present in many grasslands. Do not use abstract concepts such as ‘beauty’.
- Be clear and honest about what you are trying to achieve, what you would like farmers to do, and how you can help them. Anyone perceived to have a changing or hidden agenda will not be respected.
- Most landholders require practical advice on identification and management of remnants and the importance of maintaining ecological systems.
- Non government extension officers will usually be more successful for private land conservation.

Mechanisms

Even where there is clear recognition of the values of native grasslands by landholders, grasslands on private and public land will continue to be lost to land clearance or be degraded unless action is taken to ensure their long-term security.

A range of protection mechanisms must be adopted including land acquisition and private land agreements backed by incentives to encourage voluntary partnerships to protect biodiversity on and off reserves. In some instances, private land agreements and incentives may be the only option available to protecting biodiversity in a region.

Regional Plans

Regional vegetation management plans have the potential to be the most equitable and effective approach to meeting broad vegetation management objectives. Such plans would also be the most appropriate way to establish an operational definition of duty of care. However, they must include suitable criteria for biodiversity conservation if they are to be effective. Acceptable levels of agricultural development should be set in each region with requirements for biodiversity conservation and sustainable land use underpinning those decisions. It has yet to be demonstrated that regional plans are effective and useful additions to existing measures for achieving biodiversity protection

A regional plan (such as that being developed by the Western Riverina Vegetation Committee) with landowner participation will be more effective in the long-term than *ad hoc* protection on a site by site basis. However, regional planning exercises may lead to 'trade offs' of lower priority grassland areas in order to secure high priority sites through long term agreements with landholders.

Regulations

Vegetation retention controls apply to native grasslands in Victoria and South Australia, with regional grassland plans operating to limit clearing in New South Wales. Unfortunately these controls appear to have had little impact in halting the decline of grassland communities. A number of factors have minimised their effectiveness:

- Vegetation controls can be circumvented, for example by intensive grazing that makes accurate assessment impossible;
- Landholders may not recognise that native grasslands are present or are unaware that a permit is required;
- Disincentives to comply, including promotion of introduced pasture and cropping by government and industry;
- Breaching regulations may be very profitable depending on the proposed activity;
- Adverse reaction to or fear of controls has reputedly lead to deliberate destruction of grasslands (Benson 1997); and
- Failure or reluctance of government to properly enforce controls.

Young *et al* (1996) comment that, "other mechanisms rely on a substantial underpinning of government regulation for their effective implementation", and that where possible such regulation should be precautionary. They identify the risk of irreversible loss as a key indicator of the need for regulation. However, they also argue that to halt irreversible or threshold threatening biodiversity loss, all mechanisms and instruments should be used and that in virtually all situations, a mix of instruments will be more effective than any single instrument.

Regulations are an essential element of the range of mechanisms required to protect grasslands and will in many cases be necessary to prevent destruction of important remnants. However, while regulation may be effective in some instances in limiting the deliberate removal of vegetation, it can not on its own bring about or maintain appropriate management. A duty of care approach will also be inadequate, as many significant native grasslands will require management that goes above and beyond this duty. Self-interest is not likely to drive conservation: farming systems based on managing native grassland for conservation goals may be profitable in some cases, in others they will most certainly not be.

Management Agreements

In broad terms, a management agreement is a contract between a landholder and a third party regarding the use and management of their land. Entry into agreements is generally voluntary but, once entered, may be binding in perpetuity. Management agreements can play two important roles in conserving biodiversity. Firstly, by changing property rights a management agreement limits or changes a landholder's ability to exercise one or more entitlements to land use (for example, by restricting grazing rights). Secondly, management agreements put in place mechanisms for developing a plan of management that secures the management intent of a particular site and places management activities in an adaptive framework.

Binning and Young (1997) define three broad types of management agreements:

- *Landowner-initiated agreements.* Landholders with a strong commitment to vegetation protection are encouraged to voluntarily enter into agreements to ensure ongoing protection of vegetation they value.
- *Transition agreements.* Policy or legislative change is accompanied by incentives that assist landholders in meeting new vegetation management obligations. The emphasis is on equity so as to retain landholder support and motivation for the transition to a new management standard.
- *Unique-site agreements.* Management agreements may be used to secure conservation for priority ecosystems that are of high conservation value.

Covenants and easements are instruments that restrict a landholder's ability to exercise particular rights over their property. Most covenants and easements are voluntary and can be for a fixed term or can operate in perpetuity, binding any successors in title. Generally speaking, easements allow someone other than the owner to use a resource, while covenants prevent the owner from acting in certain ways. Common law covenants are generally restricted to negative action and usually can only be enforced by a party that enjoys a benefit under the covenant. Statutory covenants are established through legislation and can prescribe both positive and negative actions. Covenants can be carefully targeted and offer considerable scope for establishing buffers, corridors and protected areas.

A number of such instruments currently operate for long-term protection of conservation values on private land in the various states. It can be argued that some of these are inappropriate where ongoing active or complex management is required for the land. For example there are very few Heritage Agreements for native grasslands in South Australia and such agreements do not, at present, allow for grazing to continue even as a management tool. The possible use of covenants to protect grasslands is seen by many landholders in Tasmania as placing unfair constraints on property management for future generations (Gilfedder & Kirkpatrick 1995). Voluntary Conservation Agreements in NSW are viewed with a degree of caution and scepticism (Elix & Lambert 1997) due (largely) to the provision of powers for the Minister to unilaterally change the conditions of the agreement. In addition there are concerns regarding the permanence of such agreements and the likely implications on this encumbrance on the future management and for later resale.

On the other hand, the number of Trust for Nature (Victoria) covenants that cover native grassland and grassy woodland areas has grown considerably as a result of the Grassland Stewards/Grassland Advisers Programs.

It is worth noting from experience in NSW, South Australia and Victoria that many landholders will, with some encouragement and assistance, readily set aside 10-20 hectares for conservation of native grasslands, especially on relatively unproductive areas of their properties. Commitments to long-term protection of larger or (potentially) more productive areas appear to be much harder to gain.

The perceived unsuitability of some existing mechanisms may suggest the need to develop new approaches. The use of easements to protect conservation values has received little attention in Australia to date but could prove to be a useful mechanism for protecting significant grassland areas. In the USA, easements over the conservation values of land can be acquired by non-government or government organisations with tax benefits possible if an easement is donated to an agency or conservation body (Young *et al* 1996).

Generally speaking, easements are restrictions on the title of land that allow someone other than the owner to use a resource. They are most commonly used for conservation by purchasing the development rights over land to retain certain features that are of value to the contracting party. Most easements are voluntary and can be for a fixed term or can operate in perpetuity, binding any successors in title. Easements do not restrict ownership or sale of the parcel, although purchasing an easement constitutes partial ownership in some sense.

In the United States easements are used to not only prohibit or limit the density of development, but also to require additional landowner work (eg. soil conservation and weed control) or monitoring particular types of plants, animals and habitat. Purchases of easements are made by both public and non-profit organisations and the use of easements has increased greatly in recent years. For example, the Nature Conservancy's cumulative easement activity quadrupled between 1986 and 1996. The mixing of public, non-profit and private funds for easements is also growing.

Crosthwaite (1997a & 1997b) has developed a partial budget approach for assessing appropriate valuations of the cost of retaining native grasslands on farms. Such valuations will be important in determining suitable values for easements and for incentive programs. In a similar vein, Barlow (1999a) proposes a simple subsidy per hectare for landholders that manage native grasslands for conservation values.

Covenanted properties are still likely to require a degree of management advice and assistance as well as regular inspection. As Binning and Young (1997) contend, management agreements must both achieve and retain strong landholder commitment through governments (or other contracting organisations) demonstrating their commitment by providing funding and service.

Effective management agreements are therefore built upon a partnership between the landholder and a contracting organisation that enters an agreement.

This ongoing commitment to the 'partnership' and monitoring for these schemes must be considered in developing conservation programs. The Trust for Nature (Victoria) has established a stewardship fund in anticipation of the long-term cost of maintaining a positive role in the management of areas under covenant. Similarly, Greening Australia in the Riverina is considering partnerships with other organisations such as universities and community groups to assist with monitoring and maintaining fenced areas under management agreements.

The test of effectiveness of management agreements and indeed regional plans is how areas that are not subject to development are managed in the future. Even now it is apparent that it is not so much the extent of clearing that is important but getting the best management out of what is not cleared. High quality management on private and public land with objectives developed at a regional scale will be required to ensure that overall diversity is not lost through poor management. Management agreements that provide clear benefits to the landholder and take advantage of their expertise in land management will be most likely to succeed in this regard.

The role of long-term management agreements is not restricted to private land. Public authorities and local government can also enter into such arrangements to achieve conservation objectives. A notable example of such agreements is the Memorandum of Understanding between the Department of Defence, Environment Australia and Environment ACT for the protection of threatened species and communities on Defence land in the ACT. Public Authority Management Agreements under the Victorian *Flora and Fauna Guarantee Act* and Voluntary Conservation Agreements in NSW have been developed for cemeteries that support important grassland and grassy woodland remnants. Flora and fauna surveys of Travelling Stock Reserves in the Riverina and the Monaro are being conducted with a view to developing management plans and protecting conservation values.

There is no question that small public land areas that support native grassy ecosystems require better management in all regions. Management agreements will assist in achieving this. However, although these agreements will be between government and local government/government authorities/government departments they must still be in the form of a partnership and there must still be some incentive for the land manager to enter into and maintain the agreement. This incentive may in some cases be simply assistance and advice with fulfilling a statutory or public service obligation, but in others similar levels and types of support to that offered to private landowners will be required (see below *Monaro Remnant Native Grasslands*).

Acquisition and Reservation

Thackway and Creswell (1995) found that most bioregions in which temperate native grasslands are found have relatively low reservation levels and, with few exceptions, high levels of bias within the existing reserve system. As a result the conservation of native grassland communities has generally been regarded as a priority for the National Reserve System Program.

In the past three years a number of highly significant grassland areas have been added to the National Reserve System. Together they represent the most important advance in native grassland conservation in south-eastern Australia. Despite the considerable capital cost, there is little doubt that acquisition and reservation of large, relatively intact areas is the most effective means of ensuring long-term protection for native grassland communities.

For example, the purchase of a property of some 1,280 hectares supporting native grassland and grassy woodland communities at Terrick Terrick in northern Victoria and its protection as part of a National Park has substantially improved the reservation status (and the conservation outlook) for a number of grassland conservation values (Lunt *et al* 1999; Robertson 1999). These include:

- The largest area of Northern Plains Grassland in Victoria;
- The largest population of Plains-wanderers in Victoria;
- The largest known population of the Hooded Scaly-foot in Victoria;
- The only Victorian populations of Annual Buttons and Pepper Grass;
- Possibly the largest Victorian populations of three other flora species; and
- Populations of a large number of flora and fauna species previously unrepresented within National Parks in Victoria.

Acquisition and reservation provides a level of certainty for grassland conservation that is unlikely to be achieved through any other means. Such certainty allows for long-term management planning and research but just as importantly provides a presence for native grassland conservation in 'mainstream' conservation planning and public recognition of the importance of protecting these communities. Survey and modeling of known populations of Plains-wanderers indicates that both a network of suitably managed refuge areas on private land and a large reserve (of the order of 20,000 hectares) are necessary for the long-term survival of the Plains-wanderer in NSW (NSW NPWS *in prep*).

Acquisition has been recommended as a major action for grassland conservation for several years. McDougall and Kirkpatrick (1994) recommended that the Commonwealth provide \$20 million to the states to purchase or covenant significant grassland remnants. They cautioned that acquisition of one or two reserves was insufficient and that any such program must be based on floristic representation.

To facilitate the purchase of high priority sites the necessary approvals and funding should be obtained on an in-principle basis either for specific sites or for a class of sites so that conservation objectives are not frustrated by inability to act within the short timeframes of the open market.

It would appear from other regional studies that the approximate figure for reserve purchases arrived at by McDougall and Kirkpatrick remains a reasonable estimate. The major impediment to conserving native grasslands through acquisition is, therefore, not so much a matter of cost but that many owners of high priority sites are not willing to sell their land. This may be because of the site's values to their farming system, the loss of future opportunity or a fear of what may happen to the land in government ownership. The use of leaseback and other management arrangements with owners may be one option to assist in encouraging sale.

Purchase of high priority sites for conservation by non-government or similar organisations (including Trust for Nature (Victoria) and the Australian Bush Heritage Fund) may overcome a reluctance to sell to governments. Free from the normal government processes, these organisations can act quickly and decisively to secure important areas that come onto the open market, or negotiate openly with landholders. The involvement of private organisations both increases the range of options available for protection and the potential funding available for grassland purchases. The development of innovative strategies to promote nature conservation to

the private sector, including philanthropic trusts, may well prove to be as valuable for native grassland communities in Australia as it has been in the United States.

Above all, sites that are acquired for conservation should be promoted as providing models for the protection and sustainable management of native grasslands on all tenures. The benefits of dedicated reserves can be substantially increased through management agreements with adjoining landholders to provide buffer zones and complement these formal reserves (see below *Merri Creek Grasslands*).

Protected Area Networks

Binning & Young (1997) suggest that:

*A series of **Protected Area Networks** should be established which include all public and private land managed for conservation. The Network would provide a mechanism to account for and provide formal recognition of the contribution that land outside the formal reserve system makes to the conservation of Australia's biodiversity.*

In regions with highly fragmented natural landscapes all of the available mechanisms will play a role in securing conservation of priority sites for biodiversity conservation. The end result will be a variety of sites in a variety of tenures: a network of public reserves and private land managed in sympathy – a “protected area network” (Prober & Thiele *in press*; see below *Grassy White Box Woodlands, Gippsland Red Gum Woodlands*). Such networks will also be necessary where a number of sites are required to fulfil conservation targets for reserve systems due to the loss and modification of natural communities (see Todd 1998; Ross 1999).

Concerns have been raised that 'private reserves' or reserves based on management agreements will not provide the same security as public reserves and may not preclude future land uses such as mining. To guard as far as possible against this, all protected areas should have site specific agreements and management plans that address the objectives of the National Reserve System and assign a specific IUCN category to the site (ANCA 1996). Management should also be coordinated across the Protected Area Network by a single organisation and existing auditing and inventory arrangements be extended to cover private land areas (Binning & Young 1997).

BEST PRACTICE – MECHANISMS

A range of protection mechanisms including reservation, acquisition, covenants, easements and other land management agreements is required to encourage voluntary partnerships to protect biodiversity on and off reserves.

Regulations to prevent clearing of native grasslands are an essential safety net in all regions. However, regulations on their own will not bring about or maintain long-term management for biodiversity.

Acquisition for conservation (whether by government or by private organisations) of relatively large or intact areas is the most effective means of achieving long-term protection for native grassland communities.

Significant gains in reservation status can be achieved by reviewing the status and management of high priority sites on public land.

Management agreements can often be secured for native grassland areas especially on relatively unproductive parts of properties. However, innovative incentive schemes may be required to secure agreements over large or potentially productive areas.

The use of conservation easements should be investigated as a tool for native grassland conservation.

Long-term management agreements should also be used to pursue conservation objectives on public land.

Protected Area Networks provide an effective answer to the problem of developing adequate reserve systems for highly fragmented communities. All protected areas should have site-specific management plans and agreements and overall management should be coordinated across the Protected Area Network by a single organisation.

Incentives

While there will be benefits in some situations of retaining native pasture/grassland for agricultural purposes, absolute management for nature conservation will almost always require some sacrifice in agricultural production or a loss of future opportunities. These costs must be recognised if effective mechanisms and incentives for native grassland conservation are to be developed. Failure to recognise agricultural costs, especially by overstating or generalising the potential benefits of retaining native grasslands, risks alienating farmers and farm advisers who might otherwise be willing to assist with conservation.

It is clear that more than education is needed to change behavior. A major program of incentives is required if the *status quo* is to be maintained, if not improved.

The question is what form these incentives should take. Options for targeting incentives are discussed by Crosthwaite (1997a; 1997b; see below, Economic Benefits of Native Grassland on Farms). For properties that have native grasslands of high conservation significance, a targeted approach based on the circumstances of the individual property is essential. Incentives should be linked to structural change to achieve long-term farm viability and secure protection for native grassland.

Incentives targeted at the conservation site have been successful in several areas where the threat to the site is relatively remote or low or the cost of conservation is manageable. Management agreements have been successfully negotiated with many farmers in New South Wales and Victoria through fencing incentive schemes. Such schemes (coupled to rate rebates in some instances) have been effective in securing long-term protection for relatively low cost.

However, in other circumstances, incentives that consider the whole farm situation will be most appropriate. This will include payments to assist development of other areas on the property or changes to farming systems or the farm business that will alleviate economic pressures to develop native grasslands.

Payment to landholders for opportunities foregone does nothing towards integrating native grassland into the farm management system. Improving the capacity of landholders to achieve this integration, and improving the robustness of their system to cope with difficult times or changing economic circumstances, is the surest way to achieve conservation objectives. (Crosthwaite 1997a).

Major themes that must be addressed in developing incentives programs for conservation are (Crosthwaite 1997a):

- Identifying and resolving conflict between public programs which may lead to disincentives to management in accordance with conservation and land management goals.
- Assistance for farmers to acquire knowledge and develop appropriate skills relevant to managing native grasslands and farm businesses.
- Promotion of a duty of care which incorporates pasture and vegetation management standards which are generally accepted within local communities as being fair and reasonable.
- Reward to farmers for the provision of conservation services over and above the duty of care.
- Use of management agreements to protect sites of particular conservation significance.

Farm business advice may help the owners identify strategies to achieve their income and other goals while protecting the grassland. If alternative sources of income, on or off farm, are identified, the cost to government of incentives, management agreements or covenants might be significantly lower.

In Gippsland, the offer of Trust for Nature (Victoria) services of surveys and ongoing management advice coupled with fencing incentives and rate rebates is fundamental to the ongoing success of the program.

Similarly, Elix and Lambert (1997) recommend the development of a package of measures (tool kit) for private landholders that includes:

- Practical information and advice on the significance and management of remnants;

- Provision of incentives for integrated management that includes a strong conservation component;
- Provision of fencing subsidies contingent on entering into management agreements; and
- Development of a 'stewardship' scheme.

Recently announced tax incentives for philanthropy are likely to have a significant effect on nature conservation. Tax deductions for the market value of property donations worth more than \$5,000 to approved conservation and heritage groups will now be allowed, regardless of when they were purchased or acquired. A capital gains tax exemption will also apply to gifts of property bequeathed from deceased estates.

BEST PRACTICE – INCENTIVES

Absolute management for nature conservation will almost always require some sacrifice. These costs must be recognised.

More than education is needed to change behavior: a major program of incentives will be required.

For properties that have native grasslands of high conservation significance, a targeted approach that considers the whole-farm situation is desirable.

Incentives aimed at the conservation site can also be successful where threats to the site are relatively low and the cost of conservation is manageable.

A 'toolkit' of incentives should be developed in each region that includes practical information and advice, suitable incentives for conservation management, fencing subsidies and an ongoing stewardship scheme.

Stewardship

Perhaps more than any other ecosystem type, the long-term conservation of native grassland communities and their constituent species are dependent on the maintenance of regular, high quality, strategic management.

Protection through management agreements or reservation for conservation will not in itself ensure conservation. At present, grassland communities in all regions are undergoing a loss of diversity due to poor or insufficient management.

The most important aspect of grassland management is that it should focus on outcomes. Issues of naturalness are largely irrelevant in most grassland communities. Rather, managers should aim to achieve specified objectives of diversity, structure and habitat by the best means available.

In many cases this will be by ensuring that existing management practices are maintained. This is of particular significance for small, high quality sites on public land where social and institutional changes may lead to dramatic shifts in management or to no management at all. The effects of intensification of landuse at the landscape scale will also pose particular problems for the future maintenance of biodiversity at such sites.

Nowhere is the application of effective management more important than on newly acquired reserves. Public (and political) perceptions of and acceptance of grassland reserves in agricultural regions will be largely decided by reactions to initial management. Managers of new reserves have generally adopted a cautious approach to change with the continuation of (existing) stock grazing (albeit in sometimes modified form). Many such reserves have also used Committees of Management with local landholder input to promote better understanding of the management of sites and the requirements for conservation of existing values. Development of formal Interim Management Statements can also provide a useful mechanism for ensuring that all actions are consistent with the most recent information on management (see Foreman 1997b; Ross 1998).

Management agreements for private and public land conservation are important tools for developing the concept of 'stewardship' (Binning & Young 1997). Stewardship depends upon a cooperative approach where both private and public benefits are achieved. In general this will entail the identification of rights and obligations for both the landholder and the contracting party. Management obligations under such agreements are borne jointly by both parties.

The development of management guidelines on either a site specific or regional basis requires careful consideration. Hobbs and Yates (1997), in developing 'general' guidelines for managing woodland remnants, found that assessing the problems is relatively easy, but deciding what to do is more difficult. They found that the degree of specificity required often depends upon the level of awareness or knowledge of the likely users. They concluded that the development of a general set of guidelines that can be modified on the basis of knowledge of local conditions and species requirements may be useful.

A number of management guidelines have been developed for grassland regions (Barlow 1998; DCE & VNPA 1992; Diez & Foreman 1996; Dorrough 1996; Lunt & Morgan 1998b).

Lunt and Morgan (1998a) recommend the adoption of adaptive management principles for all native grasslands managed for conservation. They emphasise that learning from management outcomes should be a specific objective of conservation management and that management should be structured in such a way that assessment is possible. They argue that it will prove to be far more cost efficient and effective to integrate research issues with management, rather than to maintain the two as separate activities.

The Konza Prairie Research Natural Area in Kansas may provide some inspiration for further development of model approaches for grassland conservation. The site is divided into sub-catchment units to study the long-term changes in environmental conditions under a variety of management scenarios. Long-term integrated studies of the effects of grazing, fire and mowing, genetic variability, nutrient cycling, dynamics of wildlife and plant populations, and so forth are conducted across the reserve. It is hoped that by studying the ecology of a natural prairie landscape that insights can be gained for the efficient management of land in the future.

While it may not be possible to devise a single site program based on the Konza model, long term integrated management research programs across grassland conservation reserves throughout south-eastern Australia may serve a similar purpose.

BEST PRACTICE – STEWARDSHIP

Effective management agreements must both achieve and retain strong landholder commitment by developing a partnership with the landholder.

A genuine commitment is required from government or other contracting organisations to provide ongoing advice and resources.

Grassland management should focus on outcomes – achieving specified objectives by the best means available.

Adaptive management principles should be adopted for all grasslands managed for conservation.

Sites that are reserved for conservation should be promoted as models for the protection and sustainable management of native grasslands.

BEST PRACTICE MODELS

The Grasslands Stewards/Advisers Program of Trust for Nature (Victoria) provides the most complete model of how a grassland conservation program can operate. The program is based on the philosophy that long-term conservation on private land requires a change in property rights and effective management in perpetuity.

The key elements are:

- Identify significant remnants through surveys;
- Establish one-to-one relationships with the owners/managers of those remnants;
- Seek permanent change to tenure through covenants, purchases or other mechanisms;
- Maintain the same extension workers for the period of the program;
- Maintain extension programs for a minimum of three years;
- Use non-government (or similar) organisations rather than government agencies to build relationships with private landowners;
- Use incentives to encourage and reward conservation;
- Develop networks of protected areas on public and private land; and
- Develop a stewardship fund to provide on-going support and advice for managers of protected areas.