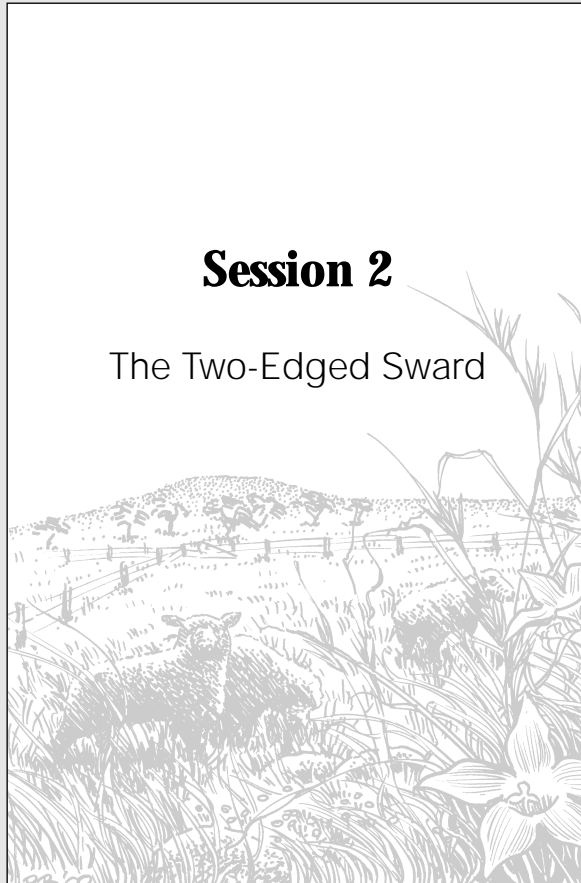


## **Session 2**

### The Two-Edged Sword



# Native grasslands – a South Australian perspective

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It is well known that the Mid-North of SA was largely native grassland at the time of white settlement, but it is not so well known that there are large areas of both grassland and grassy woodland remaining on the steeper slopes of the series of ranges that run through the Mid-North. These areas—estimated to be about 500,000 hectares—are utilised as hills grazing and are not considered to be very productive.

My family owns a farm that has a large area of degraded grassy woodland, and our challenge is to run an economically viable farm utilising this area of degraded native grasses.

The predominant grasses are Spear Grasses, Wallaby Grasses and Kangaroo Grass. In common with almost all the other farmers using this type of grazing land, our land has suffered from our lack of knowledge about the plants we are managing. Our past grazing practices—large paddocks set stocked throughout most of the year—have led to a decrease in quality and biodiversity of these pastures, and to a corresponding downward trend in productivity.

With new information on native grasses and their management, we are in the process of changing our grazing regimes to encourage the regeneration of the native grasses, to improve their utilisation, and to increase the biodiversity of our grassy woodlands so that we have a more sustainable grazing system.

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*Keywords: production, overgrazing, education.*

The explorer Edward John Eyre travelled through the Clare district on his way north in July 1840 and reported very favourably, describing it as a 'valuable grazing district, with grass of an excellent description, and of great luxuriance' (Eyre 1845). Eighteen months later my great-grandfather and his brothers settled here, building their head station some 10 kilometres north of what is now the township of Clare.

My great-grandfather started out with 2,500 sheep, and 20 years later his flocks had grown to 87,000 sheep running over a large area of leased country to the north and west of Clare—the typical South Australian squatter. Until the 1870s, those sheep were shepherded across the leases as natural water points allowed and penned into portable sheep folds at night for protection from dingoes—that is, they were rotationally grazed across the available land.

My great-grandfather grew rich on wool, and his descendants remained predominantly sheep farmers until the mid 1990s when poor wool prices forced them, along with most farmers in this area, to intensively crop their arable land.

Family members own several paintings depicting the countryside as it was on my great-grandfather's property within a few years of settlement and these landscapes are easily recognised today. The eucalypts remain on the higher ground, but the she-oak has disappeared and the open plain of the valley floor, which would have been native grasses, was ploughed up and replaced by pastures and crops many years ago. This is typical of what has happened throughout the Mid-North of South Australia.

Remnant grasslands and grassy woodlands remain on the 8 small parallel ranges of hills extending north-south through the Mid-North, while the valleys are cropping land. Early survey maps show that the higher rainfall areas, such as the area around Clare where the predominantly winter rainfall is about 500 mm, are typically eucalypts on the higher ground, she-oaks on the lower ridges, and open grassland in the valleys. On the drier ranges such as those around Burra and Mt Bryan, where the rainfall drops to 400 mm or less, there were few if any eucalypts, the she-oaks and acacias were in scattered groves and the grasslands were more dominant.

Our farm, due north of Clare, is approximately 60% non-arable open woodland, and this is predominantly SA Blue Gum (*Eucalyptus leucoxylon*) and Peppermint Gum (*E. odorata*) with a grassy understorey that is grazed by sheep and cattle. The remaining 40% of the farm is arable and at present is continually cropped with a rotation of cereals, legumes and Canola. There are creeks and rocky ridges running through the arable ground, which have grassland and grassy woodland on them, and it is on these small patches that we have the greatest diversity of native plants. Altogether I have found 113 species of native plants, all occurring on these islands in the arable ground—the grazed land only has about 13 species and 4 of these are trees. We have also seen 100 species of birds and we have small populations of both Euro and Western Grey Kangaroos, the odd echidna, brushtailed possums, six species of bats, and many feral species (including a large herd of fallow deer) that we could well do without.

We graze our animals on the crop stubbles in summer and put them into the hill paddocks after the autumn break, leaving them there until harvest. So, effectively, our native pastures are set stocked from April until December, a practice in line with most other mixed farms in the Mid-North. Since wool prices collapsed, most farmers here have turned to high input, continuous cropping on every hectare they can in order to survive. Ten years ago, at the end of the wool boom, 70% of our gross farm income came from our sheep enterprise, today it is about 20% and cropping now provides the major part of our income. This increase in cropping income is the result of continuous cropping using a high input system. But while our turnover has increased dramatically, our profits have not and we have come to the conclusion that this system is not sustainable in the long term.

I used to think our grassy woodlands were in pretty good order and felt pretty smug about the biodiversity of our farm, but that was in the days before I became a Native Grassland Extension Officer with the World Wide Fund for Nature (WWF)—and I learnt to look at the ground! I now realise that my grassy woodland is in trouble. The pressure of the last 8 years of set winter stocking in the woodlands is showing and we are now seeing a drop in production from this area, with a correspondingly rapid increase in annual weeds. There has been a dramatic drop in the size and

number of native grass tussocks and the forbs have almost completely disappeared, except for a few hardy, obviously unpalatable ones like Variable (Corrugated) Sida (*Sida corrugata*), Grassland Wood-sorrel (*Oxalis perennans*) and Pink Bindweed (*Convolvulus erubescans*).

And we are certainly not alone. Every grassland or grassy woodland I have seen in the Mid-North—with a few notable exceptions—is in the same trouble. I believe there are three main reasons for this:

1. **We do not value our grasses.** Farmers of the past two generations have almost been brainwashed into believing the grasses are almost valueless as pasture plants. SA Primary Industries and the small seeds industry have done a fantastic job promoting legumes—medics, clovers and, to a lesser extent, Lucerne. It hasn't helped that the two major crop weeds here—Wild Oats (*Avena barbata*) and Ryegrass (*Lolium spp*)—are grasses, or that Ryegrass hosts a nematode that causes annual Ryegrass toxicity, which is fatal to livestock grazing on infected Ryegrass. The message has been that grasses are troublesome weeds and have to be eradicated, and legumes are God's gift to grazing animals.
2. **We have forgotten how to manage perennial plants.** Our farming systems are geared to annual production. Our crops are annuals, our legume pastures are annuals, and we think annually—that is, in production years rather than long term. Except for small areas of Lucerne, I doubt that there has been a perennial pasture sown in the Mid-North for the past 30 years and most of what existed before that has long gone. Native grass pastures are predominantly perennials and need different management. We have been unconsciously selecting for annuals and that is why our grasslands are being overrun by weeds such as *Erodium spp.*, Wild Oats and Salvation Jane (Patterson's Curse) (*Echium plantagineum*).
3. **Most importantly, farmers don't know their native plants.** They usually know their weeds, but very few can recognise Kangaroo Grass (*Themeda triandra*) or Wallaby Grass. If farmers don't know what plants they have, how can they hope to manage them so that they can increase their productivity?

So what can we do to help our native grasslands and grassy woodlands? Are there any solutions to the overgrazing problem? I believe there are, and some of those things are already happening:

- Educating the farmer is absolutely essential. With my fellow Extension Officer with the WWF, botanist Ann Prescott, we have visited over 80 farmers, identifying and giving them information on the plants on their properties and generally raising their awareness about native grasslands. While there are plenty of farmers still to be contacted there is no excuse for anyone not to access information. We also have Grassland Information Sheets that we give to farmers and other interested people to raise their awareness of the issues of grasslands.
- Changing farmers' grazing practices is, I believe, critical to the survival of grasslands. We need to select for perennial plants and it appears from research both interstate and overseas that the best way to do this is to use some form of rotational grazing. We need to have grazing trials running in the Mid-North so that we can have local data to show farmers which grazing systems work best in this area. The other grazing option is to use a very low stocking rate. We have seen some remarkably good grassland that has been continuously grazed at about 2.5 sheep/ha. This seems to be the rate that, in this district, allows the grassland to survive in very good to excellent condition. However, unless the 2.5 sheep/ha are growing heavy fleeces of less than 19 micron wool (which is unlikely in SA) this is hardly economic at today's wool prices. However, some people will go for this low input–low output option as it has proven to be a sustainable grazing system over the long term.
- Encouraging farmers to set aside areas with good or potentially good grassland will ensure that biodiversity of the region is increased and a seed source maintained on the farm. We have seen some excellent small areas, e.g. ridges, waterways and creeklines, that have been protected from grazing, either by fences or by being in the middle of a paddock that has been continuously cropped for years. These areas can have 60 or more species on them and it seems that, if such areas have never been ploughed, they can recover from years of grazing to become quite healthy and diverse grassland areas.

So there is hope for the future of grasslands in the Mid-North of SA.

For my family, we have looked at what we can do and made some decisions that we hope will lead to a win–win for both our business and our grassy woodlands:

- We are going to reduce our cropping to the minimum necessary for our survival, mainly because we believe that the high-input farming we have been practicing is not sustainable. We have embarked upon a fencing program to completely re-fence our grassy woodlands so that we can rotationally graze them. Instead of having 6 paddocks with an average size of 160 hectares, we will have 48 paddocks with an average size of about 20 hectares. We are already running fewer mobs of sheep so that we can rotate them through the paddocks we have now, and by increasing the recovery time between grazing we hope to increase the size and number of the grass tussocks.
- We have started to monitor our plants as well as our livestock. In the past we managed only the livestock and only noticed that there was a lot of feed or that the feed was running out. This is a very important change. By observing the plants and removing the animals before the plants are overgrazed we will give our native pastures more opportunity to be both healthy and productive.
- We can recognise our plants and manage them to give them the best opportunities. We know that we want to encourage the native grasses and we need to give them an opportunity to set seed and to establish seedlings. Now that we know their life habits, we can do this.
- Thanks to a Natural Heritage Trust grant, we are fencing off the creeks and ridges that are high in biodiversity to protect them and allow further regeneration, and hopefully provide a seed source for our grassy woodland pastures.
- Better management of our pastures should translate into cleaner, stronger, more consistent fleeces from our sheep, which should translate into better prices for our product.
- We have made the decision to stay in the wool industry and be one of the 20% highly profitable producers in that industry. Better management of our native pastures is critical to that decision.
- And we are planning that our great-grandchildren will have the option to be farmers if they choose to be, as we have had that choice. We aim to bequeath to them a healthy farm with a sustainable production system.

It is exciting to be making these decisions at a time when the value of our native grasslands is at last being recognised. There is much to be learnt, particularly in South Australia where we are lagging behind the eastern States in our recognition and management of this important resource. As both a Native Grasslands Extension Officer and a farmer managing grassy woodland, I have a wonderful opportunity to be part of this re-evaluation and I strongly believe that, as our knowledge increases, there are going to be some very positive outcomes for both land managers and conservation.

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# Native grasslands in Tasmania

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The grazing enterprises at Bangor are critically dependent on native grass species, predominantly Kangaroo Grass (*Themeda triandra*), which occur as components of grassy understories in woodlands. Careful grazing management, with summer spelling and autumn patch burning every 5-10 years, maintains the diversity and productivity of this valuable resource.

Bangor, as with many Tasmanian grazing properties, retains its native grasslands because of a combination of historical circumstances: managers who were graziers rather than farmers, relative financial stability and continuous intergenerational ownership by people who had a love of and regard for native vegetation.

Currently, the 'two edged sword' is finely balanced between the desire of owners to preserve native grasslands and the imperative to maintain financial security. The greatest single threat to native grasslands in Tasmania is the dire economic state of the wool industry. Woolgrowers are turning to cropping, cultivating arable native grasslands and increasing grazing pressures. No matter how great the desire to conserve, the need for financial viability is imperative to survival.

The solutions are varied, from an improvement in fortune for the wool industry and alternative land uses based on tourism/recreation to management agreements and covenants aimed at protecting native grasslands.

A desire by landowners to maintain native grasslands, together with management skills and financial viability, are essential if this important part of our natural heritage is to be protected.

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*Keywords: Tasmania, grazing, native grasses*

## Introduction

This paper discusses native grassland management in Tasmania generally, using examples and issues we face on our grazing business at 'Bangor' in Tasmania's south-east (Fig. 1). Bangor is a 6,200 ha property, of which 800 ha have been cleared and sown with introduced grasses and legumes, and the balance is native vegetation. The management aims are to maintain a viable agricultural, grazing and forestry business and protect and enhance the natural and cultural diversity values. Importantly, Bangor is where we live, our home, and land management practices must take account of this.

## Native grasslands

At Bangor, our native grasslands are an understory to a tree layer of varying density, from scattered Eucalypts and Acacias to quite dense forests with

closed canopies. As would be expected from such a range of vegetation types, the diversity of species is large. The major grass species is *Themeda triandra*, with *Danthonia*, *Poa*, *Elymus*, *Deyeuxia*, *Stipa* and *Microlaena* species also present. There are also a wide range of perennial and annual herbs. Most grasslands also have a range of shrubs, dominated by Acacias but including *Bursaria*, *Allocasuarina* and *Dodonaea* species among others, either as the major 'tree' layer or as a true shrub layer beneath a eucalypt tree overstorey. The major eucalypts are *Eucalyptus pulchella*, *E. ovata*, *E. viminalis* and *E. globulus*.

The native grasslands and woodlands are a vital component of the grazing capacity at Bangor. Although they account for less than 20% of the total grazing capacity of the property, they support up to 40% of it during winter (Fig. 2). From a grazing business management perspective, the native grasslands allow us to over-winter livestock that we would not otherwise be able to carry. As far as the grasslands are concerned, the fact that they are grazed heavily in winter and spelled



Figure 1. Bangor is situated in Tasmania's South East

during summer suits the growth habit of the grass species, particularly Kangaroo Grass (*Themeda triandra*), very well. Introduced pasture grasses are able to persist and reproduce under heavy grazing pressure, as they have been bred and selected for this very characteristic. Kangaroo Grass, on the other hand, does not survive if heavily grazed in its active growth phase, during summer. As can be seen from Fig. 2, grazing is minimal during these months, but increases considerably during winter.

### Tasmania in general

Native grasslands and woodlands were once widespread throughout Tasmania's midlands and east coastal areas. Large areas of what were once native grasslands have been 'improved' by cultivation, oversowing with grasses and legumes, and applying fertiliser. This, combined with inappropriate grazing management of the non-arable areas, has led to the removal of native grass species. This is particularly so on the better soil types, even where slopes are steep and surfaces rocky. In many areas, only small remnants survive as examples of what were extensive areas of native grassland.

Organisations such as Greening Australia have produced a variety of material about native grassland management, but most relates to revegetation rather than management of existing grass swards. 'City Parks and Cemeteries' published

by the Tasmanian Conservation Trust in 1988 is an excellent reference for species and communities of Tasmanian grasslands. It highlights a number of areas in desperate need of conservation, but ten years later progress has been slow.

Tasmania's fine-wool growing industry depends on native grasslands and woodlands. They provide a balance of good nutrition and country that is free of annual grasses that seed and contaminate wool. This type of wool has traditionally attracted the price premiums that have encouraged owners to maintain their grasslands as a major resource for grazing. The downturn in the economic well-being of wool growing, and the major adjustment this will cause, pose a significant threat to native grasslands. The incentive to manage them for grazing and wool production is no longer there. This has been replaced by increasing pressure to cultivate remaining arable areas for cropping and, in some cases where annual rainfall is reasonable (>600 mm), to plant trees for farm forestry.

A significant factor in the maintenance of native grasslands in Tasmania has been the stability of land ownership. The retention of large holdings, and the building of grazing management experience and expertise over generations has facilitated the retention of extensive grasslands. In many areas of Australia, the subdivision and selling of properties has frequently led to wholesale changes to management, which in turn has led to the degradation of native grasslands.

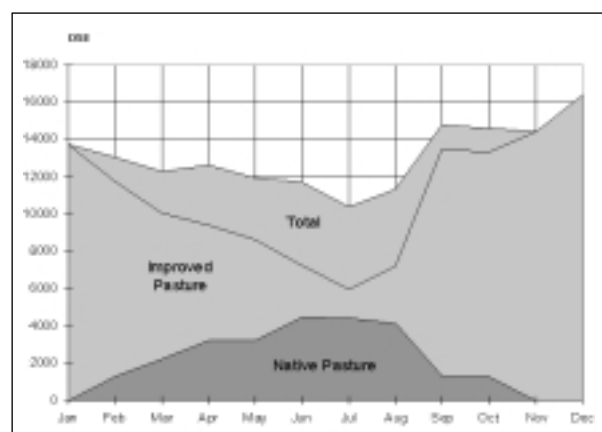


Figure 2. Average annual livestock carrying capacity of Bangor

## Management for persistence

Our experience at Bangor, gained from four generations of Dunbabin, has shown that extensive areas of grassland can be managed both as a grazing resource and an important conservation resource. Fire is an important management tool and regular burning is critical, not only in maintaining grass dominance to maximise the value of the grazing resource, but also in maintaining botanical diversity. This management closely reflects that practised by Aborigines for thousands of years. In their case they were managing to promote grasses most favourable to the marsupials they hunted, and in our case we manage for sheep and cattle.

Burning every 7-10 years during autumn in a patchwork manner ensures grass dominance by preventing ingress by *Lomandra longifolia*, Bracken Fern, *Bursaria spinosa*, *Acacia* species and a host of other native shrubs. In a trial conducted at Bangor to gauge the effect of fire in maintaining grass dominance, an area of a few hectares has been left unburned for the last two firing cycles on adjoining areas. This has resulted in a substantial increase in shrubs and small trees at the expense of ground cover plants. During recent burning of a nearby area, fire escaped to part of the unburned trial. Despite the almost wind-free conditions at the time, the extra fuel load of leaves and bark resulted in a hot fire that was difficult to control, and that caused considerable damage to smaller trees, compared to the adjacent area.

In addition to regular rotational grazing on an annual basis, it is critical to manage for seasonal variation. Native grasslands have been considered by many managers as sacrificial areas to be grazed heavily during periods of below average rainfall. This practice has been the cause of much of the degradation throughout Tasmania, particularly in the dryer areas. At Bangor we certainly utilise native grasslands more heavily during dry periods, but, most critically, also defer grazing to allow recovery during the wetter seasons that inevitably follow. This is relatively easy from a management sense as there is ample feed in other areas during good seasons. Management practices during periods of environmental instability, such as very dry seasons and immediately following burning, are the most critical. Damage to native grasslands, either in terms of reducing plant density and vigor or introduction of weeds occurs at these times.

Weeds pose a significant threat to many native grassland areas. Introduced pasture grasses and legumes as well as weeds such as thistles are quick to

establish in disturbed areas, particularly stock camps where nutrients are at elevated levels. At Bangor, we fence and rotationally graze to minimise stock camps, and are forever vigilant about weed removal. A recent introduction of Serrated Tussock (*Nassella trichotoma*) has caused major problems, particularly as without seed heads it is very difficult to distinguish from the native *Poa rodwayi*. The seeds are carried on the wool of sheep and although numbers of plants are low they are spread over an extensive area.

## What the future holds for Bangor's native grasslands

As valuable as native grasslands are in terms of offering grazing capacity in winter, there remains a large difference in the overall grazing capacity between native grasslands and improved pastures. At Bangor, our improved pastures carry between 12 and 15 DSE/ha compared with 5 to 7 DSE/ha for the better areas of native pasture, down to below 1 DSE/ha for woodland areas. The economic benefits of being able to carry between 2 and 10 times more livestock as a result of pasture improvement do not need too much explanation. For the better areas (5 - 7 DSE/ha), the benefits of input free (or at least minimal input) native pastures outweigh the lower stocking capacity. However, for areas that carry less livestock, large economic gains can often be made through clearing and pasture improvement.

To date, we have been able to expand our business without greatly impacting on native grasslands due to the advantages of growing superfine wool and grazing cattle in winter in these areas. However, if the current downturn in wool leads to a major readjustment in grazing priorities this may well not continue and we may have to look at ways of improving the productivity of native pasture areas. In some areas we have thinned the tree overstorey using stem injectible herbicide. This has been partially successful, but regrowth continues to occur and the process is time consuming and expensive. We have also conducted trials using introduced clovers and some fertiliser to improve Kangaroo Grass productivity. This has been quite successful to date, with the added phosphorus and nitrogen boosting productivity, and the careful grazing management ensuring plant persistence and reproduction. In the initial years, plant density of Kangaroo Grass was reduced as clover became established, but with time it has responded to the improved fertility and plant density has been restored.

Ongoing subdivision to enable shorter grazing rotations (or, more correctly, longer spelling periods) has greatly improved productivity of improved pasture areas at Bangor. There is no reason why these gains cannot be made with native pastures, but the increased returns are relatively less and the cost of fencing higher than for improved pastures.

Bangor is managed for a multitude of uses, including conservation and recreation. Conserving grasslands for their biodiversity values is important to us, but it does not pay the bills. Increasingly, the community is becoming interested in conservation issues and there is a growing interest in plant communities that are rare and diminishing.

We currently conduct tours for visitors at Bangor, which feature our natural and cultural heritage, and this activity may well increase in time to become a valuable enterprise.

Looking further ahead, it will be economically increasingly difficult to manage extensive areas of native grasslands unless the current trend of declining terms of trade for the grazing industry is arrested. There will be pressures to change land use, further intensification and alternative enterprises that may well be detrimental to native grasslands. If the 'community' expects their retention, then the 'community' may well have to contribute to their retention with some financial support.

### The needs of Tasmania's native grasslands

As indicated previously, there are many areas of Tasmania where native grasses once dominated the landscape that are now dominated by improved pasture and crops, with the grasslands reduced to

remnants. These areas need urgent attention to prevent further decline and to institute management regimes that will enhance their conservation values. In some cases, grazing properties still have large areas of native grasslands and all possible measures need to be taken to ensure they remain as single properties and are not subdivided. If there is a change in ownership and/or management then the practices that led to the retention of the grasslands needs to be passed on. For such properties, there should be a mechanism that enables the high conservation value areas to be retained without adverse financial implications for the owner.

There exists a wealth of knowledge among managers and shepherds who work on properties with retained native grasslands, which needs to be recorded and made available to others involved in grassland management. Much of this information is specific to the particular property, but there are many principles that could be drawn out that are not generally understood or practiced.

Many landowners have some knowledge of the management practices needed to maintain grasslands, but they have neither the finances nor the motivation to implement them. Managing extensive grazing areas is very challenging in the current economic climate and, as mentioned, is unlikely to change. Information about native pastures must be provided along with the general support mechanisms and learning opportunities for land managers. There is a large amount and variety of information available that relates to native grasses, but little of it is of practical help to graziers. The various aids to identification are very good and an important first step. However, there are many more steps that need to be made before better management practices are implemented.

# Monaro, NSW – A question of need

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*'As businessmen, pastoralists can be expected first to seek to survive, second to make profits and third to maintain productivity for long term survival. That is, the needs of the future only become important after current needs have been satisfied.'* (Young *et al.* 1985)

The Monaro is an ill-defined area extending roughly from Canberra in the north to the Victorian border in the south and bounded by the Snowy Mountains to the west and the coastal Kybean range to the east. Alec Costin's (1954) study estimated the pre-European extent of the grasslands to be about 250,000 hectares, ranging from an altitude of 600 to 1400 metres. Annual rainfall is low (between 450-700 mm), particularly in the tableland tract, which is subject to a rainshadow effect. And yes, it is bloody cold.

Ninety-five per cent of the gross value of agricultural production on the Monaro comes from sheep and cattle. Since 1967 there have only been 8 years without a drought declaration. Grassy weeds cover up to 20% of the grasslands, reducing the amount of wool cut by 1.5 million kilos.

Maybe 2% of the grasslands on the Monaro have good enough structure and diversity and are free enough of exotic species to be called high conservation value grasslands. A large proportion exists in a semi natural state—substantially modified and dominated by a small number of native perennials. It is these grasslands where I believe something close to a balance between the needs of people and the exploitation of the ecosystem where they live has consciously taken place for nearly two hundred years. Today, for most farmers on the Monaro, life is not so much a case of balancing production and conservation—but of survival.

The Monaro is therefore a place where all the contemporary questions about grasslands are in sharp focus, and maybe one day we will have some answers. But the most important questions have still not been asked, let alone answered. For example—What do we want our grasslands to look like? Is that picture compatible with the needs of the people who live there? Can everyone really share that vision? And if so, how much can we realistically influence the massive market and natural processes to create it?

This paper will use the Monaro to illustrate how our institutions have failed to respect not only the fluid nature of the grassland ecosystems, but also the multiple goals of the people who manage and live in them. And conclude that it is not so much a matter of being able to balance production and conservation, but address the reality of the current needs of people who depend on grasslands for a living, while being pragmatic about the needs of a vastly altered ecosystem.

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## Save the grasslands or save the people?

I would like to use a verse from David Campbell's poem 'The Monaro' that not only gives a feel for the stark landscape, but for the attachment of its people to that landscape.

*Willy Gray has a lover's eye  
And it goes over the twin bare hills  
And the blond paddocks to the bleached sky  
Until it has come to a thought that fills  
His mind with tenderness for this wild  
Upland country and her suckling child*

Willy Gray's love for the breast-shaped hills of the Monaro borders on a deeper dependence on the landscape. This intimate connection between landscape and people is recognised not only by poets, but also academics and politicians. However, it still doesn't translate easily into policy.

Sir Keith Hancock (1972), Steven Dovers (1986) and, more recently, George Seddon (1994) have described the historical and geographic scene on the Monaro. The relationships between the ecosystems, the human systems and the landscapes they shape

are central to the dialogue. These relationships are described as endless, unpredictable, complex, dynamic, heterogenous in time and space, with multiple causes and multiple effects.

I believe that our failure to understand the 'endless and unpredictable' relationships, and then integrate policy in light of them, has left us unable to adequately address the needs of either the grasslands or the people who use them.

While it is not hard to find a 'recognition' of the connection between grasslands and the people who manage them, we have yet to see a real attempt to integrate their multiple needs into policy. The NSW native vegetation legislation is a case in point. Put very simply, after rushing through legislation to prevent clearing of grasslands, social fairness and equity were never factored into the final product. The outcome has been policy and law that is not meeting the needs of the grasslands or people who manage them.

Efforts to get around legislation, the expense of selling unpopular policy and catching the law breakers has ended up becoming more important than the initial goal, which was to protect high conservation grasslands.

Although this may all sound obvious, we don't seem to have come far in 130 years. In a submission to a Select Committee on the Administration of Land Laws in the 1860s, my great-great-grandfather expressed 'a dislike of the subterfuges which he and his kind had been practicing'. He goes on to say that 'they would remain a necessary evil, until such time as the law was made conformable with the environmental and economic facts of life on the land.'

This is really only another way of saying that we need to better integrate economic, social and environmental policy. Until we do, we will not be able to properly address the needs of anyone.

## Background to the Monaro

It has been said that regions exist in the minds of men. Nowhere is this more true than the Monaro.

The Monaro is an ill-defined area extending roughly from Canberra in the north to the Victorian border in the south (Fig.1). The Snowy Mountains form the western boundary and the coastal Kybean range forms the eastern limits.

Alec Costin's (1954) study of the ecosystems of the Monaro estimated the pre-European extent of the grasslands to be about 250,000 hectares, ranging

from an altitude of 600-1500 metres. Benson (1994) described 8 grassland communities in his survey of the Monaro in 1994. Of the 190 native taxa recorded, only five were registered as rare or endangered. Most of his grassland sites contained more than 35% exotic species.

The distribution of these grasslands is determined more by periodic drought and low rainfall (available soil moisture) than other factors such as soil type. Costin (1954) attributes the treeless nature of grasslands on the basalt to low rainfall, high wilting point properties of the heavy textured soils, desiccating winds, frost, rapid percolation, and poor aeration.

Rainfall can be as low as 450 mm in the rainshadow areas such as Dalgety, and runs up to over 900 mm in the grasslands up on Snowy Plain. Polish explorer Strzelecki, in a despatch to Governor Gipps in 1840, refers to the extraordinary droughts of the alps area (Hancock 1972). Since 1967, there have only been 8 years without a drought declaration (Cooma RLPB 1998), leading to serious questions as to what is a 'drought' and what are normal conditions on the Monaro. Most of the Monaro has about 3 months without frost. Nimmitabel has a mean frost-free season of only 2 months.

Ninety-five per cent of the gross value of agricultural production on the Monaro comes from two commodities—wool and beef. Sheep numbers in the Cooma RLPB have averaged about 1,100,000 for the last 20 years and outnumber cattle by about 20:1 (Dovers 1986). Softwood forestry is moving gradually into the higher rainfall areas in the south—providing some structural adjustment solutions, but also some land use questions.

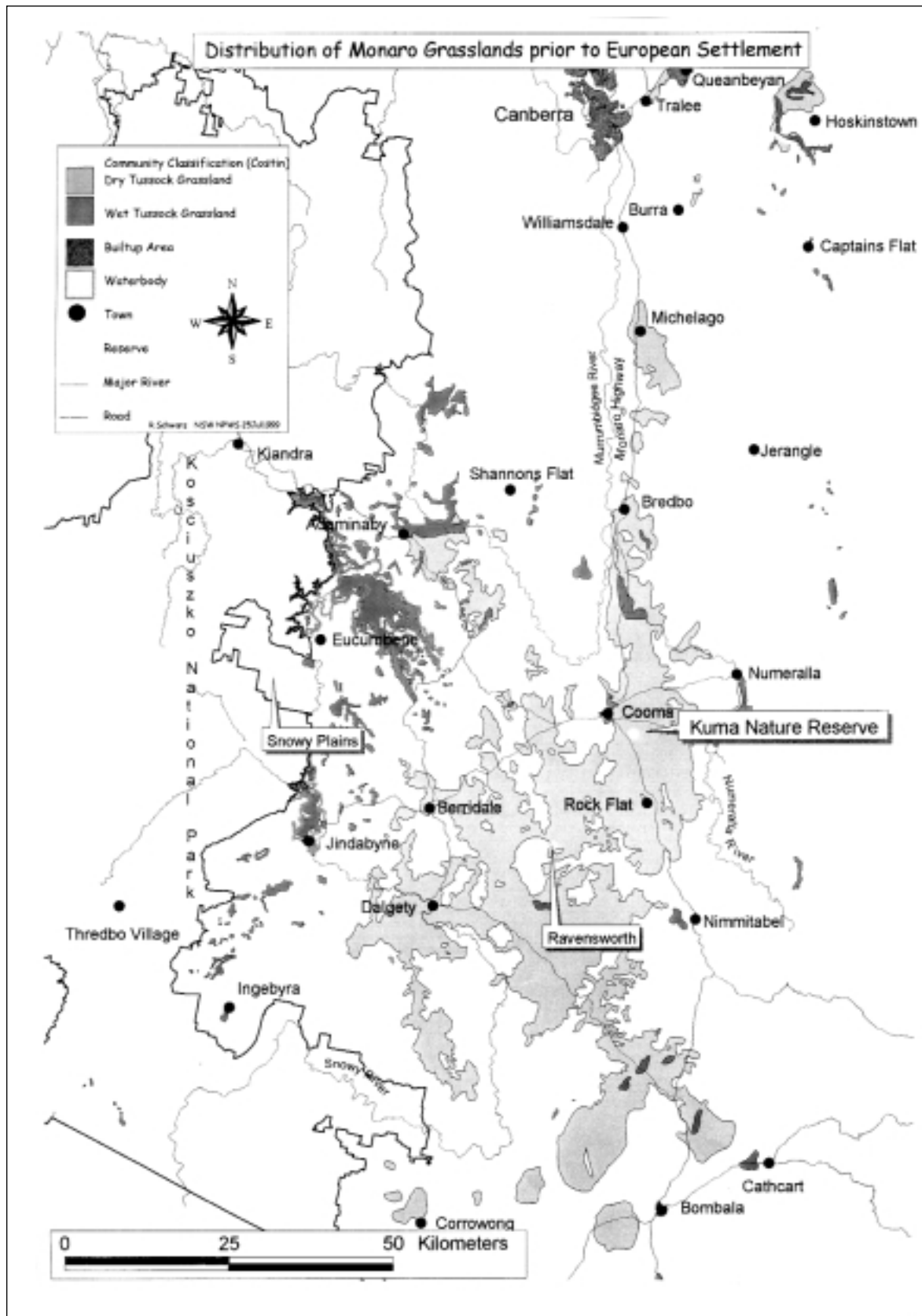
These are all reasons why Steven Dovers (1986) said—'the Monaro landscapes are not conquered ones, with humans in managed control, but places where the land user rides the limits of the setting'.

These are also the reasons why the Monaro has a character and quality that cannot be found anywhere else in the world and, in the end, makes it such a beautiful place to live.

## Landholder perspectives of conservation and production

Managing grasslands for their *conservation* value is an ecology-centred process that relates to the limitations of seed dispersal, recruitment characteristics and nutrient availability. I am having a go at this with an enthusiastic team of people who are trying to manage New South Wales' first

Figure 1.



grassland reserve, near Cooma, and I can tell you that it is not an easy task. Trying to merge my personal goals for the reserve with those of the local threatened species team has been an interesting exercise.

Managing grasslands for their production value is a human centred decision-making process that relates directly to the needs, values and goals of the manager. My family has managed grasslands for their production value for 140 years. I believe that on our farm we may have spent periods of time achieving some sort of balance between conservation and production. This is possible when using a resilient resource like our *Poa* grasslands, but may not be possible in all grassland communities.

With periodic droughts and declines in the terms of trade, we have often been pushed to the point where concern for issues like recruitment of the native species becomes less important than getting the sheep through winter. In my view, I was often just unable to balance conservation and production as well as satisfy the needs of my family, on what is considered one of the better blocks on the Monaro.

There will be as many views of what it means to balance production with conservation as there are landholders. It will depend on the equity of the landholder; it will depend on whether the farm is the only source of income; it will depend on the perceived value of the vegetation that is on the property; and, it will depend on how much you need to push that farm to survive.

Ikerds (1997) suggests that the fundamental purpose of agriculture is to shift the ecological balance so as to favour humans relative to other species. That is, to *ensure* that there is not a balance between the ecosystem and the people who use it.

We must be realistic about the capacity of professional farmers to pursue 'conservation' as a goal, even if they think it is desirable. Short-term survival comes first and profit comes second. Farmers will spend time either using or resting their resource and, occasionally, they will spend time with this in some sort of balance. *Maintaining* equilibrium (even if you could identify where it is) may not be a realistic goal over a long period of time in an agricultural system where the landholder's needs and climatic, ecological and economic processes are so unpredictable.

That should not stop people in more flexible situations from setting themselves the goal of trying to balance conservation and production. Some landholders I know are quite happy to work

towards an ill-defined point of balance between 'conservation' and 'production', even at some cost.

So what might balancing conservation and production look like? The only people I can think of at home who make decisions in the light of recruitment characteristics, energy and nutrient availability are those who have been through a Grazing for Profit school. Using the Holistic Resource Management (HRM) tools brings them close to what I think balancing conservation and production looks like. The HRM tool requires a quality of life, production and landscape goal. It is a management tool that uses the resilience and persistence of the pasture base and harvesting energy over appropriate scales of time to make a profit. There are some good lessons to be learnt from the model.

I believe the goal of 'balancing conservation with production' may be a bit like having sustainability as a goal. You will rarely know if you are achieving it and you will have trouble measuring it, but that should not stop us trying to do it.

And like sustainability, this responsibility does not start and end on the farm. George Seddon (1994) writes—'*We all exploit the land to sustain ourselves, whether we be miners or academics. The questions are not whether, but how and how much.*'

Everyone should accept some responsibility for trying to achieve this balance.

### Conservation of what?

It is quite clear that, since the initial major impacts of settlement on native species, agriculture on the Monaro has gradually changed the nature of the grassy landscapes.

Perhaps 2% of the grasslands on the Monaro have good enough structure and diversity and are free enough of exotic species to be called 'high conservation value grasslands'. Our goal should be to protect these grasslands.

Grassy weeds cover up to 20% of the grasslands (Jones & Campbell 1998) and threaten a substantial area of annual-dominant improved pastures and semi-natural grasslands. Our goal here should be to address the causes of weed invasion rather than the symptoms, and allow them time to heal themselves.

The majority of grasslands on the Monaro exist in a semi-natural state—substantially modified and dominated by a small number of native perennials (Benson 1994). While it is relatively simple to set some goals for the high conservation and more degraded grassland, there is an urgent need to identify

what our goals are for these semi-natural grasslands. Do we want to maintain or enhance the composition of these grasslands? Do we want the people who live in those grasslands to just survive or to prosper? What do we want this landscape to look like?

To add to the complexity, the high conservation and semi-natural grasslands are in a constant state of change (with occasional periods of stability) that is driven by a combination of management and unplanned natural events.

I am not sure that we can afford to have an each-way bet on what should happen to the areas of heavily modified grasslands that form the production base of the Monaro, for two reasons. Firstly, there is questionable cost/benefit in trying to protect what are drastically altered systems; and secondly, it cannot be achieved equitably at present given farmers' dependence on these systems for income.

If it *is* important to protect the status of the substantially changed grasslands, then we must provide reasons that make sense to the managers and meaningful rewards for their contribution.

### Incentives and mechanisms for conservation

Young *et al.* (1985) have written that 'as businessmen, pastoralists can be expected first to seek to survive, second to make profits and third to maintain productivity for long term survival. That is, the needs of the future only become important after current needs have been satisfied.'

Developing meaningful incentives is crucial to the long-term conservation of our grasslands, but we should be aware that farmers seek survival first and profits second.

During yet another 'drought' in the 1980s, we spent substantial amounts of money keeping our cattle alive. We were quite prepared to lose money to hold on to the genetics of our livestock. I am aware of people today who are living well below the poverty line, losing wealth until they can return to the job of feeding and clothing the world. Quality of life, pride as woolgrowers or cattlemen, and social status are all part of a powerful cocktail that, along with financial survival, drives motivation and management in grasslands.

Individuals and even institutions may not have the capacity to invest any money at all, so incentives may not be enough. In the south of the Monaro, some incentive schemes are not being taken up

because people are unable to go dollar for dollar in cost-sharing arrangements.

Despite the best intentions, some incentives are full of disincentives. The Cooma office received in excess of 50 expressions of interest in response to the Native Vegetation Act incentive scheme that forms the social 'fairness and equity' component of our State vegetation reforms (15 million dollars for the entire State). Not one local application has been funded yet and I expect only a handful will get to the line. The applications are too complex to complete and it is too difficult to qualify.

There have been a few wins—Landcare groups and individuals working with the World Wide Fund for Nature (WWF) and Greening Australia are protecting small areas of native vegetation on private property, but no one is pretending that stitching off a corner of the farm is achieving a balance of conservation with production. What these programs have done is allow people on the Monaro to build some trust, learn about the value of native vegetation and to take the first small steps. I applaud the intent of these initiatives in NSW, but I would argue that in many cases conservation is still costing people money.

It is hard to see full value being paid for food or fibre *plus ecosystem services* then properly reinvested back into the system in the near future. It is still not uncommon to go to a conference where someone stands up and says that we must get people to pay more for food at the supermarket and that they are willing to pay. The reality is that Coles, Woolworths and Franklins are at war with each other and must discount to guarantee their own survival.

In the mean time, long-term funding for a well-managed, regional network of the higher conservation value grasslands and other vegetation communities of the Monaro would achieve results quickly. Existing areas of vegetation on Crown land, travelling stock reserves, or State Forests should be the first to be included. Some of these are large areas of high value that are still being poorly managed and resourced. The network would grow slowly over time, with willing landholders committing areas to the network in return for incentives linked to the discount to production. As the network grows, acquisition and lease-back may be an option. The outcome would be a large, representative network of the region's grasslands and other native vegetation.

No matter how hard we spell out the benefits of looking after grasslands on individual properties, management will not change until the rewards of doing so are greater than the costs. We need to find and offer meaningful rewards now and stop handing the costs of retaining native vegetation on to farmers, until we come up with a better idea.

## Conclusion

Up until now, it has seemed that the policy approach has focused our science and law on the need to 'save' our grasslands. I am now confident that there is an understanding that once we have protected our highest value areas, we must use our grasslands for the greatest benefit.

This conference for me is about acknowledging that we are not trying to reconstruct our grassland ecosystems, but using them in a way that might not only retain some of their values, but also benefit the manager along the way.

So I will conclude by saying that we need to look for simple actions and get on with it where we can. We cannot afford to keep arguing about management structures and regional plans when there are potentially good outcomes just sitting there ready to happen. Taking small steps towards whole networks of vegetation, including grasslands, is a good example. We need to start with the areas of public land and with landholders who have already shown enthusiasm, rather than struggle to get everyone on board. Over time we will end up with a large enough area of sufficient quality to make a difference.

We need to develop clear goals that take away some of the confusion in what is already a complex management task. We should acknowledge the reality of the extent of modification of our grasslands, look at the costs and benefits, and adjust our goals accordingly.

The greatest value of grasslands is their incredible resilience and their low maintenance. We need to sell this value and recognise that providing financial incentives will only be part of the deal when it comes to motivating managers of grasslands.

And lastly, the grasslands are infinitely unpredictable and the needs of the managers can change as quickly as the system they live in. We desperately need good adaptive policy that integrates the economics and ecology of our grasslands, so that the goals of the people are somewhere in line with what we believe are the needs of the grasslands.

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# Native grasslands on the Victorian Basalt Plains or ‘What you value is what you get’

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The original grassy landscapes of the Basalt Plains in Western Victoria were crucial to the success of the pastoralists who started arriving in the late 1830s. The area was settled so successfully and so rapidly that no formal reserves of original vegetation were set aside.

Innovations for increased agricultural production have been a focus in this region since European settlement. The use of fertiliser and introduced pasture species, intensive grazing regimes, and off-site effects such as the invasion of pasture species and weeds into linear reserves have dramatically altered or eliminated the original grassland communities. It is estimated that 99.5% have been destroyed.

Until recently, what remained on linear reserves and on farming properties was more a matter of chance than active planning.

Significant factors are impacting on the remaining, isolated and discrete, populations of plants: there are people with a greater awareness of the grassland heritage and formal support for some conservation initiatives; there is a loss of first hand memory of the Indigenous people as part of the landscape; there are changes in farming practices, with techniques and species allowing increased cropping; there is a change in ‘land managers’, with more people with urban experience and less young people; and with low commodity prices, there is an increased economic imperative, creating pressure on farmers to define what is of value, assess costs/returns and set priorities, which may or may not consider conservation of the original grassland species.

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## Introduction

The original grassy landscapes of the Basalt Plains in Western Victoria were crucial to the success of the pastoralists who arrived in the late 1830s. The area was settled very successfully and rapidly.

I will present a farmer’s perspective of the area near Mt Elephant, a volcanic cone surrounded by basalt plains approximately 2 hours drive west of Melbourne.

The 1857 painting by Eugen von Guerard of the early ‘Larra’ settlement shows an open grassy landscape with low trees along the swampy areas and in the background the volcanic cone of Mt Elephant covered with She-oak, Silver Banksia and Wattle (Oman *et al.* 1961).

By the 1870s there were grand bluestone homesteads built with local basalt, imported timber,

and the profit from raising sheep on the excellent native pastures.

Innovations for increased agricultural production have been a focus in this region since European settlement. The use of fertiliser and introduced pasture species, intensive grazing regimes and off-site effects such as the invasion of pasture species and weeds into linear reserves has dramatically altered or eliminated the original grassland communities. It is estimated that 99.5% have been destroyed.

Now you can drive for kilometres without seeing any indigenous vegetation. There are no trees on Mt Elephant. The original forest was harvested for the Derrinallum Butter Factory, burnt in the 1944 fires, and the subsequent re-growth eaten by rabbits. There is still some native grass, and what may be the only remaining tree violet, hidden between some rocks.

## What you see is what you get

There are few community members who remember the trees, so much so that at a meeting where it was suggested that trees be planted on Mt Elephant one local commented that 'maybe that would not look right'.

Other locals, like Arthur Welfare, have included the remnant trees in what they see of the world. Arthur, a farmer, runs a small nursery that features indigenous tree species.

The area was settled so easily and so completely that no formal nature reserves were set aside. What remained on public and private land was mostly by chance.

Chatsworth Road is one example of this. In 1944, wildfires burnt Derrinallum township. Since then, the fire brigade has burnt a strategic fire-break along Chatsworth Road, to the north west of the town, almost every year. This site is now a significant example of basalt plains vegetation. Every year there is an incredibly rich display of wildflowers with, for example, yellow Snake Orchids and Yam Daisies, purple Chocolate Lilies and Swainson Peas and pink Convolvulus.

You can still find small, species-rich sites on public and private land, each with its chance history and its unique suite of plants.

On private land these sites are often 'neglected areas', unimproved pastures or places where the grazing is not too intense and small areas that were too wet or 'over the other side of the creek' and thus missed out when the fertiliser was spread or the pasture species were being improved.

In the Corangamite Catchment area virtually all of the remnant grassland vegetation is recorded as being on private land (Corangamite CMA 1999), a small amount on public land, and a negligible amount, if any, in reserves. The remnants on public land, whilst smaller, tend to contain more rare species and less weed cover than those on private land.

We cannot rely on chance to continue to preserve these areas on private land. Farming practices are changing rapidly and these remnant areas will be greatly affected by new innovations in agriculture.

With new technologies and a different economic climate, there are enormous changes in rural areas; these changes affect both the attitude to land and the actions that are taken.

For the past 100 years, grazing sheep has been an important part of local farming enterprises. These

grazing practices have become more intensive with time and there is strong pressure to increase production and to consider other enterprises.

## Sheep farmers are not building bluestone homesteads

The 1997-98 'return to assets' graph from the 1997-98 South West Monitor Farm Project (Patterson *et al.* 1999) analysis illustrates the poor returns from wool farming. The top 20% of farmers are shown to have between 6 and 7% return, while the average return for the sample is about 2.6%.

This information is from 49 farms in South West Victoria, including some near Mt Elephant. These farms, predominantly wool producing properties, were not randomly selected so the data cannot be used to represent overall averages, however, they do indicate a low return to assets for many farmers. The information collected by the South West Monitor Farm Project provides a useful tool for farmers to improve management practices and consider other industry options.

Due to high costs and poor returns, farmers are intensifying production and experimenting with other enterprise options. Changes in technology can be used by farmers to support these changes and to increase economic returns.

Improved management of pastures is an option considered by many farmers. Recent farm records from 'Titanga' (10 km from Mt Elephant) show carrying capacity of native pasture to be 2.5 sheep/ha, with un-managed improved pasture to be 7-8 sheep/ha, and well-managed improved pasture to be 12 sheep/ha.

According to South West Monitor Farm Group data, changing enterprises from wool to hay and cropping can increase the gross margin from \$144/ha to \$265/ha. So there are strong incentives to consider intensifying production or changing enterprise. This is usually at the expense of the remnant grassland vegetation.

## Some changes and the impact on remnant vegetation

### Herbicide use to allow early burning of fire breaks

This practice has many advantages to the farmer and to the community. The break can then be burnt when the surrounding area is still green, so the risk of wildfire is reduced. The break is more effective because it is put in place early in the fire season. This system needs less labour, which is very important because the number of available volunteers, particularly young people, is declining.

Herbicide can have a disastrous effect on the native vegetation. In some places, the continuance of late burning on recognised sites has worked well, particularly if there is a local person who is concerned about the site. In other areas, however, there can still be over-enthusiastic spraying.

Changed and more intensive landuse can eliminate remaining remnant vegetation unless there is a conscious effort to maintain it.

### Increased cropping

There are new crop varieties that make cropping possible and profitable in this area, e.g. Canola and Red Wheat can now be grown. There are large areas of grazing land being used that have not previously been cropped. With minimum tillage techniques, i.e. greater broadacre use of herbicide and less soil disturbance, it is easier and more economical to put in crops over a greater area. The increased cropping and management to control Serrated Tussock (*Nasella trichotoma*) has increased the removal of rocks. Wetter areas can be cropped by using raised bed cropping.

Other enterprises that have been introduced very quickly, such as Pine or Blue Gum pulp-wood plantations, can be very extensive and all encompassing, with few gaps to allow chance survival of grassland species.

## What you value is what you get

Amongst my farming neighbours many will look at the same situation and see different things.

A waterlogged area, or a wetland? One neighbour saw his swamp as valuable enough to put a Trust For Nature covenant on it before he sold the land.

'Salinity' and a rising water table, or a saline marshland? Another neighbour has just covenanted an area that other farmers consider a wasteland. She values it as a fascinating remnant plant community. She said she thought she should preserve her section of it because none of her neighbours were preserving theirs.

Silver Tussock Grass (*Poa labillardierei*) can be looked at with suspicion if it is seen as being linked to Serrated Tussock. It may be viewed in a more kindly light if it is seen as part of our ecosystem and plant heritage.

Trust for Nature figures indicate a growing farmer interest in conservation (P. Foreman pers. comm. 1999). This is, however, coupled with the impact of very rapid and broad-reaching effects of changing land management practices and increasing economic pressures.

What you value is what you get. But you do need to have the resources to manage it, this includes financial resources and the information on how to manage a site when the conditions that allowed it to survive until now have been changed.

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# Native grasslands – who needs them?

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Changes wrought by European-inspired agriculture over the last 150 years have decimated our natural grasslands and grassy woodlands, leaving them at best in a depleted and fragmented state. Current trends in agriculture, global trading policy and consumer expectation can only put more pressure on surviving biodiversity, to the point where much of our farmland may well be best described as industrial rather than rural.

Native grasslands await one of the final indignities—to be confirmed with the status of rare and endangered curiosities, closeted away and protected by well-meaning environmental enthusiasts. Will this ensure their survival? At present in south-eastern Australia's farmlands, there still exist native 'grass-scapes' of sufficient size and diversity to make a significant contribution to agriculture as well as the environment. To survive and improve, the last of these larger remnants must be grazed, burnt and generally managed with due care, consideration and concern. If native grasslands are not regarded as an important grazing resource this management will not occur.

Government initiatives have proven to be potent at changing land management practices and landscapes—the superphosphate bounty is an excellent example, arguably responsible for beginning one of the greatest landscape changes to 'improved' pastures and increasing soil acidity. An action plan is urgently required for restoring our large areas of degraded native grasslands to a condition where they are relevant to today's production systems, while still retaining their biodiversity. Positive extension of native grassland management, in particular the strategic and integrated grazing of 'exotic' and 'native' paddocks, is needed.

Incentives for landholders to undertake better management, especially periods of de-stocking, are crucial. We all may want native grasslands to survive in Australia, but unless our grazing industry sees the need for them they will continue to decline.

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Native grasslands await one final indignity—to be confirmed with the status of rare and endangered curiosities, closeted away and protected by well-meaning environmental enthusiasts. Will this ensure their survival? At present in south-eastern Australia's farmlands there still exist native grass-scapes of sufficient size and diversity to make a significant contribution to agriculture as well as to the environment.

To survive and improve, the last of these larger remnants must be grazed, burnt and generally managed with due care, consideration and concern.

If native grasslands are not regarded as important grazing resources, this management will not occur.

It must be acknowledged, however, that native grasslands rarely match exotic pastures for sheer production capacity alone. Instead, they are great landscape strategists with an unmatched genetic capacity to provide, for example:

- **economy**—with little need for inputs and natural ability for self-propagation;
- **stability**—through drought, bushfire and short periods of high stocking rates;
- **endurance and ability**—to thrive in shallow, nutrient-depleted and acidic soils under harsh climatic conditions;

- **rapid response**—to rainfall, especially during summer when evaporation severely limits growing time available;
- **soil conservation**—providing the groundcover that protects our most valuable resource from erosion, enhancing the biota living within it, and holding the rain that falls upon it.

It is the strategic use of these natural abilities that will best demonstrate the value of native grasslands to their largest custodian—rural Australians.

The vast majority of our existing native grass-scapes are not managed, they simply survive or slowly decline under a regime of set-stocking and the absence of the vital renewing processes of fire and rest.

The balance, however, are glowing examples of the ability of native grasslands to respond to positive management. Although sometimes management is more accident than by design, we must carefully consider what positive processes are at work and incorporate similar strategies into compatible remnants.

The most important management action any landholder can undertake is also by far the easiest, and simply involves—CLOSING THE BLOODY GATE! I would also recommend this action as vital to evaluating our most common form of native grassland—a degraded one.

Allowing your 'grassy patch' an early spring to mid-summer period without stock should make it pretty obvious which has the 'upper hand'—the weeds or the natives. This action will also allow vital replenishment of the native seedbank, the very foundation for any future management. It can also allow exotics and noxious weeds that are present to achieve the same result. Valuable strategies to prevent this include:

- heavy grazing prior to de-stocking, to suppress early season weeds; and
- patch spraying and/or chipping of noxious exotics and other undesirables.

A decision should be made after a minimum of 2 spring/summer de-stockings as to whether the grassland has the ability to respond to the resources available for management.

My own experience and observation suggests that species-poor, fragmented grasslands competing with exotics on higher quality soils with a history of cultivation and fertiliser are best given over to fodder crops or improved pasture to relieve the stock pressure on higher quality remnants. The

intensive inputs that would be required to recover a native grassland system under these conditions would not be economically viable and would result, at best, in an 'engineered' result.

If sufficient numbers and densities of native grassland species begin to wave in the wind and declare 'we're back', the real challenge has begun—to go down the path few have trod before of pro-active grassland management. At this stage, identification of species on-site and an understanding of their individual traits needs to be appraised. These traits include growth patterns, flowering and seeding times, grazing sensitivity, seed dispersion, placement and germination, and suitability for soil type.

By this time, fire management will have become an issue, either as a proactive regenerative tool and/or as a hazard reduction method. In my experience, rotationally grazed and occasionally burnt native grasslands are less of a summer fire risk than exotic annuals, let alone hayed-off winter crops or stubbles. In fact, many of the well-managed native grasslands will be green in summer and yet carry a good fire in the depths of winter. Fire management is far easier than many believe and is part of the intriguing genetic adaptability to the landscape that native grasslands have achieved.

All in all, pro-active management for restoring and maintaining native grasslands is quite simple—simply lock them up from early spring to mid-summer, crash graze them once or twice in between, and toss a match into them every 4 to 5 years. Easy, hey?

NOT!

We are dealing with an extraordinarily complex and sophisticated ecosystem that has adapted in different ways to every soil type, rainfall zone and climatic area that this continent provides. Good, long-term management only comes from living with your grass-scape, observing and understanding its unique identity, sharing this information with others who are doing the same, and applying the knowledge gained to your 'patch'.

As a remnant grassland becomes more robust, variations to the standard practice management are needed, such as occasionally grazing in spring and summer, or when conditions permit a hotter burn in summer. These variations can be incorporated with climatic variables, such as droughts and wet summers, and have the potential to provide strategic use of the area that benefits the rest of the farm.

At this point in time, our grazing industry is undergoing its greatest ever survival challenge. Loss of economic, social and environmental viability has many landholders considering both their future land management and traditional ideals. Changing grazing practices to a cost-effective natural resource management system is a more commonsense option than ever before.

Government initiatives have proven to be potent at changing land management practices and entire landscapes. The superphosphate bounty is an excellent example, arguably responsible for beginning one of the greatest landscape changes with 'improved' pastures and increasing soil acidity. An action plan is urgently required for restoring large areas of degraded native grasslands to a condition where they are relevant to today's production systems, while still retaining their biodiversity. Positive extension of native grassland management, in particular the strategic and integrated grazing of exotic and native paddocks, is needed.

Incentives for landholders to undertake better management, especially periods of de-stocking, are crucial.

We may all want native grasslands to survive in Australia, but unless our grazing industry sees the need for them they will continue to decline.

