

THE SIGNIFICANCE AND STATUS OF SOUTHEASTERN AUSTRALIAN LOWLAND GRASSLANDS -A SUMMARY AND UPDATE

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Introduction

There has been a recent surge of research and conservation activity directed towards the survival of the temperate lowland grasslands of southeastern Australia, our most imperilled native terrestrial ecosystem. The results of much of this work are presented and discussed by McDougall and Kirkpatrick (1994a) and Kirkpatrick, McDougall and Hyde (1995). Given the normal delays between data collection, writing and publication, these books give a picture of the state of the lowland grasslands in the early nineties. The present paper gives an outline of the significance and conservation status of lowland native grassland in southeastern Australia based largely on these earlier accounts, and describes some of the significant changes in knowledge and conservation status that have occurred during the last five years.

Significance

The maintenance of the diversity of communities, species and genotypes is an international and national goal. This diversity is most threatened in our most depleted ecosystems, because they tend to have concentrations of threatened elements.

McDougall and Kirkpatrick (1994b) summarized the Australian temperate lowland grassland biodiversity and its conservation significance, as it was known in the early nineties:

Twenty-six lowland grassland communities were identified by floristic survey of remnants in south-eastern Australia: five in the Monaro Region of New South Wales, six in southern Victoria, three in the Riverina and Wimmera areas, four in South Australia and eight in Tasmania. ...

A total of 711 native plant taxa have been found Seventy-eight taxa are

considered to be rare or threatened: 19 nationally (seven endangered, nine vulnerable, three rare), 56 at a State level (11 endangered, 11 vulnerable, 34 rare), and three of uncertain status but probably rare or threatened. At least one species has disappeared from grasslands. Two others, apparently grassland endemics, are close to extinction. Several rare or threatened animals are also associated with grasslands, although overall there have been few faunal surveys.

Since the above was written there has been a major increase in research efforts directed towards documenting the biodiversity of grasslands. The following is unlikely to be a complete listing of such work, but gives an indication of its geographic and taxonomic breadth. In Tasmania, there have been surveys of the grassland invertebrate fauna from Peter McQuillan's research group in the Department of Geography and Environmental Studies at the University of Tasmania. Invertebrate surveys have also been undertaken in Victoria by the Museum (Allen Yen) and Latrobe University (Tim New). Further work has been carried out on the Latrobe Valley and Northern Plains grasslands by the research group centred on Bob Parsons, Botany Department, Latrobe University. Michael Hyde has produced a much more detailed typology and descriptions of South Australian grasslands than was earlier available. This document is available from the Worldwide Fund for Nature, Australia. In New South Wales, John Benson and his associates from the National Herbarium have been working on the Monaro (Benson 1994) and Riverine Plains grasslands. In the ACT, the University of Canberra has been the centre of considerable research work on the biota of native grasslands. In Queensland, a major gap in our knowledge of temperate lowland grasslands is being filled by Rod Fensham and his associates at the Queensland Herbarium (e.g. Fensham and Fairfax 1996). This considerable work in progress has revealed many more elements of biodiversity in grasslands than were previously known. Many of these elements are in urgent need of conservation action, and new critical areas for conservation have been identified.

Much of the above work has been undertaken using funding from the the State component of the National Estate Grants Program. The Australian Heritage Commission has recently discontinued this program. The future lack of funding for this type of work that flows from this decision means that we are almost certain of losing nationally and internationally significant sites for biodiversity conservation through ignorance of their values.

In relation to the non-biodiversity values of lowland grassland McDougall and

Kirkpatrick (1994) wrote:

Grasslands in 1993 have a commercial value There is increasing interest in the use of grassland species in landscaping and restoration projects Remnants in the Melbourne area already provide large quantities of seed for such projects, a resource that has not been accounted for in the economic planning for urban development of private land.

Many grassland species have horticultural potential. Two forms of *Leucochrysum albicans*, which are threatened in grasslands of Tasmania and Victoria, would be stunning garden plants. A closely related everlasting was recently made "Flower of the Year" in the nursery trade and widely promoted.

The natural "wildflower display" of some remnants in spring has begun to attract school and naturalist groups. The ecotourism potential of remnant grasslands is worth investigation.

The values of grasslands and grassland species to agricultural production are also worthy of investigation. Increased costs associated with using fertilisers both on-site (the direct cost) and off-site (the indirect cost of eutrophication of rivers and lakes) may ultimately force farmers to look for less productive pasture species. Many native grassland species would be suitable for pasture and could even provide advantages over exotic species during drought. Seed production and establishment techniques need to be developed.

Since the early nineties there has been increasing interest in the aesthetic and commercial values of grasslands. For example, in Tasmania there has been an investigation of the characteristics and values of native pastures organized by Doug Friend of the Department of Primary Industry. Non-government organizations, such as the Friends of Grasslands, have been set up. Grassland species are now used widely in horticulture, being especially prominent on roundabouts and other road islands. Farmers are becoming aware of the high value of seed from horticulturally useful species.

In recent years an appreciation has developed of the historical/cultural values of our remaining grassland landscapes. These landscape have been partly created by the

nature of land use since the European invasion, and are valued by many people for the evidence they provide of pastoral activities that are now vestigial.

The Status of Lowland Grasslands

McDougall and Kirkpatrick (1994b) produced the following summary of the status of lowland native grasslands in 1993:

Of the 26 lowland grassland communities in south-eastern Australia, three are adequately reserved but none are without threats. At least one community has become extinct in the last 100 years and most have been reduced to small remnants, accounting for less than 1% of their former range.

The area of lowland grassland at the time of European settlement in south-eastern Australia is difficult to determine because early records of grassland distribution are poor and the grassland/woodland boundary was rapidly altered in most places. Estimates based on research conducted during this project put the original area at around 2 million ha. It would have been a prominent landscape feature, especially in western Victoria and the Riverina.

The current area of lowland grassland is also difficult to determine because remnants range from more or less natural (although probably somewhat altered by land use) to severely degraded. The point at which degraded vegetation is no longer a grassland remnant has not been addressed. However, the more or less natural remnants amount to perhaps 10 000 ha. This means that 99.5% of the original grassland vegetation has been destroyed or greatly altered, a catastrophe analogous in scale to destroying all the State and National Parks in Victoria, except Brisbane Ranges National Park.

In Victoria and southern New South Wales, most remnants are on private property, roadsides and travelling stock routes and reserves (Table 21). By area, private property and TSRs contain most grassland. The average private property and TSR site are also much larger than sites of other land tenure. Remnants in cemeteries, aerodromes and rail reserves are usually less than 10 ha. They do, however, have a disproportionately large number

of sites that have been assessed in this study as of great significance. This is indicative of the lower levels of degrading disturbance (eg. over-grazing, ploughing etc.) on these land types. Despite this, no land type can be singled out for conservation; action will be required across the range of land tenures.

In summary, it is clear that

- 1) lowland grasslands in Victoria and New South Wales are very poorly reserved and most communities are not reserved at all,
- 2) most remnants on Crown land are very small and / or linear, and
- 3) remnants on private land may be comparatively large but they are often of lower significance; however, in the long-term they will be critical to the survival of some grassland communities.

Private land will also be important for grassland conservation in South Australia. Half the sites identified as of greatest significance are on private land. One third are on roadsides and the remaining sixth is on Crown land, where protection is feasible.

Tasmanian lowland grasslands are better protected than most of the communities identified in this study in mainland States. Although all eight Tasmanian communities are represented in conservation reserves, only one is considered to be adequately reserved. The two most significant remnants identified are on private land and half the total significant sites are on private land.

Overall, more than half of the rare or threatened plant species recorded occur on private land (47% of nationally rare or threatened species and 52% of state rare or threatened species), emphasising the importance of private land in grassland conservation. Nine of these species do not occur in grassland on public land, although most do occur in other plant communities on public land.

This study identified a range of threatening processes. All grassland remnants are threatened by some form of degrading disturbance, even

those in permanent reserves. This is often a function of the smallness and /or linearity of remnants. However, most of the threatening processes identified are avoidable (eg. urban expansion, over-grazing, tree planting, cessation of burning, roadside cropping) if the will is there to do so. Others (eg. weed invasion) might be rectified if the resources are available. Only the less-predictable and rapid (eg. the movement of nutrient-rich soil onto remnants during drought) are perhaps insoluble.

... the continuing decline of the remaining stands is cause for great concern and immediate action. For example, of the grassland sites in western Victoria recorded by John Stuwe in 1986 and re-inspected in this study, 44% had been destroyed, severely degraded or earmarked for destruction. About half of the remaining "intact" sites had been reduced in size or degraded to some extent.

Without immediate action, the decline in grasslands will continue. A further four communities are likely to become extinct in the next two decades and opportunities for protection of the other communities will diminish.

Since 1993 there have been some promising developments in grassland conservation as well as a depressing degree of grassland depletion. In Victoria it seems likely that the Craigieburn and Terrick Terrick grasslands will be purchased for conservation, although the process is not complete. In the Australian Capital Territory a substantial area of grassland has been reserved in the last few years. In New South Wales, a process involving local landowners has been developed to try to prevent any further losses of significant sites, after short-lived clearing controls were revoked. There was a short-lived and parsimoniously-funded grassland program administered by the Australian Nature Conservation Agency, and some money devoted to grassland purchase through the National Co-operative Reserves Program. Our knowledge of the management requirements of grasslands and threatened grassland species has increased substantially (e.g. Lunt 1995; Morgan 1995ab; Gilfedder and Kirkpatrick 1996abcd).

On the negative side, the rate of clearing of lowland grasslands in Tasmania has been greater than for any other mappable vegetation type in the period 1988-1994 (Kirkpatrick and Jenkin, unpublished), with one of the most significant grasslands recognized by Kirkpatrick (1994) being lost. The rate of attrition elsewhere does not

seem to have slowed. Even in the ACT, authorities gave permission to plough up part of a reserved grassland.

Thus, we have made a promising start towards ensuring that lowland native grassland biodiversity survives for the future. However, we are still far from achieving this simple goal.

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