

UTA12 INTEGRATING BIODIVERSITY CONSERVATION INTO SUSTAINABLE GRAZING SYSTEMS

MILESTONE 6 AND FINAL REPORT

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1ST JULY 2006



native vegetation
and biodiversity

improving farm profits through biodiversity

LandWater&Wool
Shaping the future



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Acknowledgements:

We would like to acknowledge the many people who have contributed to this project. Interactions with over 50 Tasmanian wool producers, research and extension personnel from the University of Tasmania, state government agencies and other stakeholder groups have contributed greatly to the outputs and outcomes of this project. Particular thanks must go to Tom and Cynthia Dunbabin and John and Alan Cameron for allowing us to conduct research experiments on their properties.

This project was funded by Land, Water & Wool. Extensive support through the LWW network was given by Prof. Jann Williams, Mr Peter Hanrahan and Currie Communications.

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Project title: INTEGRATING BIODIVERSITY CONSERVATION INTO SUSTAINABLE GRAZING SYSTEMS

Start and finish date: 15/06/02-30/06/06

Project team members:

J.B. Kirkpatrick, K.L. Bridle, L. Gilfedder (2002-2003), L. Sherriff (2004-2005), S.W.L Leonard

ABSTRACT

Objectives

The research objective of the project was to determine the nature of the interaction of nature conservation with wool production in the run country of Tasmania. Other objectives related to the facilitation of improvement in both nature conservation and the value of wool.

Methodology

Sheep and wild herbivore exclusion experiments were used to determine the impact of sheep and wild herbivore grazing on vascular plants and invertebrates, permanent plots were set up to monitor the changes in vascular plant communities that resulted from changes in sheep grazing regimes, the vegetation and soils of runs subject to different forms of long term management were compared using quadrat data, the vertebrate fauna of a typical part of the run country was surveyed through trapping and observation, remote sensing and geographic information systems were utilised to determine changes in tree cover in the run country during the latter part of the twentieth century and to assess the potential conflict between nature conservation and production in the upper Macquarie River catchment; transcribed and qualitatively analysed discussions with the managers of 48 wool-growing properties were used to understand the ways in which graziers manage their runs and the values they attach to them, and, to develop user-friendly criteria and processes for accreditation, a group of graziers, the researchers and other interested parties held a series of discussions.

Implications

Observational and experimental research indicated that there is no one 'right way' to manage sheep grazing to promote the interests of 'nature' on the runs. One key to maintaining native biodiversity in the runs as a whole is the maintenance of spatial heterogeneity in management at the landscape scale. In contrast, it seems likely that temporal heterogeneity in management could lead to the loss of species that were adapted to the old management regime, but not the new. The interaction of fire management with sheep grazing regime was found to be critical in determining the species composition of both vascular plants and invertebrate animals. It appears that both fire and grazing are necessary to prevent increases in tree cover on those bush runs that have had their tree cover reduced by past management regimes. Discussions with 48 managers of wool-growing properties in Tasmania indicated that they manage their runs in different ways depending on their environmental circumstances and their preferences for alternative grazing and burning regimes. Thus, there appears to be no one 'right way' to manage runs for production.

There was a consensus among key stakeholders on the way in which a process of accreditation for 'green' customers for wool might progress. This consensus involved an

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accredited biodiversity plan within the framework of a property plan. Criteria included no net loss of native vegetation and maintenance or enhancement of populations of rare or threatened species.

Collaboration

Collaborators in the project included more than 50 Tasmanian wool-growers, Roberts Wool, the 8 x 5 program, DPIW, TIAR and many staff and students of the School of Geography and Environmental Studies, University of Tasmania.

Sponsors

Funding was given to the University of Tasmania by Land, Water & Wool, a collaboration between Land and Water Australia and the Australian Wool Innovation. Both of the University of Tasmania and the Department of Primary Industries, Water and Environment (now DPIW) provided substantial resources for the project.

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MILESTONE No.:	6	DATE OF FINAL REPORT:	30/6/06
LWA PROJECT REFERENCE No.:	UTA12		
PROJECT TITLE:	Integrating Biodiversity Conservation into Sustainable Grazing Systems		
PRINCIPAL INVESTIGATOR:	Name: Prof. J.B. Kirkpatrick Organisation: University of Tasmania Contact details: School of Geography and Environmental Studies, University of Tasmania, Private Bag 78, Hobart 7001, Tasmania. J.Kirkpatrick@utas.edu.au Ph: 03 62262460		
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OTHER COLLABORATORS (e.g. Steering committee members)	Collaborators included more than 50 Tasmanian wool producers, Roberts Ltd (wool brokers), the 8x5 program, DPIW, TIAR and many staff and students of the School of Geography and Environmental Studies, University of Tasmania		

PROJECT OBJECTIVES (from the Project Schedule):

1. To improve knowledge of the impacts of sheep grazing at a number of scales.
2. To create ownership by key stakeholders of Key Performance Indicators for accreditation and incentives packages.
3. To encourage the adoption of grazing regimes which maintain and enhance biodiversity.
4. To provide data to support the environmental credentials of the wool industry.

Original rationale for project

The purpose of the project was to develop and promote the adoption of viable sheep grazing systems to provide for ecologically sustainable agriculture and protect biodiversity in the Northern Midlands bioregion of Tasmania. Within this region sheep grazing is the principal agricultural activity. A key issue is the integration of biodiversity conservation into sustainable grazing systems. The Northern Midlands community has identified that there are presently no means or incentives available to protect intact natural areas on private land from agricultural pressures (grazing, logging cropping). These areas of native vegetation are of high conservation significance. Unless this problem is addressed Australia will lose these significant lowland grassy ecosystems and have depleted quality native vegetation in upland

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areas. This project aims to investigate the status and condition of grassy ecosystems within the region, and to assess the impact of current and changing land use on species and ecosystems. It aims to develop options for integrating wool production and the protection, management and restoration of native vegetation, particularly through the determination of the production cost of conservation and the development of ecologically-based accreditation criteria.

MILESTONE 6:

Components

1. Production of criteria and KPIs for inclusion into accreditation or environmental management systems as determined by industry.
2. Research on best practice guidelines and woolgrowers insights on grazing and fire completed and written up.
3. Progress report on activities against the agreed communication plan.

ACHIEVEMENT RESULTS FOR COMPONENT 1:

The following summary is an account of the development of stakeholder-based criteria for accreditation. While the aim of the project was to develop the criteria, it became obvious that it was difficult to do this in isolation, without identifying how the criteria could be delivered. Therefore discussions also focused on the process of how to deliver the criteria to the market.

The process

A stakeholder group, consisting of 12 producers, 4 DPIW staff, 2 University staff and 1 industry person (Roberts Ltd) met five times over a period of two years to develop the approach and the final product. Productive discussions resulted from all of the meetings held. Leanne Sherriff compiled records of the discussions.

The decision

Members of the group decided that the adoption of a 'Biodiversity Management Plan' (BMP), based on a similar approach taken by 'Nature's Choice' would be the preferred method of providing documentary evidence of on-farm biodiversity management. The underlying objective of the plan is to show documentation that on-farm natural values are maintained or enhanced. The document is intended to provide 'proof' of on-farm management for biodiversity gains.

The template for the BMP was created by Leanne, who based it on an existing DPIWE template. An example of the plan was developed for 'Apsley Park' where Leanne worked in conjunction with Sarah Ackland and Steve Barrington (the owners) and Andrew Hamlet (8x5), who was developing a farm fencing plan at the same time.

The BMP for 'Apsley Park' included management actions for each block of native vegetation, and estimated dates of completion of the identified works. The plan also included a monitoring section and a section to document completed works. This plan documents the on-farm biodiversity credentials of the property, the proposed management

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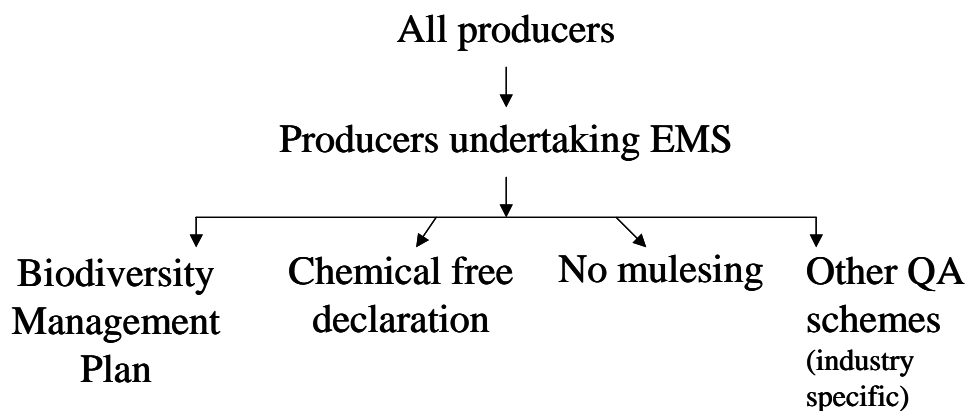
actions to enhance or improve natural values (in accordance with the aim of the plan) and provides guidance to monitoring and documenting management actions. As such the plan can be audited by an independent auditor.

Unresolved issues

Issues arose with the development of the plan and the scheme. Some of these issues are yet to be resolved, while others may be resolved by placing the BMP into a State-wide approach to documenting environmental credentials.

Many growers thought that the plan was good, but that form a component of a whole farm EMS (environmental management systems) plan. This was beyond the scope of the project, but we have looked into the development of EMS to support the BMP. Tasmania, has through the TFGA, implemented an EMS pathways project (FarmSAT) to investigate the development of EMS on-farms in the State. We have been involved in cross-project meetings that are focussed on farm plans underlain by EMS principles.

The adoption of EMS into the scheme alleviates the need for producers to meet entry requirements in order to participate. With the focus on biodiversity only, a producer would need to have a certain level of biodiversity on farm to give the plan some credence. However a tiered approach may be developed that identifies producers who have particular credentials (see diagram below). This approach lends itself to across industry acceptance, underpinned by a general farm EMS that can be augmented by other documentation (BMPs, chemical free declarations, organic etc.). A tiered system, once operating, can be refined to suit particular market needs. The framework provides the ability to identify which producer has what documentation for their product.



The bottom row could include many different schemes. Producers may do more than one i.e. have a BMP and be chemical free

The last major issue with the BMP and the accreditation system focused on being 'in' the system, tying in the criteria with the process. The underlying aim of the BMP is to maintain or enhance natural values on-farm, i.e. the 'no net loss' approach undertaken in other

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states. Many producers are happy to accept this as much of the land they manage successfully for production and conservation has little other economic use, however others would prefer to know that they are still able to develop areas of native vegetation if the need arose (this would include fertiliser inputs as well as complete conversion of native vegetation to some other use). It is understood that most producers who wish to adopt this scheme, will also wish to maintain their native vegetation (used as a surrogate for biodiversity). However, developing this into the BMP is a problem. What do we do if a producer wants to clear some land? Do they clear it and then join the scheme? Or do they join, then drop out and clear, then join again? The solution to this should be incorporated into a whole of farm planning approach, suggested during the development of EMS on-farm. The 'maintain or enhance' component of the BMP could be augmented by the 'offsets' policy being developed by the State Government. The idea of this being incorporated into the BMP needs to be discussed by stakeholders in the future.

Talks have also taken place with the LWW Rivers project to incorporate their best management practices into the system. It is hoped that a co-operative and co-ordinated approach between Tasmanian land management agencies, industries, and producers will result in the process being accepted and adopted, beyond the life of the Land, Water & Wool project.

The development of biodiversity plans sitting within a whole farm plan/EMS approach is popular and has been widely accepted by producers, Roberts Wool, NRM groups, agricultural extension service providers, and DPIW. There is a great deal of momentum associated with this approach, most of which can be carried forward by DPIW, Roberts Wool and NRM groups. A copy of the plan for 'Apsley Park' was given in the previous milestone report.

ACHIEVEMENT RESULTS FOR COMPONENT 2:

Best practice guidelines, informed by the scientific results from UTA12 and other work undertaken by the School of Geography and Environmental Studies, University of Tasmania, work done by the Tasmanian Institute of Agricultural Research and work done by DPIW, were published in June 2006 (attachment 1). The insights of woolgrowers on grazing and fire are written up in a book currently with CSIRO Publishing (attachment 2).

ACHIEVEMENT RESULTS FOR COMPONENT 3:

Communication activities involved attendance at various field days and information days, meetings with, and presentations to stakeholder groups, articles in the media (Landcare Magazine, TasCountry, Stock and Land, ABC radio), results published in research journals and delivered at conferences.

The list is as follows:

September 05

- Roofs/NRM North Landholder link – discussion on knowledge and information links for sustainable grazing practices (Tasmanian Meat and Wool Industry), Launceston 28/9/05

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October 05

- NRM North Follow up discussion, Launceston 7/10/05
- Apsley Park Field day in conjunction with 8x5, 17/10/05

November 05

- Extensive Agriculture – Agricultural Research and Advisory Committee Forum – oral presentation given, Launceston 1/11/05
- Roberts Ltd and IzWool 'Sustainable Merino' workshop for Tasmanian producers, Ross 8/11/05
- IzWool and John Noonan (Curtin University) meeting re EMS for Tasmanian Wool producers, Perth WA 15/11/05

December 05

- Ecological Society of Australia – oral presentation by Steven Leonard, Brisbane 1/12/05

March 06

- VegFutures – Conference attendance – posters presented, Albury 19-22/3/06
- Southern Australian Beef Research Council – oral presentation and attendance at NRM workshop/field trip, Hobart 28/3/06

April 06

- Attendance at Hamilton Show, Tas (fact sheets and Victorian dog collars on display), 1/4/06
- Media – Stock and Land two articles 13/4/06

May 06

- Agfest – display of LWW information (fact sheets, posters), Carrick 4-6/5/06

June 06

- Article in Australian Landcare magazine
- Campbell Town Show (Tas) (display, launch of grazing guidelines), launch covered by TasCountry and ABC radio (Country Hour) 2/6/06
- LWW Information day for wool producers, (covered by ABC country hour) Ross 22/6/06

SUMMARY OF PROJECT METHODS:

1. Sheep and wild herbivore exclusion experiments were used to determine the impact of sheep and wild herbivore grazing on vascular plants and invertebrates (sheep exclusion only).
2. Permanent plots were set up to monitor the changes in vascular plant communities that resulted from changes in sheep grazing regimes.
3. The vegetation and soils of runs subject to different forms of long term management were compared using quadrat data.
4. The vertebrate fauna of a typical part of the run country was surveyed through trapping and observation.
5. Remote sensing and geographic information systems were utilised to determine changes in tree cover in the run country during the latter part of the twentieth century and to assess the potential conflict between nature conservation and production in the upper Macquarie River catchment.
6. Transcribed and qualitatively analysed discussions with the managers of 48 wool-growing properties were used to understand the ways in which graziers manage their runs and the values they attach to them.

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7. To develop user-friendly criteria and processes for accreditation a group of graziers, the researchers and other interested parties held a series of discussions.

STATEMENT OF KEY FINDINGS, THEIR INTERPRETATION AND PRACTICAL SIGNIFICANCE AGAINST EACH PROJECT OBJECTIVE:

To improve knowledge of the impacts of sheep grazing at a number of scales

One of the major gaps in knowledge that the project was designed to fill in relation to this objective was the impact of variation in sheep grazing regimes on nature conservation values.

Our major finding is that there is no one 'right way' to manage sheep grazing to promote the interests of 'nature' on the runs. Any management regime will benefit some native species and disadvantage others. All of the many different regimes currently used on the runs can provide habitat for at least some of the many rare or threatened native species that co-exist with sheep, or are benefited by them. One key to maintaining native biodiversity in the runs as a whole is the maintenance of spatial heterogeneity in management at the landscape scale. The management regimes that allow the grassland paperdaisy to persist are very different to those required by the tussock skink. In contrast, it seems likely that temporal heterogeneity in management could lead to the loss of species that were adapted to the old management regime, but not the new.

We found that variation in grazing regimes on lightly to moderately stocked and unfertilised runs influenced the abundances of native species more than the overall species composition. However, some species were subject to local extinction with even light sheep grazing, while others only survived where heavy grazing resulted in substantial areas of bare ground. Clearing, ploughing and sustained fertilisation all reduced native biodiversity.

The interaction of fire management with sheep grazing regime was found to be critical in determining the species composition of both vascular plants and invertebrate animals. It also proved to be highly important in the processes of tree thinning and thickening on the bush runs. It appears that both fire and grazing are necessary to prevent increases in tree cover on those bush runs that have had their tree cover reduced by past management regimes. In the prolonged drought that has occurred since the late 1970s in eastern Tasmania, the trees that increase their cover in the absence of either grazing or burning are not the eucalypts, but rather wattle, prickly box and she-oak.

The main implication for nature conservation of the above findings is that fire and grazing regimes need to be adjusted to the needs of the rare or threatened species present in a management unit, as the more common species will cope with a wide range of management regimes on any one site.

The main implication for production of the above scientific work is that the reintroduction of burning into management regimes may be a desirable option to maintain pasture productivity and eucalypt cover where trees are thickening.

To understand the impacts of sheep on native ecosystems, it is important to understand how they fit within farming enterprises. Classificatory analysis of the discussions with managers of wool-growing properties, on the basis of their comments on the way they ran their enterprise, indicated that there were four main groups of graziers. The first group, the 'improved country set stockers', had high percentage frequency values for set stocking, fertilization of native pastures and the use of sagg/tussock country for off-shears and lambing. Their properties were concentrated in the Midlands, had relatively low rainfall, a high proportion of improved pasture and a low proportion of bush. The

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second group, the 'improved country rotators', had high percentage frequencies for rotational grazing, cropping, irrigation and using the bush for shelter. Some fertilized native country, but most did not state that they did so. This group was geographically widespread. Their properties tended to occur in low altitude and low rainfall areas and had a high proportion of improved pasture. Graziers in the third group, the 'high and moist country graziers', largely used a combination of rotation and set stocking, rested their runs in spring, had a growing focus on prime lamb production, had recent changes in management and mostly did not say that they fertilized their runs. Their properties occurred in areas of relatively high altitude and rainfall, and they had a relatively high proportion of bush and a low proportion of improved pasture. Those in the fourth group, the 'warm country graziers', were almost equally divided between set stocking and rotational grazing. They did not say that they fertilized native pastures, widely utilized drenching, had Saxon merinos, used their sagg/tussock country for shelter during lambing, and commonly rested their runs in spring. Their properties were concentrated at low altitude in the South East and Northern Midlands and had a high proportion of bush and a low proportion of improved pastures.

The natural environment of the individual property has many strong influences on the nature of the wool-growing enterprise. This is strongly indicated in the environmental distinctiveness of most of the groups in the enterprise classification, a classification that did not use environmental variables as inputs. This environmental distinctiveness not only pertains to rainfall and altitude, but also to the proportions of improved and bush country, which are strongly likely to reflect land capability. Different environments present different management problems, particularly with diseases, pests and weeds, and different production opportunities, such as those related to kangaroo grass, tussock grass and sagg. To a large degree graziers seem to have adjusted their activities to the environments of the properties on which they work their sheep.

Despite the importance of environmental influences on the nature of the wool-growing enterprise, there is no doubt that different graziers have developed very different systems to produce wool from runs on properties with highly similar natural environments. The 'improved country set stocker' and 'improved country rotator' enterprise groups do not occur in distinct natural environments, but rather are a product of human choice. There may be poor or good economic choices in the management of runs for profit, but there is certainly no one right answer. The choices involved in deciding such things as whether or not to fertilise, or whether to set stock, rotationally stock or cell graze, can be influenced by economic circumstances, variation in the preparedness, or need, to take economic risks, and the weight that is placed on the non-economic aspects of farm life.

The practical significance for nature conservation of the variety of ways in which wool-growing enterprises are managed, is that conservation advice has to make sense in terms of the enterprise. Advice that might suit an 'improved country set stocker' may not suit an 'improved country rotator'.

The practical significance for those who produce wool lies in an understanding of the variety of ways that problems can be solved in more or less the same circumstances. If something does not work for a particular grazier, another approach can be found from the experiences of 48 graziers (see attachment 1, chapters 2 and 3).

To create ownership by key stakeholders of Key Performance Indicators for accreditation and incentives packages

There are no key findings because this objective does not relate to research. However, the process that developed a consensus among key stakeholders on the way in which a process of accreditation might progress seemed to the researchers to be owned by those who participated in it, who included many graziers, a wool agent active in developing markets for 'environmental' wool, the researchers and DPIWE (now DPIW) bureaucrats. The consensual outcome was that an accredited biodiversity

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plan within the framework of a property plan was the best way to provide evidence of biodiversity-friendliness for potential 'green' customers, incentive schemes and regulation. The agreed key elements of minimum performance were no net loss of native vegetation and maintenance of populations of rare or threatened species, inasmuch as they are dependent on the property.

The outcomes of the above process have been fed into several other processes aimed at improving the environmental and economic performance of the wool industry, including a Statewide attempt to incorporate environmental management systems into farming systems (FarmSAT), the adoption of a property planning approach to sustainable farm management (NRM North, NRM Cradle/Coast), supporting wool producers who wish to target a niche market for ecologically sustainable wool production (Roberts Ltd). The approach of a biodiversity management plan was also well received from international wool buyers (Teko Socks, USA) and the Southern Australian Beef Research Council. As part of a deliberative social conversation they, hopefully, will contribute to the solution of the many problems of the wool producers and the nature on which their enterprises partly rest.

To encourage the adoption of grazing regimes which maintain and enhance biodiversity

This, again, is not a research objective, so there are no key findings. The interim results of our work, and that of our colleagues and students, on the research side of the project, have been communicated to stakeholders as they became available. For example, those landowners who have hosted experimental or observational work have received annual reports on the results, information days have been held and communication has taken place through the 8 X 5 Newsletter, the mass media, at rural shows and at conferences. However, it needs to be emphasised that the AVCC considers it unethical to communicate the results of research work to the public before it has been through a peer review process. It is highly unrealistic of funding bodies to expect major research work to be done, written up, refereed and communicated within 3-4 years. Of the three major pieces of work from the project that are likely to encourage the adoption of grazing regimes which maintain and enhance biodiversity, one was published in the last month of the project (attachment 1) and the other will probably be published 5 or 6 months after the end of the project (attachment 2). The remaining one, *The Nature of the Midlands* by Gilfedder *et al.*, was published in 2003, early in the project, based largely on the results of research work funded under other grants. Comments given in a recent questionnaire to producers show that some producers have indicated that they have changed their management approach in native pastures (attachment 3).

To provide data to support the environmental credentials of the wool industry

This objective would now be considered unethical. Again, it is not a research objective. However, the outcomes of the research discussed under objective 1 do document numerous examples of excellent environmental practices among Tasmanian wool growers (attachment 2, chapter 3). They also document some lousy ones (attachment 2, chapter 3). More importantly, we have documented populations of many rare or threatened species and communities in country used for sheep-grazing for more than one and a half centuries. Some species seem to require sheep grazing for survival in the present landscape. This is both good for nature conservation, in that it demonstrates that management for wool production can be compatible with the maintenance of populations of many rare or threatened elements of native biodiversity, and good for the Tasmanian wool industry, in that it has one of the world's best 'biodiversity-friendly' stories to tell about its product.

HOW WAS 'SUCCESS' TO BE MEASURED IN YOUR PROJECT?

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Objective 1: To improve knowledge of the impacts of sheep grazing at a number of scales

Incorporation of data into Best Practice Guidelines by September 2002 and into criteria for incentives and accreditation in draft form by end of March 2003 and final form by April 2006. Note that a variation of the contract extended the latter date to June 2006.

Objective 2: To create ownership by key stakeholders of Key Performance Indicators for accreditation and incentives packages

A number of key stakeholders dominated by wool producers were involved in the process. The group also consisted of DPIW, the State land management agency and TIAR (Tasmanian Institute of Agricultural Research). The producers were from properties ranging from the very large (> 20,000 acres) to smaller farms (3000 acres). Industry was represented at the meetings by Roberts Ltd, the dominant wool broker in the State. Once a biodiversity plan had been created for a property, the process was discussed with wider audiences, both producers (at field days) and other key stakeholders (e.g. NRM groups). Discussions were also held with international wool buyers, especially Jim Heiden from Teko Socks, USA. At least 30 Tasmanian producers would have been involved in discussion specifically over the development of the biodiversity plan. Over 50 producers were asked about their thoughts on environmental accreditation as this topic was included in the interviews. The subsequent links between this project and other State-based initiatives means that a much wider audience will be reached.

Objective 3: To encourage the adoption of grazing regimes which maintain and enhance biodiversity

The original measures of success, as stated in the application are no longer appropriate, as work related to vision-development and incentives was taken out of the schedules. The original idea was to provide research-based information to graziers on ways in which they could maintain both wool production and nature conservation values, so an appropriate measure of success would be the provision of such information in a form both attractive and accessible to graziers.

Objective 4: To provide data to support the environmental credentials of the wool industry

The original measures of success, as stated in the application are no longer appropriate, as work related to vision-development and incentives was taken out of the schedules. The original idea was to assess whether the industry, in whole or part, could honestly advertise their product as 'biodiversity-friendly'. An appropriate measure of success would be consensus between graziers, scientists and other stakeholders on the characteristics that would make wool 'biodiversity-friendly'.

MONITORING AND EVALUATION:

Direct, verbal feedback was sought whenever producers were given information about the research findings of any work done on their properties. Evaluation forms were distributed at the combined LWW Rivers/Native vegetation field day in September 03, the combined LWW Native vegetation and 8x5 field day at Apsley Park in October 05 and the LWW Native vegetation information day at Ross in June 06. A questionnaire was also mailed to the 50 producers who have been involved with the project. Collated responses to this questionnaire have been combined with the responses from the information day (2006) as the same questions were used. The responses from all evaluation forms are presented in attachment 3.

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As researchers our product is evaluated by peer review. This pertains to most of the papers and books that have been or will be published (marked by an asterisk in the publication list). The chapters in the major book (attachment 2) have also been reviewed by graziers and others involved in the wool industry.

SUMMARY OF COMMUNICATION, TECHNOLOGY TRANSFER OR 'ADOPTION' ACTIVITIES:

1. 5 practical fact sheets developed along with grazing management guidelines to offer best available information on managing native pastures
2. four field days/information days covering the range of topics in the project, presentations delivered to stakeholder groups as appropriate (SABRC, International Wool Buyers, State NRM agencies), information available through the media
3. published articles in peer reviewed journals, presented material at national conferences

ASSESSMENT OF ANY COMMERCIAL POTENTIAL:

There is no potential for commercially viable products, as the project was public interest research. Nevertheless, its outcomes may improve the commercial viability of those Tasmanian wool-growing enterprises that seek 'biodiversity-friendly' accreditation and has made available to all graziers various options for the management of runs that may improve the commercial viability of some.

LIST OF PRODUCTS

Including full publication details.

Fact sheets: [Our reputation for quality wool in the Northern Midlands rides on the sheep's back and on the health of our native vegetation](#)

[Managing grazing on native pastures in Tasmania](#)

[Grazing native pastures in Tasmania - the best way to manage grassy weeds in native pastures](#)

[Grazing native pastures in Tasmania - the forage characteristics and qualities of native grasses](#)

[Grazing native pastures in Tasmania - managing kangaroo grass pastures](#)

[Grazing native pastures in Tasmania - managing wallaby grass pastures](#)

* = refereed, authors in bold made their contribution as part of this project

Books

***Gilfedder L, Kirkpatrick JB**, Wapstra A and Wapstra, H (2003). *The Nature of the Midlands*. Midlands Bushweb, Longford.

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*Mokany K, Friend D, **Kirkpatrick JB and Gilfedder L** (2006). *Managing Tasmanian Native Pastures - a Technical Guide for Graziers*. TIAR, Hobart.

***Kirkpatrick, J.B. and Bridle, K.L.** (in press). *People, Sheep and Nature Conservation: The Tasmanian Experience*. CSIRO Publishing, Collingwood.

Journal articles

***Kirkpatrick JB** (2004). Vegetation change in an urban grassy woodland 1974-2000. *Australian Journal of Botany* **52**, 597-608.

***Kirkpatrick JB, Gilfedder L, Bridle KL** and Zacharek A (2005). The positive and negative conservation impacts of sheep grazing and other disturbances on the vascular plant species and vegetation of lowland subhumid Tasmania. *Ecological Management and Restoration* **6**, 51-60.

***Leonard SWJ and Kirkpatrick JB** (2004). Effects of grazing management and environmental factors on native grassland and grassy woodland, Northern Midlands, Tasmania. *Australian Journal of Botany* **52**, 529-542.

*MacDonald M and **Kirkpatrick JB** (2003). Explaining bird species composition and richness in eucalypt-dominated remnants in subhumid Tasmania. *Journal of Biogeography* **30**, 1415-1426.

***Pharo EJ, Kirkpatrick JB, Gilfedder L, Mendel L and Turner PAM** (2005). Predicting bryophyte diversity in grassland and eucalypt-dominated remnants in subhumid Tasmania. *Journal of Biogeography* **32**, 2015-2024.

Article in conference proceedings

Kirkpatrick JB, Bridle KL, Leonard SWJ and Gilfedder, L (2005). Managing sheep for nature conservation on wool-growing properties - some preliminary observations on the short term impacts of grazing regime changes. In *Grassland Conservation and Production - Both Sides of the Fence* (Eds C O'Dwer and S Hamilton) pp. 100-105. Proceedings of the 4th Stipa Conference on Management of Native Grasses and Pastures 11-13 October 2005 Burra, SA FLFR University of Melbourne, Dookie Campus.

Theses completed

Fitzgerald, M (2004). Responses of macroinvertebrate communities to altered management regimes in grassy woodland and heathy open-forest, Tasmania. BSc (Hons) thesis, School of Geography and Environmental Studies, University of Tasmania.

Jensen, A. (2004). Selecting least cost areas for conservation in rural landscapes. BSc (Hons) thesis, School of Geography and Environmental Studies, University of Tasmania.

Jones, M. (2004). Plant Diversity on Sheep-grazed Properties in the Northern Midlands, Tasmania, with Special Attention to Bryophytes. BSc (Hons) thesis, School of Geography and Environmental Studies, University of Tasmania.

Leonard, SWJ. (2003). The effects of grazing management and environmental factors on native grassland and grassy woodland in the Northern Midlands, Tasmania. BSc (Hons) thesis, School of Geography and Environmental Studies, University of Tasmania.

Scott, M. (2004). Evaluation of two methods to assess remnant vegetation as fauna habitat. BSc (Hons) thesis, School of Geography and Environmental Studies, University of Tasmania.

Vercoe J (2003). Voluntary conservation on private land: Tasmania's private reserve program: lessons and opportunities. BSc (Hons) thesis, University of Tasmania, Hobart.

Wilson D (2004). Vegetation change in the upper Macquarie catchment, between 1968 and 2002: patterns and causes. GradDipSIS (Hons) thesis, School of Geography and Environmental Studies, University of Tasmania.

Theses in progress

Green, D. Responses of soil mites to disturbance. PhD

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Leeson, K. The potential for natural revegetation after severe disturbance. PhD

Von Platten, J. The reconstruction of historic and prehistoric fire regimes using evidence in tree stumps. PhD

WHERE CAN THE READER OF THIS REPORT OBTAIN ADDITIONAL INFORMATION

If required.

PROF. J.B. KIRKPATRICK, SCHOOL OF GEOGRAPHY AND ENVIRONMENTAL STUDIES, UNIVERSITY OF TASMANIA, PRIVATE BAG 78, HOBART 7001, TASMANIA.

OVERALL, WHAT ARE THE KEY LEARNINGS – GOOD OR BAD – FOR THE LWW PARTNERS (AWI & LWA) FROM YOUR PERSPECTIVE

Good

The LWW emphasis on working with, and understanding, the graziers in the research process added enormous value to the research outputs and outcomes, in both a theoretical and practical sense.

Most of the interactions with Jann Williams, the SWAG and other researchers funded by LWW added strongly to the value of the research.

Improvable

There sometimes seems to be some misunderstanding in LWW of the nature and ethics of the research process. The research process normally works in the sequence: idea; grant application; negotiation between researcher and granting body on details of research; data collection; data analysis; writing up of data; peer review; publication; public communication/implementation; evaluation. It is considered unethical to engage in mass communication about results until after peer review. While communication of properly reviewed results and their interpretation is a necessary part of the research process, communication for advertising purposes is an extraneous activity. There is not much point in evaluating research that has not been completed and reviewed.

It is inefficient to make researchers become public communicators and evaluators. In any case these activities should take place after the investigation, peer review and publication phase is over. Having the project investigators in charge of their own evaluations involves a conflict of interest.

Partnerships, when required as a prerequisite for grants, lead to inefficient outcomes in most cases. The transaction costs are huge.

It would be interesting to have a calculation of the proportion of resources put into the LWW projects that were actually used in the critical 'data collection; data analysis; writing up of data' part of the research process. We suspect that the funders of the funders would expect it to be much larger than it is.

The politics of granting bodies should not be allowed to interfere with research projects, once they have commenced. An activity is not considered to be research if its aim is political – research has to involve an investigation that is able to come up with, and disseminate, politically 'wrong' answers.

RECOMMENDATIONS ON THE WAY FORWARD

Including how outputs could be adopted and future R&D needs identified in the project.

Continued monitoring of the plots set up under the aegis of this project is essential to allow satisfactory disentanglement of the effects of short term fluctuations in climate from the effects of management regimes. The high level of trust built up between the researchers and the wool growers could produce many more positive research and communication outcomes if the team was enabled to continue, and support the implementation of, its work by further funding (see comments from producers in attachment 4). Some subprojects that have been part of the research effort are still in the stage of analysis and write up. These include the documentation of past changes in fire regimes from

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evidence in tree stumps and a critical project that looks at the potential for natural revegetation of previously cleared areas. The principal investigators in both of these projects, both PhD students under the supervision of JBK, are currently finding it difficult to both support their families and finish the work, as their PhD scholarships have run out. Further funding would also allow the team to attract more of the honours and PhD students who have added so much value in the first five years. These students tend to want to work on projects that are thought by others to be sufficiently worthwhile to be funded.

LIST OF ATTACHMENTS:

Attachment 1: Mokany K, Friend D, Kirkpatrick JB and Gilfedder L (2006). *Managing Tasmanian Native Pastures - a Technical Guide for Graziers*. TIAR, Hobart.

Attachment 2: Kirkpatrick, J.B. and Bridle, K.L., in press. *People, Sheep and Nature Conservation: the Tasmanian Experience*. CSIRO Publishing, Collingwood.

Attachment 3: Questionnaire sent to those graziers involved in the project, and evaluation reports for field and information days.

Where possible, in addition to hard copies, **please provide electronic copies on a CD-Rom**, or URL links to journals where the whole paper isn't available.

Products/further information

- Fact sheets (6)
- Management Guidelines (1) – attachment 1
- Evaluation reports/survey forms (see attachment 3)
- Journal articles (5)
- Newspaper/newsletter/ media articles (3)
- Conference papers (1)

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SUMMARY of MONITORING and EVALUATION ACTIVITIES
(Please cross-reference responses to more detailed reports where available)

Project code and title: UTA12 INTEGRATING BIODIVERSITY CONSERVATION INTO SUSTAINABLE GRAZING SYSTEMS

Dates (over full life of the project):
 15/06/02-30/06/06

Context issues that have affected project progress and outcomes:

Towards the end of 2003, Louise Gilfedder was transferred from the Botany Branch of DPIWE to work on the development of non-forest vegetation clearance controls. LWW did not think it appropriate that she continued to work on UTA12 with her new responsibilities, as these controls were controversial among the wool-growing community. The apparent (but not real) imminence of these controls made it difficult to continue with the vision-development component of the project. Instead energies were diverted into the process of learning from graziers that ultimately resulted in the book in attachment 2.

Activities/outputs and people involved/reached

Activity and Outputs	No.	Woolgrowers involved**	Service providers	Other* stakeholders	Comments
Activities					
Field sites (where research was undertaken)	16	16			
Courses					
Workshops	2	13+12	6+14	1	Information day (evaluation of 2 nd day in June 06 questionnaire)
Field visits/days	3	Approx. 23+9+7	22+10+10	6+1+5	
Steering Committee					
Interviews	50	45		5	
Outputs (numbers)					
Conference publications (say if abstracts or full papers)	1 full paper 5 abstracts				

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Activity and Outputs	No.	Woolgrowers involved**	Service providers	Other* stakeholders	Comments
Journal articles (say if published, in press or submitted)	5 published				
Fact sheets	6	2	3		
Posters	15				Results of research used at field days, conferences and shows.
Media articles	>5	5			Stock and Land, TasCountry, ABC radio
Web sites/sections	2	0	UTAS LWW		
Tools or guidelines	1	Approx. 20 Approx. audience of 500	Approx. 10 Approx audience of 100	Approx. 10 Approx. 200	Includes reviewers Guidelines out June 30 th 06
Books	2	Approx 20 Approx. audience of 500			Nature of Midlands published 2003 People sheep and nature – not yet published
Theses	7 Honours completed 3 PhDs in progress				
Total people reached by project					

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**** Please comment on interaction with/numbers of “influencers” involved at any level:**

During the project JBK was appointed to the Natural Heritage Trust Advisory Council as vegetation expert, a position that has enabled him to communicate on matters relevant to the project with high level Australian

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government officials and the Commonwealth ministers responsible for environment and primary industries. This interaction has involved 4 individual ministers and c20 high level bureaucrats, as both are subject to rapid changeover. The other 9 members of the committee (a more stable group) are also people of influence.

With the approval of the graziers involved in discussions of accreditation processes and criteria, JBK also had discussions with influential local conservationists, on the subject of criteria for accreditation, as these would be worthless if not accepted by this group.

Key outputs or products to emerge from project of direct value to woolgrowers

<i>Key findings, information or product developed through project</i>	<i>Level of relevance to woolgrowers in project region or state (numbers of groups, hectares of land that could be impacted on)</i>	<i>Level of relevance to woolgrowers beyond region or state (numbers of groups, hectares of land that could be impacted on)</i>
Nature of the Midlands	Potentially relevant to c500 wool producers (average property size c2000ha) in Tasmania)	
Technical guide for graziers	Potentially relevant to c500 wool producers in Tasmania	Partially relevant to more than this on the Australian mainland
People, Sheep and Nature Conservation book	Potentially relevant to c500 wool producers in Tasmania	Partially relevant to more than this on the Australian mainland and overseas
Consensus on biodiversity-friendly accreditation process	Potentially relevant to c300 wool producers in Tasmania	May have lessons for elsewhere

Stakeholder Reactions – to the project and LWW in general

<i>Stakeholder group</i>	<i>Summaries and examples of reactions (for example perceived usefulness or value of activities or products)</i>
Woolgrowers	See attachment 3 – “Have enjoyed working with competent people with a sense of humour” “Whilst the debate rages on about the concept of duty of care and who should pay for maintenance of biodiversity services provided by private land, this project has helped to bring these issues out in the open and has encouraged some farmers to lead the way. Already we are seeing growing numbers of farmers looking to managing their natural resources with biodiversity and sustainability in mind and marketing that aspect of their wool. More astonishingly there are mainstream sectors of the wool industry who are providing much of the support and encouragement as well.”

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Stakeholder group	Summaries and examples of reactions (for example perceived usefulness or value of activities or products)
Service Providers	See attachment 3 – “ARM will be using biodiversity plan as basis of template for NRM projects”
Researchers	Acceptance of results in scientific journals – links to other projects
Media reaction/ interest	Good links with Jo Heazlewood – reporter for Stock and Land, ABC country hour,
Other stakeholders	see letter from SABRC

Improvement in understanding or skills in relation to program objectives

Stakeholder group	Summaries and examples of gains in understanding or skills
Woolgrowers	See attachment 3 “The revelations about Wallaby Grass have prompted me to more seriously consider managing my old and degraded pastures (improved with exotics 25 years ago) to promote the establishment and optimum production of this native grass. It has already become well established but I no longer think of it as a degraded pasture but as Lowland Grassland Complex - ½ full not ½ empty!” “try not to graze native pastures in late spring/summer”
Service Providers	See letter from SABRC
Other stakeholders	

Changes in attitudes or motivation in relation to project objectives

Stakeholder group	Summaries and examples of changes in attitudes or motivation
Woolgrowers	See attachment 3
Service Providers	
Other stakeholders	

Changes in practice or information demand in relation to project work area as a result of project information or activities

Stakeholder group	Summaries and examples of practice changes (including numbers and areas of change where applicable and known)

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Stakeholder group	Summaries and examples of practice changes (including numbers and areas of change where applicable and known)
Woolgrowers	
Service Providers	
Other stakeholders	

Broader productivity, environmental or social impacts and potential impacts of project

Key findings, information or product developed through project	Productivity benefits to date and potential benefit over the next 5 years	Environmental benefits to date and potential benefits over the next 5 years	Social benefits to date and potential benefits over the next 5 years
<u>Consensus on biodiversity-friendly accreditation process</u>	could potentially help create viable longterm specialty markets for Tasmanian wool	if adopted, will improve nature conservation management	is an acceptable solution derived largely by a group of influential graziers
<u>Nature of Midlands,</u>	none	has raised general awareness of the high value of nature in the Midlands	celebrated the people and history of the Midlands thereby reinforcing social cohesion
<u>Technical guide</u>	provides the information necessary to increase productivity from native pastures	provides the information necessary to look after the environment while utilising native pastures	recognizes the expertise of graziers through a series of ‘grower perspectives’
<u>People, sheep and nature conservation book</u>	provides information on the many ways in which graziers can manage their runs for profit	provides information on conservation management and planning processes that could result in improved conservation outcomes	is largely based on the words of the graziers

The request to turn these benefits into dollar figures is mission impossible. The dollar benefits to be obtained over the next 5 years (the potentially lucrative products have all just been produced) are highly contingent on unpredictable events (wool prices, cost structures, Chinese wool production, effective marketing, regulation, influence of PETA), and may consist only of the survival of wool-growing on accredited properties. The project was not funded to improve profitability, and should not be judged on this basis.

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Other outcomes/benefits

<i>Alliances developed with other projects</i>	NRM regions, TQA (FarmSAT), TFGA, DPIW, GA, Landcare
<i>Examples of innovative activity stimulated by the project</i>	
<i>Emerging funding opportunities to build on project activities and outputs</i>	
<i>Other projects or agencies that have picked up on findings</i>	NRM regions, TQA (FarmSAT), TFGA, DPIW, GA, Landcare
<i>Other demand for information or outputs</i>	