







LandWater & Woo

Anstrulius Generation



native vegetation and biodiversity

another innovation

PRODUCTIVE RESOURCE MANAGEMENT FOR WOOLGROWERS Managing Native Vegetation & Biodiversity

By Dr Jann Williams, Land, Water & Wool Native Vegetation and Biodiversity Sub-Program Coordinator

Recent research has found that nine out of 10 woolgrowers consider natural resource management to be an important part of their farm business - 91% have either adopted practices in the past or are currently doing something about it.

We know you're one of the 91%

Of those woolgrowers with native vegetation on their farm, nearly 70% believe it is useful for production, with the main benefits identified as the provision of shelter and stock feed. Other benefits identified include the control of pests, erosion and salinity and wildlife corridors.

This insight demonstrates the importance of research on how to better manage and protect native vegetation in rural Australia. It also demonstrates the importance of actively involving growers in developing better management solutions.

The national Land, Water & Wool initiative is connecting woolgrowers and researchers, to ensure viable, practical and beneficial solutions for national resource management (NRM) on farm are developed. Land, Water & Wool is a joint investment between Australian Wool Innovation Limited, and Land & Water Australia. The program works closely with woolgrowers and key influencers, advisory agencies and organisations within the wool industry, to help them manage their natural resources for sustainability and profitability.

Managing Native Vegetation and Biodiversity is one of the seven sub-programs under Land, Water & Wool (see www.landwaterwool.gov.au for details). The Sub-program recognises that native vegetation is an important part of our natural environment as well as being important for wool production.

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SUB-PROGRAM OBJECTIVES

To develop, test and promote options for integrating wool production and the protection, management and restoration of native vegetation and its associated biodiversity by:

Improved knowledge of the impact of grazing systems on native vegetation (including native pastures and bushland) and its associated biodiversity at a number of scales;

www. Development of best-practice management guidelines for managing native pastures and bushland in wool production landscapes in the high rainfall and sheep-cereal zones; and

Provision of authoritative data to support the environmental credentials of the wool industry.

Participating from the ground up



Through Land, Water & Wool, woolgrowers participate from the 'ground up' in identifying needs and issues, gaining relevant information, and developing practical solutions through research. In many cases, research is being trialled by woolgrowers, carried out on farms or at demonstration sites where they can be closely involved.

"Many woolgrowers face significant challenges to maintain real incomes," Sub-program Coordinator, Dr Jann Williams said. "Native vegetation (both pasture and bushland) often provides a major input to their production system. Importantly, the sustainable use of native vegetation and seeking to increase productivity of wool enterprises need not be in conflict. It is possible to manage landscapes in a way that helps ensure satisfactory performance for Natural Resource Management objectives, while also maintaining enterprise profitability.

"The interaction between researchers and woolgrowers is a vital component of this Sub-program. This participatory approach is fundamental to ensure that the results are accepted and adopted by woolgrowers as well as others involved in natural resource management."



The Managing Native Vegetation and Biodiversity Sub-program projects are examining options that are profitable and help protect, sustain and improve native vegetation across several regions of Australia. More than 70 families with woolgrowing enterprises are currently directly involved with research projects on their properties.

The Managing Native Vegetation and Biodiversity Sub-program is also working closely with the Rivers and Water Quality Subprogram of Land Water & Wool, with paired projects underway in Tasmania and South Australia.

The projects featured in this publication, include the research perspective from both a scientific and woolgrower point of view. They recognise that woolgrowers are managing their properties for multiple outcomes and that sound science is needed to better understand the relationship between wool production and native vegetation management. Each project is taking a different approach to meet each regions needs.

A number of research organisations and groups are collaborating with growers in the Sub-program. The main players are the University of New England, the Southern New England Landcare Committee, the Centre for Agriculture and Regional Economics, The University of Tasmania, the Department of Primary Industries, Water and Environment (Tasmania), the Departments of Sustainability and Environment and Primary Industries in Victoria, The University of Southern Queensland, Queensland Murray Darling Committee, Traprock Wool Association and the Mid-North Grasslands Working Group in South Australia.

In order to deliver the research results to a larger group of woolgrowers, projects are working closely with wool initiatives such as 8x5 in Tasmania and BestWool 2010 in Victoria. At the Program level, Land, Water & Wool has a comprehensive communication and delivery strategy that will ensure the research results reach a wide audience. Links are also being made with industry programs such as Grain & Graze and the EDGENetwork[™] training program.

Managing Native Vegetation and Biodiversity our approach

Projects are being undertaken in New South Wales, Victoria, Tasmania, South Australia and Queensland, with the results to be shared amongst all woolgrowers. These projects will build on the almost decade of research undertaken in the Native Vegetation R&D Program, managed by Land & Water Australia. More than 70 farm families are already involved.

A range of tools will be developed such as examples of profitable conservation practices, good practice guidelines and case studies that demonstrate the compatibility of commercially successful profitable wool production and the conservation of biodiversity. Field days and training programs will benefit a wider group of woolgrowers. For researchers it helps to broaden their understanding of how to best manage native vegetation for a range of outcomes.

Sub-program Coordinator, Dr Jann Williams (right) with South Australian project leader and woolgrower Millie Nicholls: "The sustainable use of native vegetation and seeking to improve the productivity of wool enterprises need not be in conflict."



Farm businesses, wool production and biodiversity

A survey of 1500 woolgrowers last year, commissioned by Land, Water & Wool, found that more than half of Victoria's woolgrowers have remnant native vegetation on their land. Many Victorian woolgrowers manage their native pastures and vegetation to provide shelter and shade for stock, retain ground cover and reduce erosion, and improve the general health of their land.

The Victorian-based *Farm businesses, wool production and biodiversity* project is identifying productive, practical solutions for native vegetation management, incorporating the commercial aspects of wool growing and sheep breeding.

Detailed financial, vegetation and agronomic assessments are a key part of the project. Once an accurate picture of the case study farms have been mapped and an assessment of the financial, productivity and native vegetation status is made, then a plan of action will be formulated that fits in with woolgrower's goals for the next 10-15 years.

The project involves nine case study farms throughout Victoria, in the Springhurst region, the Ararat Hills district and the Maryborough-Maldon region. Ultimately, it will provide information for woolgrowers in Victoria and south-east Australia.

The study area is generally fragile or light with soils and the substantial land clearing in the past has contributed to some large areas of soil erosion and low productivity. Native pastures and vegetation occur in much of this hill country.

Jim Moll, a senior agribusiness analyst with the Department of Sustainability and Environment, leads of the project. Many woolgrowers already manage their native pastures and vegetation differently to other areas of the farm, because of practical and environmental health issues such as access and erosion control he said. "This project is helping woolgrowers assess the financial and whole farm impact of different management options that will aim to improve biodiversity on their farms. Any costs incurred by the wool grower and necessary funding of these options, will also be calculated"

The pattern and dynamics of native vegetation on each property have been assessed. Preliminary analyses have indicated that hills and slopes tend to have higher cover/diversity of native species and that intermittent grazing is compatible with high diversity and condition of native vegetation.

Agronomic appraisals have been undertaken by an independent agronomist in close collaboration with the woolgrowers.

Historic and current data has been collected on fertiliser use, the grazing system, stocking rates and soil characteristics at the paddock scale. This information is being used to assess pasture productivity and current carrying capacity, and identify whether current management practices may need fine-tuning.

Management options that woolgrowers have already identified that support their current farm operations are the fencing of small clumps of trees throughout paddocks for natural regeneration and the use of rotational and strategic grazing to improve both biodiversity and pasture production.

"Our attitude is that the farm has to be sustainable in every sense of the word," Matthew said.

Using natural regeneration as a low cost option for woolgrowers is a particular focus of the Victorian project. Preliminary research has been undertaken on the potential of different areas on each farm to regenerate naturally. These areas are being mapped to illustrate the costs and benefits of regeneration for both production and conservation outcomes, with the research results being applicable to other farms. contact Jim Moll Dept. of Sustainability and Environment phone (03) 5761 1619 email jim moll@dse vic gov al



Matthew Allen, Rocky Point Merino stud, Byawatha, is one of three woolgrowers involved in the project in the Byawatha/ Springhurst region. A fourth generation woolgrower and sheep breeder, Matthew has embraced the project to help ensure his farm remains sustainable.

Matthew, his wife Mandy and three young children farm 1000 hectares at Rocky Point, running 4500 Merino sheep. Matt's father Rex is also actively involved in the management of the farm.

The sheep flock (average 19.5 micron) includes a stud nucleus of 700 ewes, 1100 flock Merino ewes, 600 ewes joined to Border Leicester rams for first cross lamb production and 1000 Merino wethers.

"It's an exciting time and a great learning curve to have a mix of people from botanists, agronomists and other specialists in their field visiting the property and working towards finding a balance between productivity and biodiversity."



(from left): Matthew Allen and Project Leader Jim Moll inspect Matthew's property, Rocky Point Merino stud, at Byawatha, one of nine local woolgrowers involved in the national Land, Water & Wool research project. The project is exploring the critical role of native vegetation management as part of a healthy and productive farming business through research which aims to improve wool production on farms.



Tasmania

Biodiversity conservation integrated into sustainable grazing systems

The Midlands is well known for producing some of the world's most prestigious wool that can sell for record prices. Not so well known is the fact that the wool-producing enterprises in the region are substantially based on native vegetation that can be of high conservation significance.

The project, *Biodiversity conservation integrated into sustainable grazing systems*, is looking at how woolgrowers currently manage their native vegetation for production purposes on-farm. The project aims to take a 'ridgetop to river' approach on how woolgrowers may better manage the native areas on their properties for both conservation and production.

The region covers 400,000 hectares and sheep grazing is one of the principle agricultural activities. About 60% of the wool growing area is native pastures with approximately 200 woolgrowers managing them.

Project Manager, University of Tasmania's Jamie Kirkpatrick, is working with woolgrowers to conduct grazing trials (including set-stocking, rotational grazing and cell grazing systems) and to look at on-farm biodiversity throughout the region.

The main trial plots for the study are situated in the upper Macquarie catchment area. Such is the interest locally that there are now 100 plots scattered throughout the Midlands.

"The native pastures are really important for fine wool production in Tasmania. Most of the native pastures and bush-



Kevin Leeson (left) who is undertaking a PhD at the University of Tasmania assists Professor Jamie Kirkpatrick (right) with Land, Water & Wool-funded research being conducted in the Midlands of Tasmania. The project has found that many threatened native plant species now rely on sheep grazing to maintain their habitat.

runs are found in white gum and black peppermint country with tussock grass, kangaroo grass and wallaby grass," Jamie said.

"While there are many benefits of native pastures, one of the disadvantages according to growers is that the carrying capacity of native pastures is low compared to improved pastures. However, this may be offset by lower management costs."

Importantly, according to Jamie: "We have found that many threatened native plant species such as *Leucochrysum albicans* (Grassland Paper Daisy) and *Colobanthus curtisiae* (Grassland Cupflower) now rely on sheep grazing to maintain their habitat."

One of the major priorties will be to learn about the economic and ecological value of the native vegetation from local woolgrowers, as well as from our experiments, Jamie said.

Tasmanian woolgrowers were recognised in a recent survey by Land, Water & Wool as the most environmentally-aware and environmentally active in Australia.

"At this stage of the project we have developed a series of indicative key performance indicators (KPIs) for environmental best practice and we are about to test these with woolgrowers to see if they are practical," Jamie said.

"A number of the world's biggest retailers of woollen garments are showing increased interest in using wool that is produced with minimal impact on the natural environment."

One of the farmers involved in the grazing trials is John Cameron of 'Charlton' at Ross. The research involves examining the impacts of a range of different grazing management strategies contact Professor Jamie Kirkpatrick University of Tasmar phone (03) 6226 2460 email j.kirkpatrick@utas.ec



"I think farmers are becoming environmentally more aware, and want to make sure that the 'footprint of farming' on the landscape is less... the trials have been in place for 12 months now and in the next few years we hope to see results which will give farmers better knowledge of the environment they farm in and better tools to manage it."

John Cameron, Ross, Tasmania



(above) *Leucochrysum albicans*, and (below) *Colobanthus curtisiaerelies*, both species rely on sheep grazing to maintain their habitat.

Photos courtesy of Hans and Annie Wapstra





South Australia

Managing native pastures for improved animal production and biodiversity

South Australia's Mid North region is the location of the Managing native pastures in South Australia for improved animal production and biodiversity project, which will help woolgrowers to conserve and improve native pasture biodiversity by rotational grazing, and boost profits through increased production.

Some growers involved in the project aim to achieve significant increases in pasture utilisation rates - doubling current rates in some cases. According to project investigator, Millie Nicholls, from the Mid North Grasslands Working Group, about 300,000 hectares of native grasslands in the Mid North of SA are grazed. The rainfall varies across this region from 250 millimetres up to 500 mm.

"Generally native pastures in the hill areas of the Mid North are continuously grazed during winter to fit in with the cropping program," Millie said. "This has reduced the population of native perennial grasses and produced pastures dominated by undesirable annual grasses such as wild oats and barley grass."

The project area currently involves seven demonstration farms stretching from Robertstown in the Mid North up to Carrieton in the Upper North. An experimental site has also been established near Clare. One of the woolgrowers involved in the project is Rowan Cootes, whose family own a 1200 ha farm near Spalding in the Mid North. The Cootes family crop about 800 ha and run a self-replacing Merino flock with a total Dry Sheep Equivalent (DSE) of 3,500 (winter-grazed). The property's annual average rainfall is 450 mm.

According to Rowan, he became involved in the project due to concerns about the detrimental impact set stocking was having on their grazing land in the hills on his property.

"Large areas of capped soil were developing, there were increased numbers of weeds such as thistles and we had poor pasture utilisation in parts of the paddock due to patch grazing by our sheep," Rowan said.

Although it is still early days, Rowan believes the change in grazing management could have a range of benefits such as improved native pasture biodiversity and production, a reduction in bare ground and increased water-use efficiency, so more grass can be grown per mm of rain.

"The growers are rotationally grazing their sheep through each paddock, according to pasture growth, with emphasis on an adequate rest period to allow the perennial plants to recover from grazing," Millie said.

"By managing for a perennial-based pasture rather than an annual-based pasture, which is what occurs with set-stocking, we should see an increase in the health and numbers of each perennial plant." contact Kylie Nicholls Full Bottle Media phone (08) 8842 3275 email fullbottlemedia@rbe.net.au



A range of plant and soil measurements are being taken as part of the project including pasture growth rate, change in native and annual pasture species, plant species diversity, water-use efficiency, water infiltration rates and soil biological activity to provide valuable data to growers and researchers.

"In the past, native pastures have been under-valued but they are important for long-term grazing productivity and sustainability in many areas. They are drought-tolerant, low-input, healthy and if managed correctly will be productive pastures," Millie said.

"We hope the project results will show woolgrowers how changing grazing management can increase native species biodiversity and generate a more robust, productive pasture which will perform better than an annual-based pasture in any season - whether wet or dry."



As part of the national Land, Water & Wool initiative, a new project has started in the Mid North of South Australia aimed at helping woolgrowers conserve and increase native pasture biodiversity and on-farm profits through improved grazing management. Project investigator Millie Nicholls (left), from the Mid North Grasslands Working Group, is pictured with Spalding farmer, Rowan Cootes, one of the woolgrowers involved in the project.





New South Wales

Profitable wool production and biodiversity

contact Associate Professor Nick Reid University of New Eng phone (02) 6773 2759 email nrei3@metz.une.edu

A significant number of the world's premium fine woolgrowers operate on New South Wales' Northern Tablelands, which covers 2.5 million hectares and carries four million sheep. Approximately 1000 woolgrowers operate in the region, with granite, trap and basalt soil types and predominantly summer rainfall.

Many woolgrowers in northern NSW have profitable enterprises characterised by high levels of biodiversity. Management practices have included grazing management of native pasture including continuous grazing and phase (cell and rotational) grazing in different situations; tree management such as protecting and enhancing woody vegetation; developing windbreaks and wildlife corridors; plantation forestry and agroforesty, and river and water management.

The Project, *Profitable Wool Production and Biodiversity* is run by Associate Professor Nick Reid of the University of New England, in collaboration with Southern New England Landcare Ltd and the Centre for Agricultural and Regional Economics (CARE).

Associate Professor Reid said the project aims to identify linkages between wool profits and biodiversity through phases of the research project.

The first phase involved case study and testimonial farms that demonstrate the compatibility of commercially successful wool production and biodiversity. The second phase involves 18 monitor farms, which are being used to identify the biophysical and socio-economic links between wool production and biodiversity conservation'. Examples of the managementproduction-biodiversity hypotheses generated with woolgrowers in Phase 1 of the project include:

• Retention of native pastures for wool production reduces costs (compared to sown pasture development); improves wool quality, prices and wool profits; and sustains a greater diversity of native plants and dependent native fauna than sown pastures.

• Topdressing native pastures with fertiliser and exotic pasture seed increases wool production and provides habitat for native pasture species and fauna tolerant of moderate livestock grazing pressure.

• Establishment of native trees in open country increases shade and shelter, increases wool production and profits, increases property value, and increases biodiversity.

The monitor farms are recording economic and environmental information using Practical Systems' *FarmBook* and *FarmMap* software. As part of this exercise, a technical team has collated 80 paddock histories across farms and will install biophysical survey and monitoring points for ongoing assessment.

One of the case study sites is Jon and Vicki Taylors' 650 ha property, 'The Hill'. According to Nick 'The Hill' offers high country woolgrowers an example of how to mitigate the effect of weather on stock and pasture production, generate new income opportunities and dramatically enhance ecological values.

The Taylors run 5500 fine wool Merino sheep on 'The Hill' and nearby 400 ha 'East Oaks', producing 17.5-18 micron





wool, along with 150 or more beef cattle in good seasons. Survival of the 1800-2200 lambs they produce each winter is of vital importance to the Taylors' bottom line.

By 1982 they were adding native species to their annual tree planting, which was previously based on *Pinus radiata* plantations. In 1992 they began planting over whole paddocks, along contour lines, replicating shelter provided by natural timber cover.

In drought, Jon notes, the trees have paid for themselves two or three times over. Protecting young trees from stock has meant that at times, up to 11% of 'The Hill' has not been used for production. When drought hit in 1994, however, this 'living fodder store' proved to be an unexpected blessing.

While Jon indicates environmental benefits are particularly hard to gauge, he notes water quality along creeks has improved dramatically, they have stands of native timber that have withstood dieback, bird numbers are "20 to 50 times higher" than when they started planting trees, and koalas and echidnas are now a common sight.

"'The Hill' is just one of our research properties showing that you can have sustainable practices that are profitable," said Nick.

Money may well grow on trees for New England, NSW, woolgrowers Jon and Vicki Taylor; their pioneering and innovative approach to the now-common business of vegetation management has earned them a key role as one of three research case studies across the region as part of the Land, Water & Wool Native Vegetation and Biodiversity sub-program.



Queensland

Integrating paddock and catchment planning: a woolgrower driven approach to sustainable landscape management

The Land, Water & Wool regional project in South East Queensland is a relative newcomer to the Native Vegetation and Biodiversity Subprogram, having started in April 2004.

It was initiated by the Traprock Wool Association, a proactive group of fine woolgrowers from the high country of south-east Queensland. They have invited Professor Charlie Zammit of the University of Southern Queensland to lead the project.

Charlie and his research team developed the project in collaboration with the Traprock group and this close association will continue throughout the project.

Over the past 10 years the Traprock Association have established a voluntary quality assurance system for wool production and marketing. It is now linking wool production to integrated farm management and landscape planning and have detailed property mapping and planning underway to identify biodiversity assets.

The project will link property-based training for strengthening woolgrower capacity in biodiversity monitoring, with participatory ecological research into habitat condition assessment and management. It is envisaged that up to 50 research sites will be selected and intensively sampled for biodiversity and production attributes.

One of the key products of this project will be a Monitoring and Reporting Toolkit that will have wide application for woolgrowers in Australia. The Toolkit will include procedures and guidelines that support the integration of biodiversity planning and management into grazing systems for wool production. The practicality and suitability of the Toolkit for woolgrower needs will be tested by engaging landowners in field training and calibration of the product through field days and workshops.

Individual landowners will be integral to the identification and development of credible monitoring, reporting and assessment tools. This will assist woolgrowers reliably monitor and assess native habitats to help ensure that biodiversity values are identified and retained while maintaining profitable and productive enterprises.



Woolgrowers from the Traprock Wool Association, (centre) Clive Smith and (right) Brent Finlay are working with Landcare representative (left) Darren Marshall along with the University of Southern Queensland and the Queensland Murray Darling Commission to strengthen woolgrower capacity in monitoring biodiversity.

> Delivery Address GPO Box 2182 CANBERRA ACT 2601

Land & Water Australia Reply Paid 2182 CANBERRA ACT 2601 Contact Professor Charlie Zammit, University of Southern Queensland Tel (07) 4631 5577 email zammit@usq.edu.au







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Stay Informed



The Native Vegetation and Biodiversity sub-program of the Land, Water & Wool initiative is continually developing new products and services to assist woolgrowers and their advisors in managing native pastures and bushland in Australian wool production landscapes.

To regularly receive information about the sub-program or the wider Land, Water & Wool initiative, please complete the following feedback form, including your preferences for how you prefer to receive information, and send to:

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Name: Company/trading name Address: Town Phone	StatePostcodeFax	Land, Water & Wool is currently investing in the development of innovative R&D projects and training activities to help Australia's wool industry improve on-farm production and also the health of the land and water resources that underpin wool production businesses. We want to hear from you! If you have an idea for cutting-edge wool management options and production systems, please contact us. Contact Land, Water & Wool Communication: Fleur Flanery GPO Bax 2182

CANBERRA ACT 2601

www.landwaterwool.gov.au

Tel: (02) 6263 6020

For information about the Native Vegetation & Biodiversity sub-program, please contact the project leader in your State:

VIC Jim Moll

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Shaping the future

native vegetation and biodivensity

Department of Sustainability and Environment tel (03) 5761 1619 email jim.moll@dse.vic.gov.au

TAS Jamie Kirkpatrick

University of Tasmania tel (03) 6226 2460 email j.kirkpatrick@utas.edu.au

SA Kylie Nicholls

Full Bottle Media tel (08) 8842 3275 email fullbottlemedia@rbe.net.au

NSW Nick Reid

University of New England tel (02) 6773 2759 email nrei3@metz.une.edu

QLD Charlie Zammit

University of Southern Queensland tel (07) 4631 5577 email zammit@usq.edu.au

Native Vegetation & Biodiversity general information

Jann Williams

Sub-program coordinator tel (03) 5444 0248 email jann.williams@lwa.gov.au

Fleur Flanery

Land, Water & Wool tel (02) 6263 6020 email fleur.flanery@lwa.gov.au

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re you a member of a natural resource management or production group?

No Yes Group name: ...