

# Western Division newsletter

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Produced for landholders in  
the Western Division of NSW



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## Rotating Farm Tour report

by Stephen Clipperton, Technical Officer (Pastures and Rangelands), NSW DPI, Trangie (02) 6880 8023

One of the more novel ideas to emerge out of the 2004 Young Farmers Forum at Broken Hill was the concept of the Rotating Farm Tour. The tour is the brainchild of several delegates attending the 2004 forum. It kicked off in great style on the weekend of the 6th and 7th of November with the inaugural visit to 'Bulla Bulla' and 'Coomeratta' stations. Nineteen participants came from far and wide and represented a cross-section of young Western Division landholders. The map describes the spatial spread of the group's properties, ranging from Wentworth in the south-west, to Hermidale in the east. The group not only represented a great geographical area, it also contained a great range of experience and knowledge of farming in the semi-arid zone. Some were born and bred in the west, others are relative newcomers to the Western Division. However, what stood out for me was their shared qualities of youth, intellect, and a real passion for the future of agriculture in the western region.

The host for the inaugural weekend was Viv White. Viv and family have recently acquired the adjoining properties 'Bulla Bulla' and 'Coomeratta', approximately 115 km west of Cobar. The tour started on Saturday afternoon, after a familiarisation

session in which we all introduced ourselves. My participation in the tour was to help with plant identification and talk a little about grazing management. A good knowledge of pasture species is important as plants are the foundation of any livestock enterprise and the group were keen to learn as much as possible. Viv introduced us to some of the improvements he has been making on the property to



Viv White explains aspects of his management to the group.

watering points, fences and cattle yards. Viv has big plans for his properties, and his enthusiasm was infectious as the entire group joined in with discussion on subjects such as cattle yard design, grazing management and future directions for the Western Division. At the end of the day we were all treated to some fantastic outback hospitality with a great BBQ and bonfire. The social interaction for these young people is every bit as important as the technical and management aspects of the tour, as many live in very remote locations.

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by Marita Woods  
Riverine Monitoring and  
Reporting Officer, DIPNR,  
Dubbo

**W**elcome to the January/February edition of the Western Division Newsletter. I have spent the last ten minutes flicking through past editions of the Newsletter and in doing so it has really highlighted the on-going battle of Western Division landholders in dealing with what seems like a never ending drought. Coming into the Christmas and the New Year period, I can only hope that some relief arrives in the very near future.

As we head into another hot summer with low flows in the river, we are again concerned with the development of potentially toxic blue-green algae in the rivers of the Western Catchment. This edition of the Western Division Newsletter provides two feature articles; one outlining methods for treating water affected by blue-green algae and another on how to detect algal poisoning in farm animals. I would imagine that such information would be invaluable to Western Division landholders over the coming months.

In addition to the above two articles, this edition also includes a wide range of articles dealing with: research projects occurring on the Narran Lakes, updates from the Western CMA, details of a rotating farm tour for young farmers, an update from the Western Lands Advisory Council and an advertisement for free fauna/flora surveys.

Thank you to everybody who contributed to this edition and as always if you have any contributions, comments or suggestions please contact your local DIPNR, NSW DPI or CMA office.



NSW DEPARTMENT OF  
**PRIMARY INDUSTRIES**



Department of  
**Infrastructure, Planning and Natural Resources**

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# United front to tackle invasive cactus at ‘The Springs’

The successful cactus collaboration project heralds the start of the Western Catchment Management Authority’s (CMA) Incentive Program. When other funding programs refused to fund the purchase of chemical to spray the invasive boxing glove cholla cactus, David Langford jnr contacted the Western CMA to see what support they could offer.

Upon hearing of David’s dilemma, the Western CMA offered enough financial assistance to enable David to purchase the amount of chemical required to spray the cactus. The project also met one of the CMA’s Blueprint Targets of no increase in the number of species or area of noxious or exotic weed infestation above current (2002) levels.

The boxing glove cholla cactus (*Cylindropuntia fulgida* var. *mamillata forma monstrosa*) had been present at ‘The Springs’ for several decades, however, ongoing dry spells favoured the cactus so much that it spread rapidly in both area and density. Although David was successful in receiving some Australian Government Envirofund funding, this only allowed him to secure a team of Conservation Volunteers Australia to lend a helping hand. Chemical control was the only option due to the steep, rocky slopes and the spikey nature of the cactus. For four days, six Conservation Volunteers Australia climbed the hills around ‘The Springs’ to spray the cactus. They also helped David and his team of caretakers, to map the perimeter of the infestation, so that a boundary could be set for on-going control and monitoring programs.



Although the boxing glove cholla cactus has not been given a formal weed status, it has the potential to spread easily across all land types and reduce stock and habitat productivity in heavily infested areas. Being a garden escape plant, it highlights the need for people to keep an eye on introduced garden plants to ensure they do not become future problems. Town residents also need to ensure that they dispose of garden waste responsibly at designated rubbish dumps.

For more information on the Western CMA’s Incentive Program and on how to apply for funds to implement on-ground natural resource management projects, contact the Western CMA on 1800 032 101.

# Algal poisoning of stock in the Western Division

by Greg Curran, Veterinary Officer, NSW DPI, Broken Hill

One of Australia's leading veterinary toxicologists, Ross McKenzie, summarised algal poisonings in his excellent CD *Toxicology for Australian Veterinarians*.

*We're Annie<sup>1</sup>, Noddie<sup>2</sup>, Mike<sup>3</sup> and Cy<sup>4</sup>!*

*Drink us straight down, and wait to die  
Your liver's shot, your nerves are too  
Bid life farewell, the grave's for you!*

## Blue-green algal hotline

**1300 657 763**

For detailed information on blue-green algal conditions on the Barwon-Darling river system please call the blue-green algal hotline listed above. The hotline outlines the current algal conditions for the river system between Mungindi and Menindee and provides some information on the precautions that should be taken in the event of a blue-green algal bloom. This hotline is updated on a regular basis throughout the summer months when blue-green algae blooms are more prevalent.

The chief villains in this piece are various species of *Anabaena*<sup>1</sup>, *Nodularia*<sup>2</sup>, *Microcystis*<sup>3</sup> and *Cylindrospermopsis*<sup>4</sup>. There are others in this algal underworld.

The rapid build-up, or blooms of algae are often not poisonous, but all blooms should be considered potentially poisonous. Their villainy usually takes the form of severe liver damage, with animals becoming very ill and dying, with nerve damage less common, showing sometimes as a paralysis or respiratory arrest. This might look like any other staggers. Cattle, sheep, farm dogs, pigs, goats and humans can be affected.

*Cylindrospermopsis* can cause liver, kidney and heart damage, and as it usually doesn't form floating masses of algae, is not obvious in dams or rivers. Algae in the *Cylindrospermopsis* group have been a problem in cattle on dams in northern areas of the Western Division from time to time. Weakness and deaths over days are more common, as animals need to take in these algae in quantity over time.

Most algae contain gas cells that give them buoyancy, allowing them to float at the most suitable depth of water. Some float, some are found under the surface, so not all algal blooms are obvious.

Numbers of algae increase for a number of reasons:

- build-up of nutrients in water, such as nitrogen and phosphorus from animal and human wastes, and fertilisers,

- slow water flow and layering of water,
- wind blowing algae to where animals drink.

## Stock Poisoning in the Western Division

Relatively few cases of blue-green algal poisoning have been diagnosed in the Western Division, despite some massive blooms and more stock using river water than were affected or reported as ill. This low number of reported deaths or illness due to algae might indicate a low risk from blue-green algae, or reflect reasons for not reporting problems, such as:

1. deaths clearly being due to algae and people deciding not to report what they've seen;
2. deaths and weakness from algal blooms being put down to a dry time or drought;
3. relatively few animals being affected;
4. stock being moved to other waters before major losses occur.

More cases of algal poisoning have been diagnosed in stock on farm dams than on rivers. Cases have not been reported on troughs, but are possible, both from drinking quantities of the algae, or the toxins released into water when cells of some kinds of algae break down.

## Diagnosis of algal poisoning in stock

Diagnosis or suspicion of an algal poisoning is based on one or more findings:

- the signs (unexplained illness, death, possibly staggers) and postmortem showing severe liver damage, possibly with some damage in other organs,

- the circumstances (slow flow and layering of water, build-up of nutrients),
- observing a blue-green algae bloom, or perhaps smelling the distinctive odour of some exposed blue-green algae (although *Cylindrospermopsis* is more difficult to detect as it floats at various depths rather than on the surface, prefers water with a sediment load, and has a red-brown colour that can be difficult to pick),
- finding blue-green algae species known to be poisonous in water stock have been drinking,
- demonstrating the algal toxins by assay of water or, in some cases, tissue.

Managing the risk of algal poisonings has progressed. Public authorities now regularly check levels of different algae in major waters. People are now aware of the circumstances where algae can build up in waters. Keep one eye out for algae in water and the other eye on stock if concerned about an algal threat. The variable nature

of algal poisonings and generally low risk usually means that the threat is usually considered very low.

## Reducing the risk of stock poisoning

More options for dealing with algal poisonings are now available, if a threat, including:

- the standard option of moving stock to safer waters,
- fencing stock off from algal blooms,
- using chemicals to kill algae although some of these can carry a risk of algal cells rupturing and spilling toxins into the water (chemicals should never be used in rivers),
- use of barley straw to counter build-up of algae (not as successful in Australia as overseas),
- reducing flow of nutrients into water (such as fencing stock off waters, wetlands on inlets to remove nutrients, re-vegetating margins, removing carp to avoid stirring sediments and nutrients, aerating the bottom layer of waters, precipitating phosphorus with chemical agents).

This article was based largely on material in Ross McKenzie's *Toxicology for Australian Veterinarians*.

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# Removing BGA from your non-potable water supply

Blue-green algae (also known as cyanobacteria) are a fact of life for people living in the Western Division. These days, many of our rivers and streams of the Western Division routinely experience blue-green algae (BGA) blooms at some point during the warmer months between September and May. Even during the cooler months, BGA blooms are not unheard of.

However, they should not necessarily be the cause of concern that they once were. Whilst nothing much has changed in terms of their potential danger to human and animal health since BGA first came to prominence, we now know much more about BGA and how to manage bloom affected waters to reduce the risk of exposure to BGA toxins.

## Impact of BGA toxins on humans

There are two basic classes of BGA toxins – those released into the water only by live BGA (endotoxins) and those that are generally only released upon the death of the BGA cell (hepatotoxins and neurotoxins). All BGA species, to varying degrees, produce endotoxins. Only a very small number of species can produce either hepatotoxins or neurotoxins – none can produce both.

Endotoxins are produced by the outer cell walls of BGA and exposure to these toxins is only possible via direct physical contact with the BGA. Endotoxins are the compounds that cause the rashes, swelling and general irritation of the skin and eyes that are typically associated with contact with BGA blooms. You can significantly reduce the risk of exposure to endotoxins in two ways; the first is to avoid contact with water affected by BGA, the second is to remove the BGA from the water before you enter it or make use of it. If you do not come into physical contact with the BGA then you should not be affected by endotoxins.

Hepatotoxins and neurotoxins are produced internally by a relatively small number of BGA species. They are only released into the water when the BGA cell dies and the cell wall ruptures. Hepatotoxins are compounds that typically affect the liver while neurotoxins affect the nervous system. Unlike endotoxins, BGA hepatotoxins and neurotoxins do not produce rashes or swellings on your skin and they can not be absorbed through your skin.

The only way hepatotoxins and neurotoxins can get into your body in any quantity and harm you is if you drink water that is contaminated by them. The principles of reducing risk of exposure to hepatotoxins and neurotoxins are similar to those for endotoxins; 1) avoid physical contact with contaminated water, 2) if avoidance is not an option then treat the water to remove the toxins and 3) do not drink water contaminated by BGA.

## Water treatment options

If you are reliant on a river, stream or ground tank for your non-potable household water supply (showers, baths, toilets, washing machine etc.) then you can manage this water supply to significantly reduce your risk of exposure to BGA toxins. All you have to do is treat your non-potable supply before you use it and follow some simple rules when you do use the water. A major side benefit of treating water to remove BGA and BGA toxins is that most other contaminants such as suspended sediment are removed which means your non-potable water will be clearer.

The easiest way to visualise a non-potable water treatment plant is to think about a swimming pool. The equipment required to manage a swimming pool is similar to that required to manage a non-potable water supply. A basic system that assumes that your raw water supply comes from a creek or river is described in Figure 1. All of the equipment used in the treatment system is usually available off the shelf from pool shops, rural traders or hardware stores. The treatment system proposed consists of two above ground water storage tanks, a pressure pump and a sand filter from a swimming pool.

### Step one: Flocculation

Water treatment begins when water is pumped into the first tank and dosed with a flocculant. A flocculant is any compound that causes the dirt and other suspended particles to clump together and sink. Many flocculants will also kill or settle out much of the algae. The best known flocculant is aluminium sulphate, also known as 'alum', however, many other formulations are available in either granular or liquid form. The dosing rate varies with the amount of dirt in the water to begin with and experimentation is the key. As a guide, start with about one kilogram of alum to every 10,000 litres of water and work up from there. A side effect of using alum is that it may make the water acidic. Acid water will corrode any metal pipes, pump

parts and fittings in your water supply. Use pH test strips to check the acidity of the treated water. If the pH is lower than 6 then use soda ash (approx. 1kg to 10,000 L) to bring the water back to a neutral pH.

When the water in the settling tank has cleared, fill the supply and distribution tank via either gravity or pump. The settled solids can be removed as required and should be disposed of in a landfill or sump – never in a creek, river or ground tank. The advantage of two tanks is that clean water is always available for use in the house while you are treating the next batch of water.

At this point, you should have visibly clear water. However, as a result of the treatment, any BGA cells that were present will have ruptured. If there were toxic BGA species present then the water may be contaminated with hepatotoxins and neurotoxins.

The immediate risk of hepatotoxin or neurotoxin exposure via showering, bathing or use in laundry and toilets is probably minimal. These compounds cannot be absorbed through your skin. However, your body can easily absorb them if they are ingested or inhaled as an aerosol. Therefore, under no circumstances, should this water be made available to you or your family for drinking and care should be taken not to consume water whilst showering or bathing. The same principle also applies to pets or livestock.

Despite the likely low immediate risk to human health, there may be some risk to health after long term general exposure to BGA hepatotoxins and neurotoxins. Unfortunately, there is little available research into long term BGA toxin exposure in non-potable water supplies. Therefore, it is prudent to further treat your non-potable supply, particularly during the summer months, to reduce the exposure risk to BGA hepatotoxins and neurotoxins.

### Step two: Chlorination

A number of widely used treatment processes have been shown to be very effective at removing BGA hepatotoxins

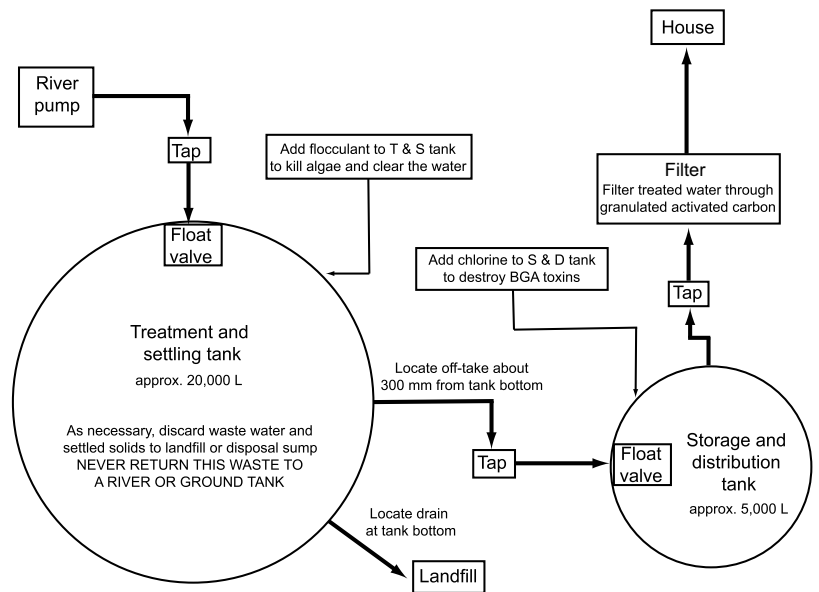
and neurotoxins from water. Filtration through activated carbon is the best known of the treatments. However, dosing with chlorine or ozone has proven to be effective at destroying BGA toxins. The simplest and cheapest treatment process is to dose the clarified water with chlorine then filter the water through granular activated carbon. Ozone dosing requires special equipment that will add to the cost of the system, however operating and maintenance costs may be lower in the longer term than with chlorine.

Chlorine is an easily available and widely used disinfectant. It should be added to the storage and distribution tank. Delivery methods vary so pick one that suits you and your situation. The simplest dosing method available is probably chlorine tablets in a floating dispenser. However, more complex automatic chlorinators are also available. Regardless of the dosing method you use you should try to aim for a residual chlorine level of around 0.5 mg/L in your storage and distribution tank. Using a pool test kit will help you determine the residual chlorine level.

### Step three: Filtration

The next step is to filter the water through granular activated carbon (GAC). This step should remove virtually all of the remaining BGA toxin, chlorination/ozonisation by-products and any fine contaminants that had not previously been removed by flocculant dosing. The filter can be anywhere on the delivery line between the storage and distribution tank and the house. However, it should be as close to the pressure pump as possible to reduce the effect of pressure drop on your tap pressure. The ideal filter housing is a medium sized sand filter for a swimming pool. However, GAC is used as the filter media instead of sand. GAC products called biological activated carbon are now available that will last a number of years as an effective filtration media for BGA toxins rather than the single season which was previously expected of GAC. GAC may be sourced via your local shire town water treatment plant, pool shop or rural trader.

Figure 1 Example of a Non-potable Water Treatment System



The treatment process described above cannot be guaranteed to remove all of the BGA or their toxins as the efficiency and effectiveness of the system depends on its construction, operation and on-going maintenance. However, it will reduce the risk of the exposure to BGA toxins and the potential for BGA related health problems for you and your family. The treatment system should also produce clear water that will not discolour clothes and will reduce damage to washing machines and hot water systems. If you can produce enough water, you could even use it in your evaporative air conditioners, which may also increase maintenance intervals and reduce costs.

At no stage will this system produce water that could be considered suitable for human consumption.

There is some potential to use the system to produce water that is of sufficient quality for use in stock watering. There are however, risks. If you want use the treated water to water stock the Department advises that you should seek professional water treatment and animal husbandry advice about the management processes and testing procedures that will need to be put in place.

When using any chemicals in the water treatment process we advise you follow instructions for use as provided by your supplier at the time of purchase.

If you would like to further discuss the details and practicalities of the treatment systems suggested in this article, then get in touch with the DIPNR Water Quality Officer for the Far West Region, Sean Dwyer on (02) 6872 2144 or by e-mail at sean.dwyer@dipnr.nsw.gov.au

# Western Catchment Management Authority

The Western Catchment Management Authority (WCMA) is working on behalf of the community in managing natural resources.

## Appointments

While off to a rather controlled start the WCMA is now running full steam ahead. The finalisation of recruitment is expected to take place over the next month with management positions already having been filled, and recently, a further two board members were announced, bringing the total of board members to six.

### Chairman of the Board



**Rory Treeweke** has a long standing involvement with natural resource management issues in the Western Division. As well as being a landholder in the Lightning Ridge area, he has been a member of the West 2000 and West 2000 Plus management boards and independent Chair of the Barwon Darling River Management Committee.

### Board Members



**Max Hams** is a landholder from Little Topar. Mr Hams is the founding member of the Topar Rangelcare Group, has represented the Pastoralists' Association of West Darling and has been the Chair of the Broken Hill Rural Lands Protection Board.



**Peter Cottle** has been a member of the Cotton Australia Board since 1996 and is the Chair of the Mungindi-Menindee Advisory Council. Peter has also been a member of the Socio-Economic Working Group on the Barwon-Darling River Management Committee.



**Jenny McLellan** is a landholder from the Brewarrina area. Jenny was Chair of both the Western Catchment Management Committee and Board and a past President of the Western Division Group of Shires and Director of a Rural Lands Protection Board. Jenny has also served on the WEST 2000 and WEST 2000 Plus boards.



**Andrew Mosely** is a landholder from the Nymagee district. He is actively involved in the Buckwaroon Catchment Landcare Group and holds the position of

Livestock Officer on the NSW State Boer Goat Breeders Association. Andrew also serves as a board member on the Eastern States Branch Dorper Society.



**Justin McClure** is a fifth generation Western Division grazier. He is a graduate of Longreach Pastoral College

and manages varied enterprises including extensive grazing and irrigation country and tourism interests. Justin is involved in the local community and has interests in Landcare and river management issues and is a member of the Wilcannia RLPB.

### General Manager



**Daryl Green** has spent 30 years working in Western New South Wales with the Soil Conservation Service and the

predecessor agencies of DIPNR. Daryl has worked tirelessly to ensure that government agencies have maintained customer service and that sound technical skills are the basis for competent technical staff. Previous



years have seen Daryl heavily involved in Regional Vegetation Committees, Woody Weeds Taskforce and the Australian Rangeland Society.

### Operations Manager



**Matt Davidson** began employment in the Western Catchment at Broken Hill in 1996 as a Soil Conservationist. This position included mining

rehabilitation, rangeland monitoring and advice. In 2004 he took on the role of Operations Manager with the Western CMA based at Cobar. Duties include overseeing the implementation of State and Federal Government investment programs within the Western Catchment such as the Natural Heritage Trust and National Action Plan for Salinity and Water Quality.

### Business and Investment Manager



**Ken Harrison** started in the west in 1992 as a Coordinator/Property Planner working for the

Tilpa Rangecare Group. He then held various Catchment Management positions based in Cobar, before moving to Dubbo in 2000 to work in native vegetation and water management. Ken is now involved in the planning and investment operations of the new CMA.

## Comments from the Chair

The Western CMA is now operational with six Board members appointed and a majority of staff in place.

Operational work has centred around Natural Heritage Trust (NHT) and National Action Plan for Salinity (NAP) programs

developed by the Catchment Management Board (CMB).

The CMA is working with the Natural Resources Commission (NRC) to develop standards and targets for Natural Resource Management that are appropriate and functional for the Western Catchment, and also meet the need for consistency with state-wide standards and targets.

The Board will be developing an Investment Strategy and a Catchment Action Plan (CAP) based on the previous Catchment Blueprint and the work done through the Brewarrina and Walgett Vegetation planning committees. The CAP development will be done in conjunction with the catchment community.

In 2005, the CMA's will be handed the responsibility for managing the Property Vegetation Planning tool (PVP) which is the process landholders will use when applying for clearing and thinning consents to manage vegetation on their properties. With woody weeds, now termed 'invasive shrubs', a big management issue across the Western CMA, efforts are being directed towards making the process as simple as possible for landholders. Vegetation management and the maintenance of good groundcover under varying seasonal conditions are the pre-eminent issues for the Western CMA.

## What's happening

Thursday the 14 October 2004 saw the awards ceremony held at the Cobar Heritage Centre for the 2004 Country Energy Western Catchment Environmental Care Awards. The awards have been held every two years since 1998. They acknowledge and reward groups and individuals who have carried out sustainable natural resource management and environmental on ground works or projects within the catchment.

The winners of each category were:

Individual Award	Garry Hannigan for 'Churinga'
School Award	Byrock Public School
Community Award	Cobar Penepplain Environmental Group
Industry Award	Peak Gold Mines

The ceremony was attended by diverse range of people from the Western Catchment community and was officiated by Daryl Green.

## Summary of Minutes

### Board Meeting 12 October 2004

The October General Meeting was held at the SES Offices, Cobar. For further information or general enquiries please contact Daryl Green on (02) 6883 3046

- The Property Vegetation Plan (PVP) trials have started in the Western Catchment with board members and staff attending trials. Feedback from the trials will be submitted to the relevant authority for consideration.

- Wayne O'Mally and Ken Croskell of the Western Division Shires Association attended the board meeting to discuss the working relationship between Western Division Shires and the Western CMA. A special meeting will be convened to discuss the value of developing a greater intimacy between the WCMA and WDSA.
- Mark Sutton, State Indigenous Land Management Facilitator attended the board meeting to establish projects that

will affect the indigenous population of the WCMA. It was determined that the Aboriginal people must see the progress and benefit to the land and that representation from each of the tribes throughout the region must be considered.

- The Investment Strategy 2004/07 is to be developed for the next board meeting for endorsement by the board.

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# Grain and Graze set to tackle farm productivity in the

Gill Stewart  
Extension Leader, Mallee  
Sustainable Farming Inc.

It is an exciting time for the Mallee farming and grazing community with the arrival of the new research, development and extension program Grain and Graze. The groundbreaking program is set to challenge the importance of livestock in maximizing the productivity of farming in the Mallee.

Grain & Graze represents a first for Australian agriculture. Four of the country's top Research and Development Corporations (RDCs), Meat & Livestock Australia, Australian Wool Innovation, Grains Research & Development Corporation and Land & Water Australia have developed a program that offers Mallee mixed farming enterprises the opportunity to significantly increase their productivity and profitability, while managing their natural resources. Grain & Graze program will work closely with Mallee Sustainable Farming (MSF) Inc. which boasts a network of 1400 farmers and numerous farmer groups across three states.

## Project region

The Grain and Graze program will be focused across the mixed farming regions

of NSW, Victoria and South Australia that are currently supported by MSF Inc. Therefore, the southern region of the Western Division of NSW will fit into that category where there are mixed cropping and grazing enterprises. The region targeted initially is from Hay through to Wentworth and as far north as the cropping belt extends. There are two other Grain and Graze projects in the southern region of NSW that are also supporting farmers in the Central West / Lachlan and Murrumbidgee regions.

## Components of the program:

**Integrated Monitoring Program** - this will see 6 farms selected for monitoring and analyses of farming and grazing systems already in place, and/or innovative systems which could be implemented as a result of local research. Monitor farms in this program will utilise Decision Support software to assess the financial implications of a particular strategy, then the implementation of this strategy would be monitored under the Grain & Graze project.

### **On-farm Research and Development**

- Initially, this will see the development of a Feed-Based Animal Production Information Package to evaluate the production impact of different management decisions, incorporating different feed scenarios to deliver information to farmers about the importance of feed in effective animal production and a Soil Biodiversity Monitoring program to measure the impact of Grain & Graze systems on Mallee soils over a four year period.

### **Communication and Capacity Building**

- Background work undertaken to assist in the development of the mallee program indicated that a significant research effort consistent with the aims of Grain & Graze is already taking place in the Mallee, however the knowledge and information products from this research effort are often directed to a single commodity or not coordinated between states. Many livestock producers have not engaged closely with grain extension programs and many cereal producers are moving away from livestock. Materials and a program to extend them are required for use across the three states.

The increasing shift towards continuous cropping and no till farming has significantly reduced the risk of soil erosion, and opened up new opportunities to better incorporate livestock in the total farming system. The Grain & Graze Program will expand on this current knowledge of how to incorporate conservation farming practices and how best to match livestock production with crop production for maximum profitability and sustainability.

## **How to get involved**

If you are interested in being involved in the Grain & Graze program and activities you can contact Mallee Sustainable Farming to have your thoughts and input registered with the Mallee G & G steering committee. This committee comprises farmer representatives from the Tri-state project region as well as agency and catchment staff. Field activities will be linked into current farmer group networks across the region, so this is also a good forum to raise issues with your local extension officer, who will be able to tap into additional research and extension support as required.

For more information on relevant Grain and Graze regional programs contact:

**Mallee Program** Coordinator: Beatrice Matthews. (03) 5021 9105 or via email at [beatrice.matthews@msfp.org.au](mailto:beatrice.matthews@msfp.org.au)

**Central West / Lachlan** (NSW) Program Coordinator: Ron Hacker (02) 6880 8002 or via email [ron.hacker@agric.nsw.gov.au](mailto:ron.hacker@agric.nsw.gov.au)

For broader information on Grain and Graze objectives, visit the program's web site at [www.grainandgraze.com.au](http://www.grainandgraze.com.au)

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## **Flora / fauna surveys done for free – interested?**

With the formation of Catchment Management Authorities and the restructure of natural resource management agencies, there are several professional officers involved in vegetation and biodiversity fields that require fieldwork in order to maintain their species identification skills and build on their extensive regional knowledge base. For this reason, we are prepared to conduct flora and fauna surveys on properties in the Western Division and Central Division in our own time. This would be free of charge to the landholders concerned, except for maybe providing some accommodation (e.g. shearers quarters) for the people conducting the surveys.

Ideally, we would be interested in hearing from landholders who have conservation areas, are seeking funding for conservation oriented works / management, or are part of a landcare group seeking biodiversity information. However, any landholder with an interest in what exists on their property can approach us.

Unfortunately, given surveys will have to be conducted in our free time, we can only manage to complete 1–2 surveys each spring / summer period (we need the other days off for family commitments!). In order to be as thorough as possible, each survey would need to last 5 nights in order to allow traps to capture the more elusive animals, and for surveyors to thoroughly cover the often large areas involved.

So, if you would like to know what lives and grows on your property, please contact Darren Shelly at 3 Rivergum Place, Dubbo, NSW 2830 ph. (02) 6884 6840 (h) email: [darren.shelly@dipnr.nsw.gov.au](mailto:darren.shelly@dipnr.nsw.gov.au)

# The QPLU\$ selection lines:

## Responses in fleece weight and fibre diameter continue after eight rounds of selection

by Sue Mortimer  
Livestock Research Officer,  
NSW Department of Primary  
Industries, Trangie  
Ph: (02) 6880 8008

### Background

The QPLU\$ selection lines at Trangie are part of a ten-year selection program for combinations of fleece weight and fibre diameter in the fine wool, medium wool and strong wool strains of Merino sheep. The selection lines were set up with a number of aims:

- To demonstrate the improvements in fleece weight and fibre diameter in lines of Merino sheep selected on an index of clean fleece weight and fibre diameter.
- To demonstrate to breeders the consequences of this type of selection on other production, wool quality, meat quality and reproduction traits influencing lifetime performance.
- To provide breeders with information to help them choose a balance of measured and visual selection that will achieve their breeding objective.

The last mating of selected progeny occurred in early 2004. The project's experimental work is expected to be completed by 1) the evaluation of the 2004 drop progeny during 2005 (rams and ewes to hogget age) and then by 2) the evaluation of reproduction and production traits of 2004 drop ewes over three lambing opportunities (to December 2008).

### The QPLU\$ selection lines

The QPLU\$ selection lines include:

- **3% Micron Premium (MP) Breeding Objective Line:** This breeding objective maintains fibre diameter while maximising the improvement in clean fleece weight. It is the most profitable breeding objective if the market will

pay 3% more per kg for wool that is one micron finer. This line occurs only in the medium wool strain.

- **8% Micron Premium (MP) Breeding Objective Line:** Here the objective maximises the increased fleece weight while reducing fibre diameter. It is the most profitable breeding objective if the market will pay 8% more per kg for wool that is one micron finer. This line occurs in all three strains.
- **15% Micron Premium (MP) Breeding Objective Line:** Here the objective maximises the reduction in fibre diameter while maintaining fleece weight. It is the most profitable breeding objective if the market will pay 15% more per kg for wool that is one micron finer. This line occurs only in the medium wool strain.
- **Industry Line:** the breeding objective of this line was set by the QPLU\$ Industry Liaison Committee. Selections are made by John Williams, using a balance of index performance and visual assessment. This line occurs only in the medium wool strain.
- **Control Line:** random mating to maintain a line that represents the original population.

The percentage figures refer to the micron premium on which they are based, which in turn reflect the varying emphases on fleece weight and fibre diameter in the breeding objective.

### 2002 drop responses

Responses in the selection lines are continuing and moving generally in the direction of improvement in fleece weight

relative to fibre diameter predicted from their breeding objectives. The responses show that the selection lines are on target to achieve the improvements predicted after ten rounds of selection.

The changes in clean fleece weight and average fibre diameter of the 2002 drop hoggets in each of the selection lines are shown in Table 1 and Figures 1 and 2. The responses are presented as estimated breeding values. An animal's estimated breeding value describes the difference in performance of the progeny of that animal relative to a benchmark or base value of performance e.g. a flock or breed average.

Improvements of about 11–14% in clean fleece weight and 1.1–1.2 microns have been achieved across the three 8% Micron Premium lines in each strain. The Industry line (where selection also includes conformation and fleece quality) achieved improvements of about 12% in clean fleece weight and 0.9 micron in fibre diameter.

Within the medium wool strain, the 15% Micron Premium line (high emphasis on fibre diameter) achieved a reduction in fibre diameter of about 2.1 microns with little change in fleece weight. On the other hand, the 3% Micron Premium line (high emphasis on fleece weight) achieved an improvement of 17% in clean fleece weight with a slight reduction in fibre diameter.

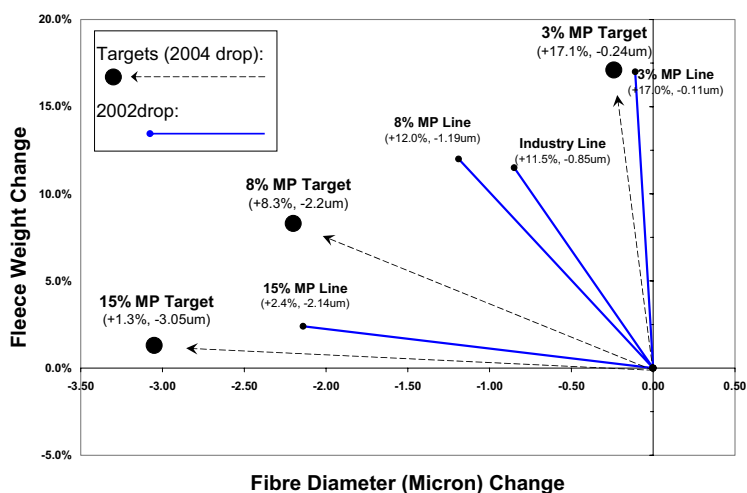
However, responses in fleece weight in the equal emphasis lines (8% Micron Premium) of all strains continue to be larger than predicted for this stage of the selection program. Analyses of the responses will be done to identify the impact, if any, of the likely influences on the observed rates of response and their variability, for example the effects of variable selection differentials and accuracy of selection.

For more information contact Sue Mortimer: phone (02) 6880 8008 or email [sue.mortimer@agric.nsw.gov.au](mailto:sue.mortimer@agric.nsw.gov.au)

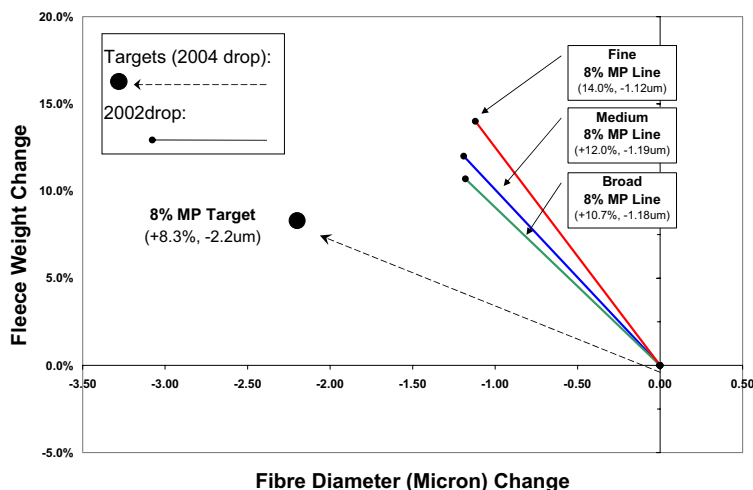
**Table 1: Improvements in fleece weight and fibre diameter in the 2002 drop of each selection line, relative to the base flocks (1993–94) of each strain**

Strain	Selection Line	Fibre Diameter (mm)	Clean Fleece Weight (kg)
Fine	Base	19.7	3.5
	Control	-0.06	-0.07
	8 % MP	-1.12	0.49
	Base	20.8	4.4 (kg)
	Control	0.08	+0.06
Medium-Peppin	Industry	-0.85	+0.51
	3 % MP	-0.11	+0.75
	8 % MP	-1.19	+0.53
	15 % MP	-2.14	+0.11
Broad	Base	23.2	5.0 (kg)
	Control	0.43	-0.09
	8 % MP	-1.18	+0.54

**Figure 1: Responses in the 2002 drop medium wool lines, relative to predictions for the 2004 drop**



**Figure 2: Responses in the 2002 drop 8% Micron premium selection lines from each strain, relative to predictions for the 2004 drop**



# Management benefits intended from study of Narran



Narran River delta

CRC for Freshwater Ecology  
Web: <http://freshwater.canberra.edu.au>  
Email: [pa@freshwater.canberra.edu.au](mailto:pa@freshwater.canberra.edu.au)

## Introduction

The Narran River catchment, like some other semi-arid catchments in Australia, has had significant water resource development in the past few years. Diversion of water from the river for irrigated agriculture, and the construction of levees on the floodplain, have interrupted the flow of the river and changed its patterns of flooding.

In this floodplain environment, flooding is a major influence on the shape of the landscape and the patterns of vegetation across it. Naturally, flooding also controls the amount of water in the lakes and wetlands that make up the Narran Lakes terminal wetland complex at the western end of the Narran River, near Brewarrina.

A team from the Cooperative Research Centre for Freshwater Ecology, in partnership with the Murray-Darling Basin Commission, is engaged in a four-year study to learn how the Narran Lakes wetland complex responds to alterations in flow. What happens if the normally variable flow and flood patterns are altered, by climate change or development of the water resources upstream?

The wetland complex covers around 30,000 ha, including three major wetlands (Back Lake, Clear Lake and Narran Lake), a large area of floodplain, and the main channel of the Narran River itself. Part of this area, the Narran Lakes Nature Reserve (surrounding Back and Clear lakes), is listed as a Ramsar wetland of international importance.

The study is collecting new data and coordinating them with information available from previous studies. There are two main foci: patterns of inundation of the floodplain and wetlands; and the ecology of plant- and animal-life in the whole Narran Lakes ecosystem.

## Flow records examined

Martin Thoms, Scott Rayburg and Orla Murray (all from University of Canberra) are examining the flow records for the last 40 years, and building a new high-resolution topographical data-set for the lakes. They have data from all the gauges on the Narran River, as well as seven sets of aerial photographs, from 1959 to 2004, and approximately 70 satellite images. By calculating the volumes of water in the lakes resulting from various flood flows, the team is working out the surface areas and water depths across the lakes during various floods. Lake size, shape and water depth influence the suitability of habitats for fish, birds and aquatic plants.

The satellite images show the lakes before and after each of 20 lake-fillings since 1981, enabling Scott to calibrate a flows model (MIKEFlood). The model will be used to predict how much water will be in the lakes, its whereabouts, and for how long, for any observed river flow.

Before this research study, there had been no detailed hydrologic investigation of the

inundation patterns of the Narran Lakes ecosystem.

## Fauna survey

Ecologists Gerry Quinn and Sam Capon (Monash University), Glenn Wilson, Cassie James, Tariq and Minal Khan, and Mel White (Goondiwindi MDFRC Northern Basin Lab), Kate Brandis and Richard Kingsford (NPWS) are investigating vegetation, fish, invertebrates and waterbirds in riverine, floodplain and lake habitats within the wetland complex. To supplement data from previous studies and aerial surveys, the ecological research team has been conducting field surveys and experiments during 2004, which will be continued in 2005. The main aquatic sampling sites include Narran River upstream of the weir, Narran Lake delta, Long Arm, Back Lake, Clear Lake (near the middens and at the river off-take), and Narran River at the exit of the off-take, while vegetation and waterbirds are being surveyed throughout the wetland complex.

Fish samples in 2004 have consisted mainly of Spangled Perch (as reported in Western Division Newsletter no. 100), but the team has also found numerous Bony Bream, as well as some Hyrtl's Tandan (catfish), Yellowbelly and Murray Cod.

Of sixty-five species of waterbirds recorded in the Narran Lakes Nature Reserve in the past ten years, 46 are known to breed there. Kate's component of the study aims to find out how important the wetland system is for the breeding of local and migratory waterbirds (both from elsewhere in Australia and from overseas). The lake-filling in January–February 2004 did not completely fill the wetland complex and did not trigger breeding. Kate will be comparing records from the Narran Lakes area with breeding records collected from across Australia to see if the area is essential for maintaining populations of nine waterbird species.

## Lignum

Lignum around the Narran River and Lakes is known to be used as breeding habitat by waterbirds such as Straw-necked Ibis. As Sam Capon has also found near the Cooper Creek in western Queensland, lignum only grows well in areas that are frequently flooded, and its height and density depend on flooding history. The area of lignum (estimated at 890 ha\*) at Narran Lakes is thought to be the largest to be found anywhere in Australia at present.

Experiments using sediments from the Narran Lakes area are producing information about the hatching and germination of eggs and seeds in response to various hydrological conditions.

## Landholder interviews



Lignum on Back Lake  
February 2004

Putting the whole scientific study into a human context, Janey Adams (Northern Basin Laboratory) and Dianne Tyson (Historian from the Back of Bourke Exhibition Centre in Bourke) are travelling the Narran River and Lakes area audio-taping interviews with long-time residents

of the region. Some very interesting observations and memories are emerging, which could not have been collected in other ways.

For example, although a number of documents report that Clear Lake fills first during flooding and then overflows into Back Lake, a sizeable number of landholders do not agree, on the basis of their on-the-spot observations. The inundation pattern via channels and overland flow is actually very complex, and the hydrology team hopes to unravel a definitive sequence during its analysis.

Another scientifically useful memory is the report that previous landholders used to remove lignum (*Muehlenbeckia florulenta*) from Back Lake to improve grazing.

The interview topic list now includes several questions about lignum, including:

- where and when did removal of lignum occur?
- was it burned off or pulled with chains?
- when did removal cease?
- how quickly did the lignum regrow?

These add to the questions that ask, for example, how long the family has lived in the area; what sorts of records they have of earlier years; what birds, predators, fish, bait, and catch sizes have been seen in the past; whether and how the vegetation has changed; and the extent of previous floods.

During an interview, the resident is asked to link any particular event, such as a flood or fish-kill, to a date or to something that happened at the same time so that a date

can be obtained. As the interviews proceed, residents become more comfortable and often become expansive. The recordings and notes from each interview are being transcribed and each participant will be given a copy to check or add to. Eventually the information will be collated into a report and made available on CD-ROM.

The Narran River and Lakes is an ideal ecosystem in which to explore the effects of increasing use of limited water resources. Median monthly river flows in the Narran River at Dirranbandi–Hebel Road range, for example, from 0 ML in June to October 1965 up to 4623 ML in February 2003. The dry climate (annual average rainfall of 475 mm and evaporation of 2250 mm) results in very high demands on river water by competing users, including irrigated-cotton growers and floodplain graziers. Allocations of water in the region are complicated, with differing water entitlement systems on the two sides of the Queensland–New South Wales border.

It is to be hoped that the activities of the state management agencies and our and other research teams can determine the best way of managing such systems for both economic and ecological long-term goals.

#### Footnotes

\* information from DIPNR

From an agency person's perspective, I found the tour a refreshing and positive experience. Refreshing in the way these young landholders were keen and willing to listen and learn from each other; and positive in the knowledge that the future of farming in the Western Division is in good hands if this group is any indication. The benefits to group participants will be significant, and the linkages that have been formed both professionally and socially,

will, I hope be a catalyst for positive change in the Western Division.

For more information about the Rotating Farm Tours contact:

Farm Tours Coordinator,  
Terry Smith

'Scarsdale' station via Broken Hill  
(08) 8091 9408



# Western Lands Advisory Council



## 22 November 2004

The newly appointed Western Lands Advisory Council held its first meeting in Cobar on 8 November 2004. The following members have been appointed for three years:

- Jenny McLellan AM, Brewarrina as the Independent Chair
- Mr Lance Howley, Kyalite and Mr James Morris, Walgett representing the NSW Farmers
- Mr Ken Turner, Broken Hill, representing the Pastoralists' Association of West Darling
- Mr Rory Treweeke – Lightning Ridge, representing the Catchment Management Authorities
- Clr Wayne O'Mally, Bourke and Clr Clive Linnett, OAM, Ivanhoe, representing the Western Division Group of the Shires Association of NSW
- Dr Beryl Carmichael representing Aboriginal interests
- Mr Terry Korn, Dubbo – representing Department of Environment and Conservation
- Mr Geoff Woods, Broken Hill representing Department of Primary Industries
- Mr Geoff Wise, Dubbo representing Department of Infrastructure, Planning and Natural Resources and also Western Lands Commissioner

All were in attendance except for an apology from Rory Treweeke. Also present were Mr Peter Walker and Ms Marita Woods, DIPNR, Dubbo.

There are still three persons to be appointed to the Advisory Council and it was a disappointment that their appointments had

not been finalised for their attendance at this first meeting. Those to be appointed are a landholder who is independent of any primary producer associations, a person representing Aboriginal interests and a person nominated by the Nature Conservation Council of New South Wales to represent the interests of environmental protection groups. For appointment to the Advisory Council, a person must have, in the Minister's opinion, a current or recent connection with, or has a relevant interest in, the Western Division.

The meeting decided on the Advisory Council's meeting protocol and procedures, its role and charter, how conflict of interest is to be dealt with, how decision making processes will be managed, its communication strategy and its relationship with other relevant committees and bodies.

The objects of the Western Lands Act that the Advisory Council must work under are:

- a) to establish an appropriate system of land tenure for the Western Division;
- b) to regulate the manner in which land in the Western Division may be dealt with;
- c) to provide for the establishment of a formal access network, by means of roads and rights of way, in the Western Division;
- d) to establish the rights and responsibilities of lessees and other persons with respect to the use of land in the Western Division;
- e) to ensure that land in the Western Division is used in accordance with the principles of ecologically sustainable development referred to in section 6 (2) of the *Protection of the Environment Administration Act 1991*;
- f) to promote the social, economic and environmental interests of the Western Division; and

Western Lands Advisory  
Council  
P O Box 1840  
Dubbo N.S.W. 2830

- g) to make other provision for the effective integration of land administration and natural resources management in the Western Division.

The Functions of the Western Lands Advisory Council as described in the Act are:

- 1) The principal functions of the Western Lands Advisory Council are as follows:
  - a) to advise the Minister on matters relevant to the objects of this Act,
  - b) to advise the Minister on matters affecting the administration of the Western Division,
  - c) to consult with persons and bodies having an interest in any matter affecting the administration of the Western Division.
- 2) The Western Lands Advisory Council has such other functions as are conferred or imposed on it by or under this or any other Act or law.
- 3) For the purpose of exercising its functions, the Western Lands Advisory Council may consult with, and receive submissions from, other persons and bodies.

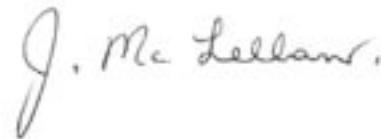
The meeting was briefed by Peter Walker, Manager Resource Access and Compliance DIPNR, Far West Region, Dubbo on the objects of the Western Lands Act, including what sort of tenures there could be in the Western Division and that some tenures may have rules for conversion. A paper was also circulated on current and future policy development by DIPNR Far West Region that the Advisory Council can deal with in the short term and later. Advice on definitions within the rent system is an urgent topic to be finalised. The policies to be followed in the establishment of the legal road access will be formalised in time by the members and will need considerable debate and decision-making.

The Western Lands Advisory Council has a charter in the Act to deal with the social, economic and environmental interests in the Western Division and an obligation to report those issues, impacts or benefits

to Minister Knowles. This will include the recently released Native Vegetation Regulation and how it will affect the Western Division. The six relevant Catchment Management Authorities are being asked if there are any issues or concerns with the Native Vegetation Act or the Regulation they wish to bring to the attention of the Advisory Council to ensure our decisions support and deliver viable and healthy communities and landscapes in the Western Division.

The Advisory Council also recommended that the Western Lands Commissioner remains responsible for the approval of all cultivation permits in the Western Division to ensure consistency across the Western Division for cultivation decisions and the only way to do that is to keep the one unit with the Western Lands Commissioner.

The next meeting of the Western Lands Advisory Council is to be held on 17 and 18 February, 2005 in Lightning Ridge and to inspect the area and also assess whether the Advisory Council can value add to resolution of the issues expressed about landholder rights and opal mining access, in view of the potential opening up of Opal Prospecting Area 4 for mining.



Jenny McLellan  
Chair

Phone: (02) 6839 1813  
Mobile: 0419 279 610

# Wild Dog Destruction Board

## Letter from Chairman

**Dear Landholder,**

The Dog Fence plays an extremely important part in the viability of the properties in the Western Division – without protection from the fence, it would become impossible to commercially graze animals and the wild dogs would threaten native animals across NSW. The role of the Wild Dog Destruction Board is to build the fence and maintain it in a dog proof state.

To do this, the Board employs 15 people. These employees, along with their families, live at specific locations along the fence. Landholders adjoining the fence would be aware of their nearest Dog Fence employee. These employees are responsible to the Operations Manager at Smithville, who is ultimately responsible to the Board, and thus through the Board, are responsible to the rate payers of the Western Division.

The length of the Dog Fence and the adjacent access road is a work place where these employees travel on a regular basis. These people are paid to maintain this fence and to do this adequately must concentrate fully on the fence while traveling along it. To do this they should not have to be fearful of unauthorized traffic along the fence. The Board would very much appreciate it if adjoining landholders could assist the board and staff by advising the members of the public to be very aware of the employees' well being and safety. These people perform a very valuable task for the rate payers of the Western Division in keeping the area free/near to free of wild dogs.

It would be appreciated if adjoining landholders could also help the Board respect the safety of the workers by trying to minimize traffic along the fence. No doubt, as business owners, you would be aware of the obligations to OH & S. With this in mind, anyone wishing to visit or traverse any part of the fence, other than to go through gates on the public road, must make arrangements with Len Dixon, Operations Manager, who lives at Smithville.

It is sincerely hoped that a good relationship can be maintained between the Wild Dog Destruction Board, employees of the Dog Board, neighbouring landholders and rate payers in general.

**Geoff Wise, Chairman, Wild Dog Destruction Board**

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## Book review:

### *Pasture Degradation and Recovery in Australia's Rangelands – Learning from History*

Edited by Greg McKeon, Wayne Hall, Beverly Henry, Grant Stone and Ian Watson, Department of Natural Resources, Mines and Energy, May 2004  
QNRME04130, ISBN 1 920920 55 2

Much has been written in previous editions of the Western Division Newsletter of the current drought and drought management strategies. Now a new book, published in May 2004, describes and analyses major drought and degradation periods that have occurred over the last one hundred years across Australia's rangelands. Historical degradation episodes in Australia are linked to global climate, economic forces and their interaction with rangeland

by Lee-Anne McInerney, Librarian,  
NSW Department of Primary Industries

grazing systems in the hope that rangelands will be better managed from learning about the mistakes and successes of the past. Eight degradation and recovery episodes in Australia's rangelands are discussed including the climate and grazing history, observations and analysis, recovery, and lessons to learn from the episode.

Based on research conducted across several State agencies and institutions, this book is a testament to the power of sharing scientific information and observations. Well referenced and well written, this book will prove valuable for anyone responsible for grazing land management in Australia's rangelands.

A summary of the book can be read at [http://www.longpaddock.qld.gov.au/AboutUs/Publications/ByType/Reports/LearningFromHistory/Summary/Summary\\_NinePages.pdf](http://www.longpaddock.qld.gov.au/AboutUs/Publications/ByType/Reports/LearningFromHistory/Summary/Summary_NinePages.pdf)

Available on request from [rouseabout@nrm.qld.gov.au](mailto:rouseabout@nrm.qld.gov.au) or by contacting the Australian Greenhouse Office infoline on 1300 130 606

# Western Division Newsletter

NSW Department of Primary Industries

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## To the Landholder



# Western Division newsletter

The editors of the WDN welcome contributions

Issue	Editorial Office	Deadline	Issue	Editorial Office	Deadline
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