

Pastoral MEMO

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Southern Rangelands

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Upper Gascoyne LCDC field day



Working together at the Upper Gascoyne LCDC field day

It was in 2004 that members of the Upper Gascoyne Land Care District Committee (LCDC) got together to discuss the pros and cons of sourcing Natural Resource Management (NRM) funding for landcare projects and the future direction of the group (see page 3).

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Upper Gascoyne LCDC field day —22 April 2009

Chairman Jim Caunt

It was in 2004 that members of the Upper Gascoyne Land Care District Committee (LCDC) got together to discuss the pros and cons of sourcing Natural Resource Management (NRM) funding for landcare projects and the future direction of the group. This meeting evolved to be the starting block of a successful funding application to carry out a variety of on-ground projects throughout the Upper Gascoyne including fencing of land systems, construction of Total Grazing Management (TGM) yards and the relocation of existing and establishment of new watering points. It was about this time that the attitudes of landholders had taken a significant shift and the area was injected with a sense of new enthusiasm and motivation brought on by the movement from sheep to cattle. It was with this keenness that the UG LCDC members embarked on the many landcare projects that they had been successfully funded for.

The group has, however, encountered setbacks, the largest being the synchronised spike in material prices with the mining boom, putting a strain on labour availability and project completion. Yet it was with the commitment of the group that all projects were fulfilled. The on-ground projects that have been undertaken in the UG are not pioneering, they are merely old principles adjusted by new thinking. The innovation of the UG LCDC lies with the changed attitude of the community and the ability for this outlook to rub off and be recognised by the broader community.

Five years on secretary Louis Weston and I sit down to complete the final report for NRM projects in the UG LCDC and I realise just what has been achieved. Through the NRM funding received, the UG LCDC has been able to generate significant social, economic and political developments throughout the area. Projects have led to whole community involvement with some 13 properties (90% of the LCDC area) taking part in funded projects. The retainment of youth in the district has been addressed by producing employment of young locals through administration, project development and contract opportunities. Shires have played a part in the establishment of grids, so too have water drillers, freight companies, merchandise and service delivery agencies. The progress and momentum that has been generated by groups such as the Lyndon and UG LCDCs has helped to act as the catalyst for many of the Gascoyne's successful landcare programs including rehabilitation of land systems, involvement in Agripolitics, the Ecologically Sustainable Rangelands Management (ESRM). The Gascoyne Catchments Project (GCP) came about as a result of the Lyndon, Upper Gascoyne and Wooramel LCDCs joining forces in partnership with ESRM.

Individual LCDCs provide the means for a finger on the pulse approach to smaller communities, they present people with the opportunity to voice their opinions on what they feel is important in terms of property scale and catchment scale landcare. It is these finer detail ideas that enable larger groups such as the GCP to address a wide range of pastoral issues, for example the development of a self-assessment and reporting tool and the development of a nationwide cattle industry forum. This is why it is important to retain individual LCDC identities, and funding, as they are the grass roots solution to ensuring that small scale issues aren't overlooked.

A note from the editor

Greg Brennan, DAFWA, Geraldton (9956 8554)

The control of wild dogs and kangaroos meets the classification of a '*wicked problem*' in that there are complex interactions and conflicting interest groups involved in the issues. Researcher Michael Parsons is a rare research scientist in that he addresses the social challenge of the *wicked problem* in his article on the use of dingo urine as a kangaroo deterrent.

Alternative methods for dealing with intractable problems?

Producers in the Southern Rangelands face many daunting challenges and some of them are addressed in this edition. It is no coincidence that historically, shrublands all around the world have suffered large losses of productive capacity and topsoil loss when water points are multiplied. Where buffel grass has not come to the accidental rescue in our region, the productive capacity has reduced and soil loss can be a problem. Wild dogs continue to populate areas previously free of predation and there's no relief in sight. These problems meet the '*wicked problem*' criteria: they are enduring, complex and involve many conflicting interests.

The Australian Public Service Commission has identified that complex problems like these cannot be solved with normal problem solving methods. They produced a document entitled *Tackling wicked problems* to assist public servants improve their effectiveness dealing with complex problems. Industry leaders may have to show the way forward with these problems. They may find some ideas in this article. It's a 20-page challenge written for public servants but it's well written. Even the Commissioner's one-page preface provides some good insights. You can find it at: <http://www.apsc.gov.au/publications07/wickedproblems.htm>.

Guard dogs again! Across Australia there is a growing interest in livestock guard dogs as a means of controlling wild dogs and kangaroos. I could not understand how this would be possible in our shrublands until the Stuart-Moore family explained that the guard dogs actually control access to the water point and at night they patrol and mark out the surrounding territory. That also explains how they control the kangaroo population. We have reproduced a section from a comprehensive article in the *Australian Farm Journal*. The full article, with lots of internet links, can be found at <http://www.dunluce.com.au>.

The healing power of litter: Jim Addison's article explaining the erosive power of raindrops falling on bare ground identifies what some are beginning to see as the root cause for the loss of the social, economic and environmental fabric of the region. Rainfall is the most limiting resource in our region and far too much of it runs into salt lakes and the Indian Ocean, transporting millions of tonnes of topsoil. Recent communications with a number of shire CEOs revealed that they too are fully aware that this same raindrop effect is what is costing them millions of dollars in road repairs after each heavy rainfall event. Cooperative efforts between shires and pastoralists may find new sources of funding assistance to deal with the problem.

Community power: We have a number of articles which are testament to the energy that can be created by community and industry cooperation. Often strong producer groups can make life difficult for public servants, especially when they start to test their new found power. There is good evidence that the benefits from autonomous industry groups, far outweighs these teething problems. It takes time and large dollops of patience and tact on both sides to make them work. These qualities will surely be in big demand as the Recognised Biosecurity Groups are formed.

How to capitalise on the strengths of pastoral breeding and farm finishing: The articles by farmer Craig Forsyth (see page 40) and DAFWA staff Smith and Harburg (see page 42) demonstrate how much more value stays in the supply chain when pastoralist and farmer work closely to streamline the supply chain.

Because we are now down to six-monthly editions, this Memo is bigger than usual. Printed communications are rapidly being overtaken by electronic media as the internet continues to revolutionise communications. We will continue to publish the Memo but often there are important issues that are needed to be communicated immediately.

If you would like to receive email communications of relevant information, please email me your contacts at greg.brennan@agric.wa.gov.au.

Gaining a deeper understanding and a brighter future with Rangelands Australia

Two Western Australians are completing tertiary studies with Rangelands Australia and are gaining greater knowledge in their chosen fields.

Trent Stillman manages an amalgamation of four properties totalling 990 000 hectares in the north-east Goldfields. Trent became interested in tertiary study after realising that he needed the qualifications for his work and future career prospects. Trent entered the program through recognised prior learning, which took into account his skills and knowledge that he had developed in his work without formal education such as reporting, budgeting and people management.

Trent has completed his Graduate Certificate in Rangeland Management and has started his Graduate Diploma. 'I have gained a lot from the subjects I have completed. I have changed my outlook on a lot of aspects and the way I do things at work', comments Trent. 'I really get a buzz from the learning process and the challenge of completing assignments. I see these studies as very beneficial to me now and in the future.'

After working in Natural Resource Management for a few years Hayley Turner (pictured) realised that she needed a deeper knowledge of her field, and jumped at the opportunity of completing a Graduate Certificate in Rangeland Management. 'I was learning a lot from the farmers I was working with, and I wanted that to be a two-way street.'



By studying while working full time as a Rangelands Development Officer with the WA Department of Agriculture and Food, Hayley was able to apply the knowledge she was gaining from her studies directly to her work every day. 'I used the course notes and readings to gain background information and this gave me the capacity to interpret what was happening in the rangelands and why', comments Hayley.

What is Rangelands Australia?

Rangelands Australia is based in the School of Natural and Rural Systems Management at the University of Queensland's Gatton campus.

Rangelands Australia has developed a number of coursework programs, which are designed to suit people from a range of backgrounds and all levels of involvement in the rangelands. It's no surprise then, that there is a wide range of people undertaking these programs, from people in government or regional Natural Resource Management (NRM) and Primary Industry agencies through to graziers, some of who left formal schooling in Year 10, but have a lifetime of experience, practical knowledge and skill.

Areas of study are varied—from Sustainable Rangeland Production, Rangeland Monitoring and Rangeland Ecology through to Effective Stakeholder Engagements and more (see <http://www.rangelands-australia.com.au>).

Rangelands Australia recognises that for many people the thought of tertiary education is very daunting, especially for mature aged (> 25) people with little or no recent experience of tertiary study, who live in rural and remote areas of Australia. To make the challenge of tertiary education a little easier, Rangelands Australia have developed a national network of Rangeland Champions. The Champions have proven an invaluable source of knowledge and practical experience to students, helping with many aspects of tertiary education such as looking at options for tertiary study, study tips, clarifying university requirements or expectations, and providing motivation and encouragement.

Rangelands Australia

Website: <http://www.rangelands-australia.com.au>

Phone: (07) 5460 1660

Email: rangelands@uqg.uq.edu.au

Getting into further study

Thinking of further study, but not sure you could do it, or what's expected of you?

Then you should do the three-day 'Getting into further study' short course developed by Rangelands Australia and supported by the Foundation for Rural and Regional Renewal (FRRR).

The course covers:

- effective learning practices and management of study
- planning and research for assignments and reports
- evaluating and using information in assignments and reports
- structuring your understanding and thinking for assignments and reports
- writing for easy reading (and marking)
- effective presentations.

The course content is suitable for anyone thinking of doing a university-level course in agriculture, range management or natural resource management, whatever the institution, and has been very useful in people's local committee roles.

We'll come to you if you can arrange a group of five or more and help us identify a mutually convenient location and time. The fee is only \$150 per person, thanks to funding provided by the Foundation for Rural and Regional Renewal.

To arrange a course in your area, contact:

Elizabeth Wallis, Rangelands Australia

Phone: (07) 5460 1660

Email: e.wallis@uq.edu.au.

Gascoyne pastoralists tour South Australia...

...as part of the 'Building Partnerships to Improve Rangeland Management and Pastoral Profitability in Semi-Arid Australia' Project

*Guy Morrison, Wharoonga Station, Carnarvon and
Rosemary Bartle, Rural Business Solutions Pty Ltd, Carnarvon*

The Building Partnerships Project, which has been operating across the southern rangelands of WA and SA since February 2006 is drawing to a close, and hence it was time for the project participants from both states to get together with the aim of sharing their learning and experiences gleaned over the past few years. Five pastoralists from the Gascoyne, Rosemary Bartle and Brian Warren winged their way to Adelaide and then on to Port Augusta for a four-day tour around projects which are underway in the Southern Flinders and Gawler Ranges of SA.

Telemetry systems for monitoring water and livestock

The first property visited was a stud Dorper enterprise to the south-east of Quorn in the southern Flinders Ranges, managed by Jamie McTaggart. Jamie is using telemetry (the Observant system) to monitor water points on this property as well as on another station near Woomera. Information on water tank levels plus photographs of the trough and yard area are transmitted via the UHF system to a computer in Jamie's office in Port Augusta. Pastoralists in WA are generally finding that repeaters are required at around 25 km intervals for the successful transmission of signals back to the base station. With Jamie's system, the signals are being transmitted over 150 km with only one repeater. Of course the difference between the two states is the terrain, with the flat country between Woomera and Port Augusta, plus a repeater atop the ranges just out from Port Augusta, being a distinct advantage. The system is working very well, and the photos are of high quality, with the only exception being when birds poop over the camera!

In addition to the remote monitoring of water points, Jamie is using the system to trial automatic weighing of stock at the waters, with the aim of keeping a close eye on lamb weights for marketing purposes. Eventually he would also like to install an automatic drafting system based on animal weights. The main challenge to date has been getting the sheep to stay long enough on the weighing platform to obtain accurate weight information, and to ensure that the weight and tag numbers are correlated. A time of three-quarters of a second on the scales is



*Remote weighing equipment
housed in an old fridge*

required for this to be achieved. While it doesn't sound long, it is proving to be quite a challenge and any number of race configurations have been trialled to slow the flow of sheep sufficiently to get accurate data. So far the data is proving useful for determining trends in weight gain of the lambs.

Another remote water monitoring system was viewed at Mt Ive Station on the edge of Lake Gairdner—famous as the site for the setting of land speed records, the annual 'Speed Week' and the backdrop for many car advertisements and Australian movies. The Mt Ive water monitoring system uses a sel-call to a UHF radio to monitor tank levels and to start up and shut down pumps. The advantage of this system is that the monitoring can be done from a vehicle, workshop or homestead—wherever there is a UHF radio—and does not rely on a single base station as with the computer systems. It is also able to handle 99 monitors. The disadvantage of the sel-call system is that it cannot support photographs or the use of weighing or drafting technology. The Observant technology uses a digital signal which means that larger volumes of data can be transmitted.

Reducing evaporation

Much of the Gawler Ranges is deficient in good quality groundwater, hence pastoralists rely on dams for stock water. With high temperatures, low humidity and strong winds across the region, the evaporation rate is up to 10 times the annual average rainfall. Hence reducing evaporation and preserving stock water is of utmost importance.

On Buckleboo Station, north of Kimba, several methods of reducing dam evaporation were investigated and one trialled. The one method that passed the criteria of being innovative, cost effective, still enabled fish and other water life to survive in the dam, and easy to install, was 'Agfloat'. This product consists of recycled truck tyres filled with crumbled polystyrene foam and closed off with the tread



Tyres reducing dam evaporation on Buckleboo Station

from a car tyre. The foam ensures the tyres float, and the tyres are simply floated on the dam to reduce the effect of wind on the dam surface and hence reduce evaporation.

The trial has shown that evaporation was reduced by around 70% over a 10-month period, which translates to saving enough water for 4500 sheep from the one dam. In the previous year, Buckleboo Station spent \$115 000 on transporting water for sheep. With a total cost of \$17 000 for putting the tyres on the dam at \$5.50 per tyre (including delivery and installation), it has certainly been a rewarding exercise.

Re-establishment of saltbush

On Thurlga Station we visited a revegetation trial which was established to evaluate different revegetation methods—direct seeding versus self establishment. The trial involved direct seeding bare and scalded areas with bladder saltbush (*Atriplex vesicaria*) using a Kimseeder with four different treatments:

- direct seeded at 5 metre contours
- ripped only at 5 metre contours

- alternate rows direct seeded at 10 metre contours, with other rows ripped only
- direct seeded exclusion plot.

The saltbush seed was collected locally using a portable blower vac and using labour from the Australian Conservation Volunteers. With the ongoing drought in SA and the total absence of rain since planting, there has not been any germination to date.



Typical country in the Gawler Ranges: western myall, pearl bluebush and bladder saltbush

Biodiversity of ephemeral lakes

There are several significant ephemeral lake systems in the Southern Gawler

Ranges which filled following unusually large summer rains in early 2007. This provided an opportunity for biodiversity surveys to be conducted over the ensuing 12 months, and for pastoral station management plans to be developed to ensure rare, nomadic and migratory bird species are not threatened. The surveys revealed 31 species of bird used these lakes, including five migratory species. Species of highest conservation significance recorded were the freckled duck, blue-billed duck, pink-eared duck, Eurasian coot, pied stilt, black swan and blackfronted dotterel.

The surveys are continuing and once complete, managers of the surrounding stations will be involved in putting together recommendations on how the lakes and areas surrounding them should be managed to maintain and increase biodiversity.

In addition to surveying the water birds, pastoralists in the region were involved in workshops to increase their bird identification skills and to understand their habitat requirements and their threats to survival. The presence of a wide diversity of bird species is a good indicator of the health of the environment and changes that may be occurring to it. Hence, by knowing your birds and keeping a close watch on them, you have another monitoring tool at your disposal for measuring the effectiveness of your management.

Other projects and activities

Other activities being conducted in SA as part of the Building Partnerships Project are:

- water quality workshops
- ruminant nutrition workshops
- trialling the M44 ejectors for fox control
- development of an Environmental Management System for a group of stations in the Outback Lakes district.

The trip to SA was a great opportunity for the Gascoyne pastoralists to see what is happening in another part of the Australian rangelands, and to exchange ideas with fellow pastoralists. Many thanks to Rural Solutions SA for organising the trip, to our station hosts for taking time out to show us around and putting up with our barrage of questions, and to NHT for funding the trip.

The 'Building Partnerships to Improve Rangeland Management and Pastoral Profitability in Semi-Arid Australia' Project is funded by the National Heritage Trust and is managed by the NRM Rangelands Group.

VegMachine – working smarter not harder!

Kaz Johnson, Development Officer, DAFWA, Carnarvon

The ESRM team and the Department of Agriculture and Food (DAFWA) are working to provide more land management tools to assist in the productive and sustainable management of our Rangelands. Our pastoral communities manage a vast proportion of the Australian continent. The rangeland regions experience high climatic variability and it can often be difficult to get an accurate impression of the overall health of the landscape (paddock, whole property, region and/or catchment). Remote sensing coupled with appropriate software packages like *VegMachine* can assist land managers and extension officers to make more informed decisions based on the interpretation of the available (historic and current) satellite imagery and data. These tools are only effective when used in conjunction with local knowledge, research and on-ground expertise.

Generally land managers and extension officers don't have ready access to the spatial information collected by the many satellites buzzing through our skies. If it is available, it is often costly, dated and difficult to interpret.

A recent training workshop held in Carnarvon saw representatives from DAFWA, DEC, Rangelands NRM and the Gascoyne Catchments Program learning the ins and outs of how this software can be used. The training was delivered by Jeremy Wallace from CSIRO and Terry Beutel from QLD DPI. The intention is to be able to roll out the software and training to land managers throughout the Rangelands, so that anyone who is interested can have the skills to easily read and interpret the data of their property on a home computer. It is hoped that this tool will be linked to the self assessment and reporting tool being developed by Jodie Caunt and the Gascoyne Catchments Project.

VegMachine is a software package designed to easily display overall land condition and vegetation and soil trends. The information presented can be used to assist with management decisions like:

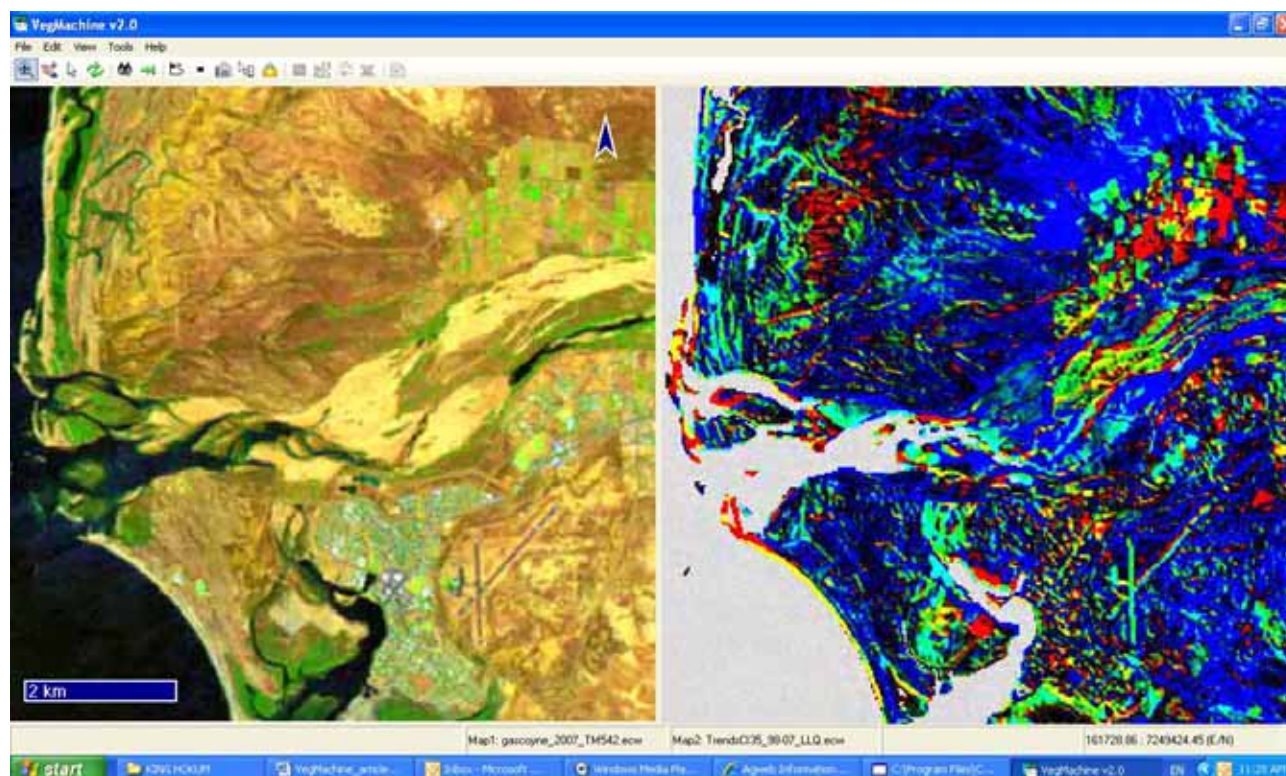
- **monitoring land condition** (what is happening over time to paddocks, the whole property or the catchment area—erosion, woodland thickening, grazing)
- **grazing management** (where are pastures being under or over utilised)
- **infrastructure placement** (if fences or roads are causing problems and need to be moved, where could they be moved to)
- **fire/flood management** (which areas might require a burn, or, following a burn or flood, which areas require fencing or rest from grazing).

How does *VegMachine* work? Satellite data is collected around our planet every second of the day, so by utilising this technology we are able to learn more about the landscape processes. While it is a highly valuable tool in saving time, it is still vital to integrate the information presented in *VegMachine* with on-ground knowledge and an understanding of the background story of particular areas of interest.

The following diagram is an example of what can be seen on the computer screen when working with *VegMachine*. The computer screen is split into two windows; in this case, on the left is a satellite photo image of the Gascoyne River mouth and the township of Carnarvon. The image on the right is of exactly the same site but contains different information. **The colours presented in the right-hand image** are an example of the vegetation and soil change trends of this region from 1998–2007. Each block of colour represents an area of 25 m² on the ground. For the purpose of this diagram the colours represent differing cover and trends in vegetation:

blue = increase in vegetation/cover
red = decrease in vegetation/cover

green/yellow = activity (either positive or negative)
black = stable or unchanged.



From the data contained in these windows, further detail can be extracted by zooming into particular areas (benchmark sites, ground monitoring sites, etc.) and graphing the recorded changes over a given timeframe. There is also the opportunity to attach photographs to particular areas of interest (for example every six months when set monitoring sites are visited and examined, a digital photo is taken of the site, this image can then be uploaded directly to that site for future comparison).

While no one system of monitoring has all of the answers, access to satellite imagery provides another tool to monitor, provide evidence and ultimately improve management. Ground-based monitoring sites are still fundamental as they provide excellent detail and are often friendlier (in terms of techno-skills). By combining the two systems we can develop a very useful tool to provide information and to improve timing of decisions which will underpin better rangeland management.

If you would like any more information on how *VegMachine* works or how it could best work for you feel free to contact the ESRM team on (08) 9956 3333 or check out the *VegMachine* website <http://www.csiro.au/solutions/Vegmachine.html>.

Rainfall effectiveness, soil erosion and landscape rehabilitation

Jim Addison, Senior Technical Officer, DAFWA, Kalgoorlie

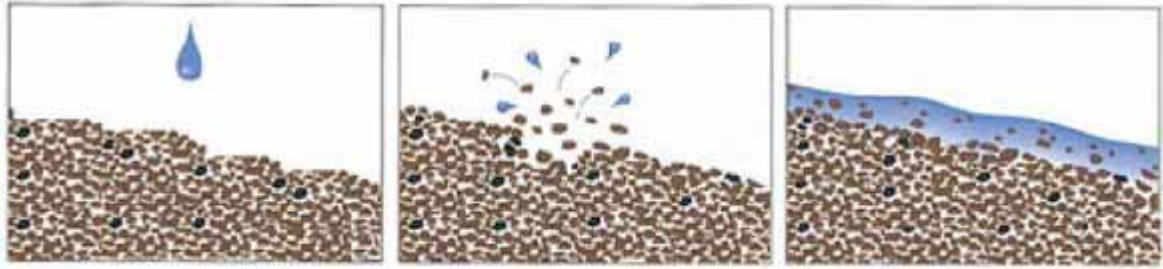
It is no surprise that within any given landscape the presence of water erosion is closely linked to rainfall characteristics. This is in part through the detaching power of raindrops hitting the soil surface. A falling raindrop typically has a terminal velocity of 9 metres per second which delivers a kinetic energy to detach soil particles. The larger the raindrop the greater the kinetic energy—this is one of the reasons why summer thunderstorms tend to be more erosive than gentle winter rains. Heavy raindrop action on bare ground also tends to ‘sort’ surface soil particles resulting in a less permeable micro-stratum on the soil surface.



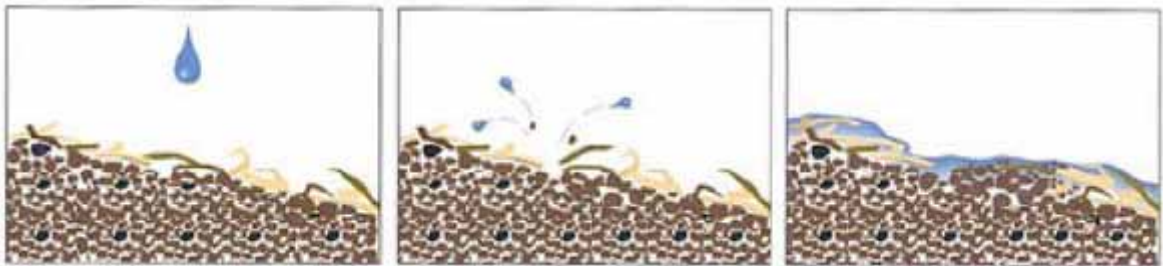
Soil erosion by water begins when a raindrop splash dislodges soil particles. The impact of a single raindrop can cause soil particles to be thrown as high as 1.5 metres in the air.

Rainfall intensity that is in excess of infiltration rate produces surface run-off that may both transport detached soil particles and be an erosive agent in its own right. Soil loss may occur as sheet erosion, micro-terracing, rilling, guttering and gulying. Rule-of-thumb is that if the speed of overland flow is doubled the erosive power is squared. For example, if overland flow increases in speed from 1 km/hour to 2 km/hour the erosive power of that flow is quadrupled. This exponential increase in erosivity is largely the result of increased water turbulence.

Minimising run-off both reduces soil loss and also delivers enhanced soil moisture for forage growth. Run-off can be reduced by increasing infiltration rates through adoption of grazing management strategies that improve vegetative/litter cover. The effectiveness of plant cover in reducing water erosion in Southern Rangeland landscapes is governed by the continuity of the canopy, density of groundcover (including litter) and root density. Perennial grasses, e.g. woolly butt, are particularly effective in increasing the infiltration rate as root systems provide infiltration pathways for rainfall, as does associated insect activity. A major role for vegetation cover/litter is in the interception of raindrops, dissipating their kinetic energy instead of it being imparted to the soil surface. The structure of some rangeland trees and shrubs permits them to channel intercepted rainfall down the trunks to the root zone below—making more use of any rain showers. Mulgas can harvest 40% of the rain that falls on the canopy as stem flow. However, in the absence of some groundcover litter around the base of the tree this water resource may in part be lost as soil run-off and/or evaporation.



With no protective cover, raindrops can splash soil particles up to 1 metre away. Soil particles and aggregates that have been detached are then transported down the slope by run-off water.



Residue cover cushions the fall of raindrops and reduces or eliminates splash erosion. Small natural dams are formed that cause ponding of run-off. Sediment is deposited in these ponds and remains in the field.

Through maintaining stocking rate (forage demand) within carrying capacity (forage supply) over an extended period of years, the vegetative cover, drought resilience and productivity of many pastures currently in a vegetatively degraded condition may largely be restored. Where significant soil loss has already occurred this is unlikely to happen. Those landscapes that are more ecologically intact and have either inherent high infiltration rates or are water run-on areas will respond quickest. Rehabilitation efforts should focus on these landscapes where positive economic returns can be expected in a shorter timeframe.

Does carbon grazing pay on a pastoral lease?

Mark Alchin, Development Officer, DAFWA, Kununurra

There is ongoing debate concerning the opportunities for pastoralists to capitalise on the rush for the world's newest commodity—carbon. Opinions vary from those who believe that pastoralists could make millions, to those people who consider that the rangelands should be completely destocked and used as a carbon sink. The current lack of scientific data on the carbon sequestration potential of rangelands under different management options creates an environment where any ambit claim can gain currency.

The *Carbon Capture* Project, which is an initiative of DAFWA and Rangelands NRM, is working to determine the realistic potential for carbon sequestration of different land types under a suite of management options. These management options include: different stocking rate levels, grazing management systems and fire regimes.

Dr Bill Parton (Colorado State University), Dr Jeff Baldock (CSIRO) and Evan Pensini (pastoralist, Cheela Plains, Pilbara) recently discussed soil carbon modelling in the context of long-term carbon capture with over 60 consultants, researchers, mining company representatives, advisers and policymakers. All three speakers reiterated that storing carbon in the rangelands is possible, but significant investment into R&D is required to ensure that a genuine climate change outcome is achieved.

Using the *Century*TM carbon model¹, a preliminary analysis of the potential for carbon sequestration and storage on a pastoral lease in the Pilbara region was conducted. The case study compared the result of completely destocking the lease in 2000 versus the implementation of a rest-based grazing regime in 2000 and made the following assumptions.

1. Floodplain dominated by a mixture of C3 and C4 grasses with a self-mulching soil.
2. Mean annual rainfall of 290 mm (stochastic rainfall data was used for the years where no data was available).
3. Carrying capacity is 3000 Cattle Units. Cattle are only run on the 30 000 ha floodplain.
4. No livestock grazing occurred prior to 1880 and a 'moderate' fire occurred once every 10 years prior to 1880.
5. From 1880 to 2000 moderate grazing occurred at 50% utilisation of the total standing biomass per year.
6. 60 mm of topsoil removed due to erosion between 1880 and 2000.
7. Rest-based grazing option = heavy grazing at 70% utilisation of the total standing biomass over a four-month period with a two-year rest period.
8. Destock option = no grazing since 2000 and no fire.
9. The model was run from the year 0 to 2050.

A summary of the differences in estimated total soil organic carbon (Figure 1) and a simple calculation of the potential returns from carbon sequestration and storage on a pastoral lease (Table 1) are presented.

¹ Parton, W, McKeon, R, Kirchner, V & Ojima, D 1992, *Users guide for the CENTURY model*, Colorado State University.

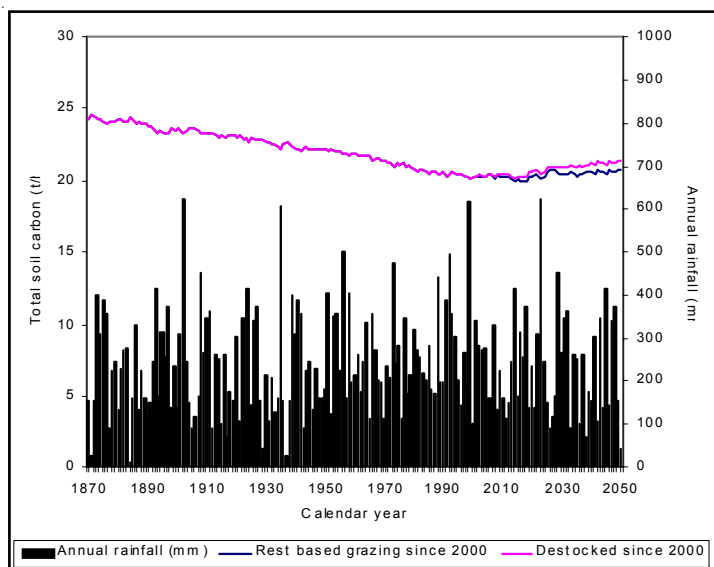


Figure 1 The difference in estimated total soil carbon between destocking and a rest-based grazing regime

The preliminary results indicate that if soil carbon was able to be included in the National Carbon Accounting System (NCAS) in Australia, then higher financial returns may be achieved by completely destocking the lease. The model suggests that rest-based grazing can only sequester and store approximately half the amount of carbon compared to the option of destocking the lease. The methane from the cattle has a significant impact on the net carbon balance. Overgrazing which causes a decline in land condition would obviously result in a much lower net income because there would be no carbon sequestration or storage to offset the methane emissions.

Table 1 The difference in forward estimated returns resulting from the sequestration and storage of carbon in soils between destocking and a rest-based grazing regime

	Complete destock 2000 to 2050	Rest-based grazing 2000 to 2050
Estimated sequestration and storage of carbon in soil (t/ha/yr)	0.02	0.01
Estimated CO ₂ e (t/ha/yr)*	0.06	0.03
Estimated loss of carbon as livestock methane emissions post the year 2000 (t CO ₂ e/ha/yr)**	0.00	0.07
Net carbon sequestration potential (t CO ₂ e/ha/yr)	0.06	-0.04
Potential income soil sequestration (\$/ha/yr) based on @ \$20/t CO ₂ e	\$1.23	-\$0.75
Livestock production net income (\$/ha/yr)	\$0.00	\$0.90
Estimated net income from participation in C trading (\$/ha/yr)	\$1.23	\$0.15

* To convert tonnes carbon into CO₂e the tonnes of carbon is multiplied by 2.76.

** Livestock methane emissions based on IPCC 2006 guidelines (60 kg head⁻¹ year⁻¹).

The purpose of the *Carbon Capture* Project is to validate the accuracy of these modelled results and the assumptions made by others concerning the impact of grazing and fire on the carbon pools in the rangelands by using actual data from three pastoral businesses in the Pilbara and Kimberley regions. It should be recognised that if a pastoralist was able to trade the carbon offsets created by destocking their lease, beyond 2050 they would be required to ensure the carbon pool is maintained even though there would be no additional payments for the carbon. It should also be noted that pastoral leaseholders in WA do not have the legal right to trade any carbon offsets that may be created on their leases, as it is a separate entitlement that must be obtained from the Department of Planning and Infrastructure. Pastoralists should remain informed about the emerging issue of carbon sequestration and accounting as it may have a significant positive or negative impact on financial returns depending on the policy that is developed and adopted in Australia.

For further information on the *Carbon Capture* Project contact:

Mark Alchin
 Mobile: 0447 077 899 or
 Email: malchin@agric.wa.gov.au



CARBON
CAPTURE



Heifer research in the Northern Grasslands applicable to the Southern Shrublands

This is a summary of an article that appeared in the Northern Pastoral Region Pastoral Memo in September 2008. Although the research results were generated in grasslands, the inferences are equally valid in the shrublands—providing grazing animals with the appropriate quantity/quality of forage is essential if optimal reproductive productivity is to be achieved.

Newry Station (in the western Victoria River district near the WA border) has been a commercial heifer research and demonstration site since 2004, as part of an NT-wide project aiming to improve heifer performance on commercial cattle stations. On 20 August 2008 a field day was held at Newry at which the findings of the heifer research being conducted there were presented.

Some of the results of the research at Newry presented at the field day were:

- Conception rates in maiden and first calf heifers were strongly influenced by weight, with conception rates increasing as weight increased.
- First calf heifer re-conception rates were low at Newry due to the light weight of heifers between calving and weaning. Most heifers were in too poor condition to resume cycling before weaning and it was not until the following wet season that their condition picked up enough for them to re-conceive. Those heifers that did re-conceive were heavier on average than those that didn't.
- First lactation heifers that re-conceived seemed to have higher ongoing fertility than those that did not (although it is still early days in monitoring their long-term performance).
- Calf loss in first calf heifers was high (26% overall). High rates of calf loss were found to be very common on many NT cattle properties. Where a heifer had successfully raised her first calf, calf loss of the next pregnancy was lower than in heifers that lost their first calf (17% versus 29%). Calf loss rates were highest in heifers that calved when pasture quality was at its worst.
- Loss rates of the EID (NLIS) tags used in data recording were 0.6% after 1.5 years, 3.5% after 2.5 years, and 10.9% after 3.5 years. However, it should be noted that most tags that were lost were not positioned correctly in the ear and that very few tags that had been put in the right place were lost.

Contact details:

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A new method of pastoral lease reporting

David Warburton, Development Officer, Department of Agriculture and Food, Northam

Pastoral Lease Inspection Review

All pastoral lessees should by now have received advice from the Pastoral Lands Board (PLB) outlining a change in the way the statutory obligations of operating a pastoral lease are reported to the PLB.

These changes are the outcome of a year-long review of the current method of pastoral lease inspections as conducted by DAFWA pastoral lease inspectors. The review was initiated by the PLB and was performed by DAFWA in consultation with the pastoral industry and the PLB.

What are the changes?

The PLB endorsed 'Contemporary Method' of pastoral lease reporting incorporates several important changes from the existing 'Traverse' inspection method. Foremost amongst these changes are:

1. Lessee installation of monitoring sites—*all pastoral lessees will be required to install a comprehensive network of monitoring sites across their lease as a basis for data collection.*
2. Objective measurement of range trend by lessees—*the assessment of the trend in range condition will be based on objective data (count of plant numbers in shrubland areas and assessment of grass frequency in the grasslands) recorded from the monitoring sites throughout the lease.*
3. Pastoral lessee self-assessment and reporting—*pastoral lessees will be required to make a decision as to the trend in range condition at these monitoring sites as a result of their management, and to report this, along with the data from each site, to the PLB through a standardised process.*
4. Electronic submission—*pastoral self reports will be submitted on-line. This affords considerable savings in time and effort for pastoral lessees.*
5. Report auditing—*all pastoral lessee self reports will be audited. Initially this will take place remotely from the lease however, if and when concerns arise, a lease audit involving a property visit will be performed. Additionally, any lease may be subject to a random property audit.*

These are important requirements to both ensure the accuracy of self reports and to enable the PLB to ensure the rangeland resource is preserved.

What are the benefits to pastoralists?

It is important to consider that the concerns expressed by the pastoral industry about the existing 'Traverse' method of lease inspection was a primary motivator for the need to review the system. The 'Contemporary Method' incorporates many suggestions made by the pastoral industry.

The benefits of the Contemporary Method include:

- Removal of the current focus on stock numbers and carrying capacities. It is recognised that through innovative management and/or successive favourable seasons, stock numbers can

safely exceed the recommended 'carrying capacity'. Provided a pastoral lessee can demonstrate an acceptable stable or improving trend in range condition, then the number of stock present is of subordinate importance.

- The use of objective data. Objective data is that which has been measured or counted. This removes any perception of subjectivity or operator bias in assessing range condition trend.
- Reflection on the impact of management. It is considered valuable that pastoral lessees **formally** reflect on the impact of their livestock and their management on the rangeland, particularly in terms of its likely future productivity for grazing. Moreover the collection of evidence of appropriate stewardship of the rangeland resource is in itself, 'insurance' in view of increasing levels of public scrutiny of the use of the rangelands.

What happens next?

During 2010 all pastoral lessees will be invited to attend self assessment and reporting training workshops in their local area. These workshops will cover all aspects of the process including:

- how to install and assess a monitoring site
- which are the important indicator plants in your area
- how to submit the data using the internet web page
- provision of print and electronic material to assist lessees.

It is important to consider that these workshops will be the primary opportunity to learn the new system. If you are unable to attend your local workshop you should consider attending another which may be some distance away; DAFWA staff will not be available for one-on-one assistance to pastoralists in regard to site installation and assessment in the self reporting process.

For further information on the Contemporary Method of lease reporting or other aspects of pastoral lease inspections please contact:

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Weed Watcher for the Rangelands

Weed Watcher, a weed mapping interface developed by the Department of Agriculture and Food, now covers the Rangelands. The interface allows weed infestations to be easily reported and mapped over the internet.

Currently more than 70 environmental and agricultural weeds can be mapped from across the state, including weeds of national significance such as mesquite, rubber vine, Parkinsonia and lantana.

The site can be accessed via the DAFWA website :

<http://www.agric.wa.gov.au/content/PW/WEED/WEEDWATCHER.HTM>

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A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Welcome to Weed Watcher

[Weed Watcher](#) is a web-based interface for finding or reporting weed infestations from a map displayed on your computer screen.

Currently over 50 environmentally and agriculturally significant weeds can be mapped across the SW of the state. Other weeds will be added on demand.

View [Weed Watcher](#) application.

Additional Information

- [System Requirements](#)
A must for **first time users** - you may need to download software to access weed watcher.
- [Download field recording sheet \(xls\)](#)

Contact

If you need help or have any feedback regarding Weed Watcher please contact:

John Bruce
Department of Agriculture Western Australia
Geraldton Regional Office
Phone: +61 8 9956 8526
E-mail: jbruce@agric.wa.gov.au

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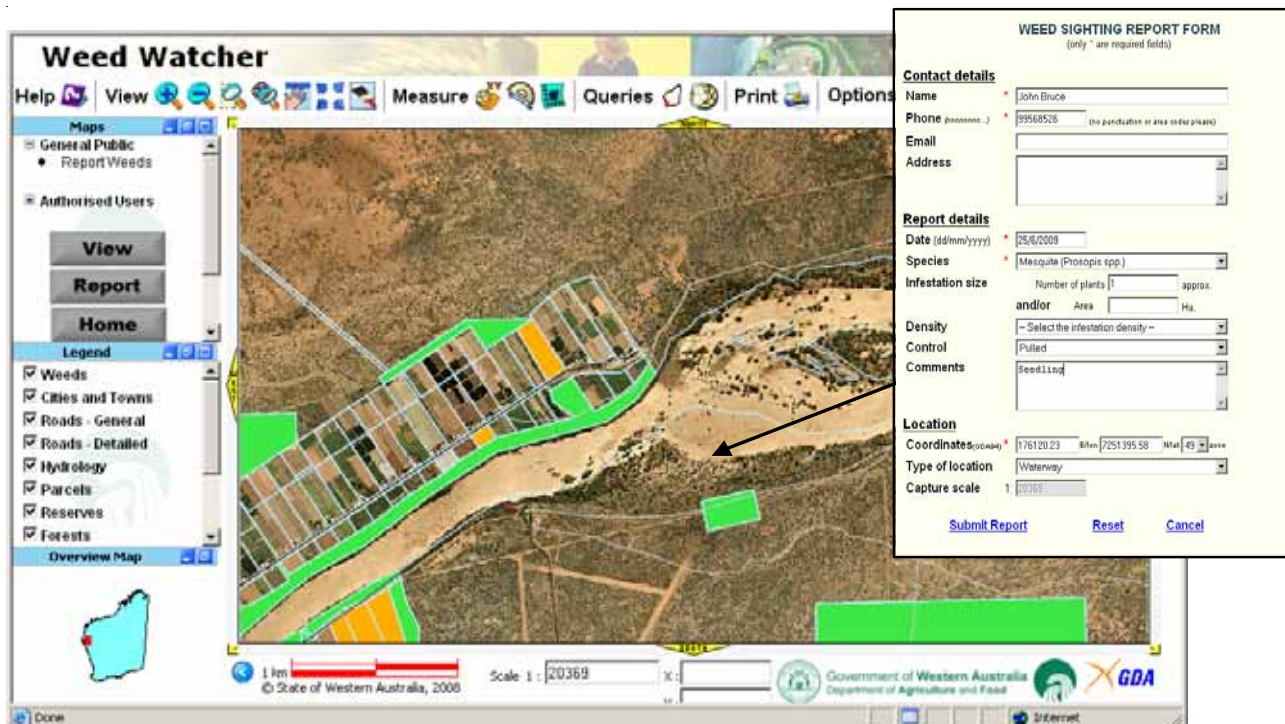
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Locations of weeds can be entered via a form and viewed immediately. Users can go to a map and locate the position of their weed, determine if it has already been mapped, or view details of previous reports.

As a management tool, Weed Watcher allows pastoralists to map their own weed infestations and better plan weed management activities. Community survey and control efforts can be recorded and viewed, assisting regional weed management strategies. It is also an opportunity to integrate the array of existing and new weed data collected by landholders, community groups and government within the state.



Weed Watcher map interface with pop-up weed form for adding weed records

Use the **HELP** button on the toolbar for assistance or contact:

John Bruce, Department of Agriculture and Food, WA
Geraldton Regional Office
Phone: 9956 8526
Email: john.bruce@agric.wa.gov.au

Animal welfare, wild dog management and overgrazing by kangaroos: a social dilemma

Michael Parsons, Murdoch University

I was asked to provide an update on our research project that investigates the repellent effect of dingo urine on kangaroos. We continue to explore novel tools to assist the strategic management of total grazing pressure. If we are successful in manipulating the movements of kangaroos on a large scale—no easy feat—then we are able to promote the recovery of perennial groundcover species during resting periods, and with the perennial grasses, prevent them being grazed below the critical 10 cm height. Additional benefits may include the reduction (or relocation) of kangaroos around key watering points. We hope to encourage new discoveries along the way to develop ‘synergistic’ effects. Some tools simply work better together than when used independently.

However, our project is a little broader in perspective; it has to be, because kangaroo management is entangled with four other prevailing determinants of a viable pastoral industry. Let’s step back and look at the big picture of what we are hoping to achieve before we focus on the main tool we are working on—the dingo urine synthetic. Perhaps other researchers will adapt a similar approach of attacking all five problems as a whole, instead of taking a linear approach. Let me explain.

Producers and others have acknowledged five closely related concerns in rangeland management; wild dog control, kangaroo abundance, animal welfare, livestock productivity and soil erosion. Science usually takes a linear approach to problem solving one step at a time. However, these five issues are so closely interlinked that to make progress in one area may be at the demise of another, and the only real progress towards a viable pastoral industry will be when all five are addressed together.

These (often) inversely related topics fit the definition of ‘wicked problems’. Wicked problems are addressed by the Australian Government (Contemporary Government Challenges 2007) in that:

‘they require thinking that is capable of grasping the big picture, including the inter-relationships among the full range of causal factors underlying them. They often require broader, more collaborative and innovative approaches’.

From my vantage, the only hope we have in addressing these complex problems is to encourage a major change, or paradigm shift, from traditional thinking that ‘*step-solves one problem before moving to the next*’ to a holistic approach that encourages progress in each of these well-defined areas of need. Let’s consider the significance of these problems separately and together.

Animal welfare

Animal welfare is important to most Australians. In the December 2008 issue of the *Southern Rangelands Pastoral Memo*, Dr Tony Higgs (DAF) referred to the *Cormo Express* incident of 2003 ‘*more letters were sent to Prime Minister John Howard about sheep stranded at sea than were written to him about soldiers sent to Iraq*’. A similar level of interest was observed following the decommissioning of the Baconnen Navel Reserve. International media attention surrounded the fate of the 400 kangaroos.

Regulatory agents and welfare interest groups have increased emphasis in alternatives to lethal control, citing painful deaths from 1080 poisoning, and ‘non-selective’ culling programs as particularly inhumane.

It is discomfoting that there are no other recognised options for kangaroo management other than bullets (not socially acceptable) or wild dogs (and sometimes the wild dogs prefer goats or sheep to kangaroos). Importantly, both of these strategies create a cascade of other effects (Figure 1).

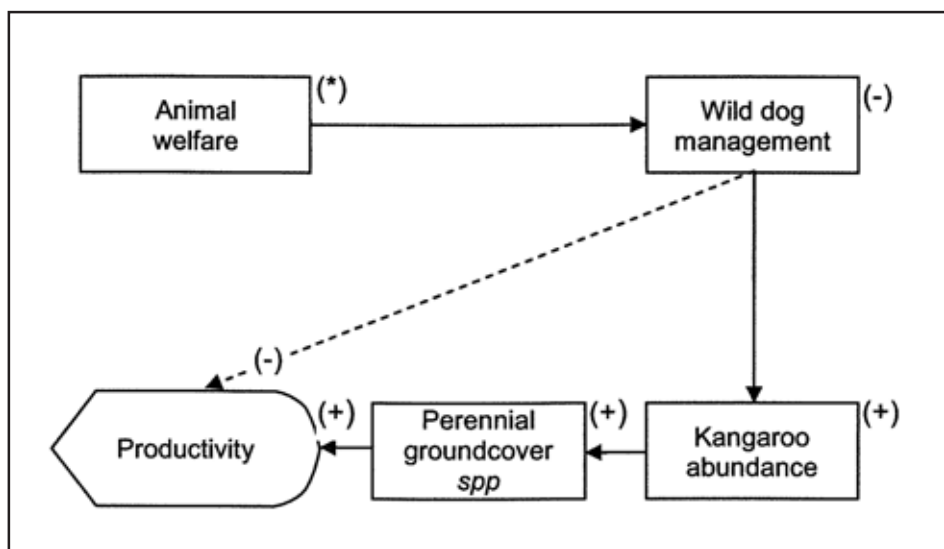


Figure 1 A wicked problem. Complex interactions between animal welfare, wild dog management, kangaroo abundance and productivity. (+) and (-) refers to progress from the producer’s perspective.

I have provided a figure from the pastoral perspective. A positive sign suggests an increase in production. For instance, a reduction in 1080 baiting (a painful death) would result in an increase in wild dogs. On a positive note, kangaroo numbers may decrease, promoting increased groundcover capacity, however wild dogs may then be a limiting factor to productivity, particularly for sheep owners. Conversely, an increase in 1080 baiting may lead to fewer dogs but higher levels of kangaroos, reduced groundcover and ultimately, kangaroo overgrazing becomes a limiting factor of productivity. Keep in mind animal welfare interests are concerned with safeguarding wild dogs *and* kangaroos. Are graziers facing an impossible conundrum?

Good news was related by Dr Higgs (if producers are able to implement sound animal welfare strategies). He expected an increase in demand for products that are ‘*animal welfare friendly*’.

Wild dog control

Wild dog management has been identified as a principal concern by graziers. The issue was epitomised at a property in the Flinders Shire of NW Queensland (dunluce.com.au). During 2002, like many pastoralists, the owners considered leaving the family Merino business due to the frequency of wild dog attacks on livestock, despite 1080 baiting programs. However, when 1080 baiting programs are successful, then we repeat the cycle: the kangaroo population moves further beyond the carrying capacity. Declines in nutritious perennial grasses, topsoil erosion and loss of fodder may challenge the economic viability. But the issue is even more complex than previously indicated. There are an increasing number of studies (Chris Johnson, Chris Dickman, Adam O’Neil) suggesting that the maintenance of top order predators is crucial for sustainability. It is well recognised that dingos set the upper limit on population size for mesopredators (foxes) and generalist herbivores (kangaroos and goats). In recent times, we have learned that some

threatened species, such as the mallee fowl, may only survive where top order predators are present. Other studies imply that plant species composition is positively affected by top order predators. Do producers have to make a choice between economic viability and sustainability? Or can they have their cake and eat it too, by focusing on each problem concurrently, and not to the exclusion of one another?

We left on an optimistic note by Dr Higgs. We also have some good news for wild dog management. Recall the Dunluce property in Queensland. Rather than forfeit the family Merino business, they employed a novel approach. After purchasing 24 purebred Maremma guard dogs the incidence of lost sheep dropped from 15% to an acceptable 3%—and most of that death attributed to natural causes; at the same time lambing rates increased substantially, despite the prevalence of dingoes in the area.

On their website, the owners go into great detail to prescribe the elements for success of running stock guarding dogs, however they do not fully relate the reduction in kangaroo numbers, improved rangeland condition and long-term sustainability of the system that boasts top order predators. Thinking ‘outside the box’ has led to better than expected outcomes.

Kangaroo management

I undertook my university studies in kangaroo herbivory and management. I learned that kangaroos are no longer limited by the natural cycles of rainfall and the associated feed; their numbers have increased as a function of stock watering points and concurrent loss of predatory pressure (Figure 2). My research suggested that effects of kangaroo grazing pressure are exacerbated with drought and may result in denuded landscapes.

A prominent mining company reflected disappointment that they had to destroy 86 000 kangaroos in one year. Another mining group suggested that 90% of their rehabilitation is browsed to death by kangaroos. Controlling kangaroos may be the first step to controlling total grazing pressure, land rehabilitation, and preparing for climate change.

Novel methods for kangaroo control are in demand. Culling is expensive, non-selective, and the animals tend to repopulate. Fencing is not possible on this scale; however where fencing is used (e.g. around TGM yards), then fauna become entangled while approaching the water. Both solutions carry liabilities with the animal welfare interests. Here again, one prominent issue is tied to the others.

Where does synthetic dingo urine fit with all of this?

The science of olfaction (smell) is considered an emerging technology. Smell is important to most terrestrial animals. Animal markings are prominent features of the landscape and provide territorial maps as well as other information both within and between species. For instance,



Figure 2 Pooled dung heaps help estimate the level of macropod activity on this property near Leonora, WA. The grey ‘carpet’ that covers this property is red kangaroo scat.

Kangaroos often appear randomly disbursed around the landscape; however, complex decisions are made each time kangaroos choose a particular food patch. Sight, smell, hearing and memory all convey data to the animal. Information in canine urine includes: gender, social rank, territorial boundaries, time of scent deposit, and nutritional status (whether the animal is hungry or not).

Through the strategic deployment of dingo urine, we have been able to encourage the movements of kangaroos. Animals in a wildlife park trial ‘chose’ to forgo their morning feed rather than forage near the urine. If you Google ‘dingo urine’, you will see some videos of the kangaroo response. Stated simply, dingo urine gets kangaroos’ attention and provides information, which, *all things being equal*, should lead to the animal selecting an alternative place to graze—every time. We have to be creative to achieve the same effects on a large scale. Ideally, the application will work synergistically (together) with other tools such as trap yard selective entry devices and guard animals (this is canine urine after all). Additional benefits will be realised by placing the deterrent in the vicinity of plants grown for special purposes such as biofuels or carbon sequestration.

The process of urine synthesis is complex, however when we adequately reproduce the ‘fresh, territorial, hungry’ scent in a stable delivery (aerosol) then we should reach our principal targets—to influence the patch selection of kangaroos. In areas where wild dogs are not baited, it is assumed that animals will respect the borders defined by the urine. We have found a tool to keep kangaroos away from some target locations, while at the same time canines (particularly foxes) will avoid the area. The method is humane in that neither species of animal is harmed.

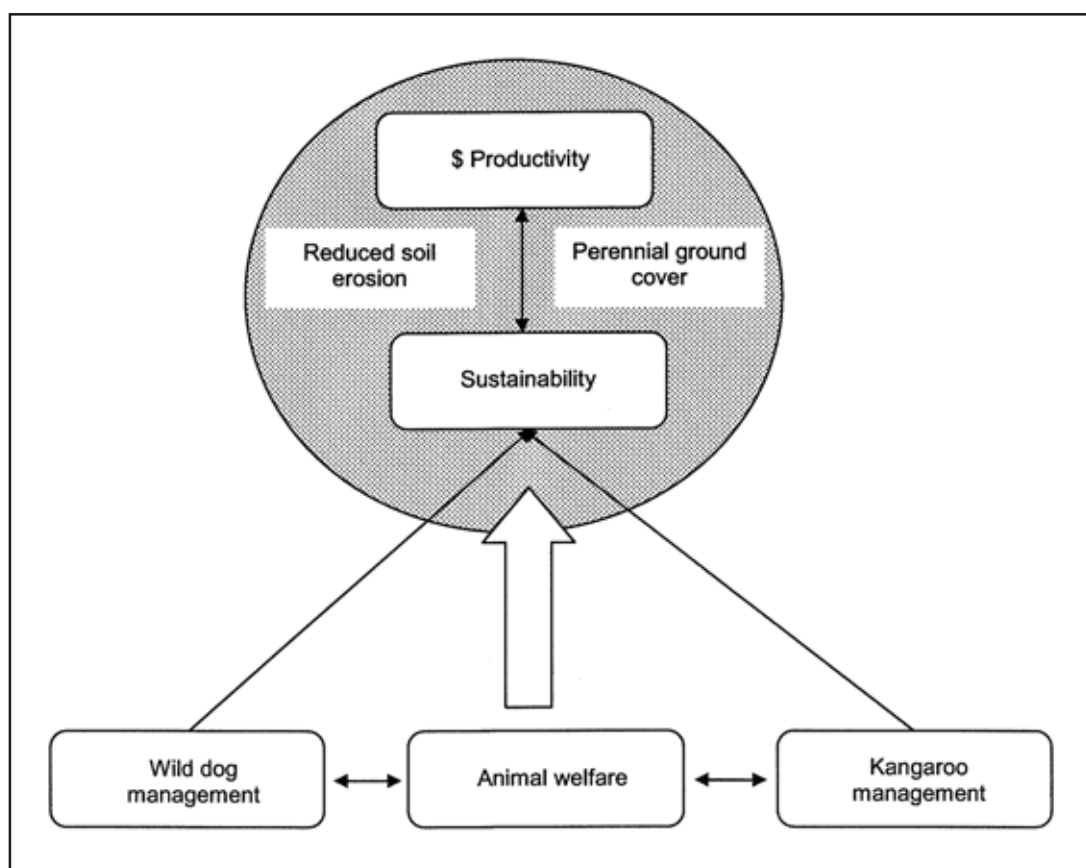


Figure 3 Constructing solutions to a wicked problem. In contrast to Figure 1, ideas which work concurrently on all three issues should lead to increased productivity and sustainability.

The future

These interconnecting factors involve multiple government departments and a range of industry and community interests. The biggest challenge of the 'wicked problem' is keeping all the parties at the negotiating table long enough to address the many conflicting issues affecting sustainable pastoralism. It is hoped our successful outcomes will encourage more collaborative and innovative approaches to the integration of new ideas and technology. This paradigm shift should extend to funding bodies. In *The logic of scientific discovery*, Karl Popper argues that science operates by trying to prove an idea wrong; if it cannot, then the idea is assumed to be right. My biggest disappointment in science funding has been a tendency to limit science to the assessment of pre-existing ideas. Let us now hope for a spirit of collaboration and that science pundits welcome many new discoveries achieved through thinking outside the box.

If you would like to correspond about animal welfare, wild dogs or kangaroo management, please contact Michael Parsons at Murdoch University School of Veterinary and Biomedical Sciences (M.Parsons@Murdoch.edu.au).

Pilbara Business and Property Planning pilot project

Luke Bayley, Project Leader, DAFWA, Carnarvon

The Department of Agriculture and Food, WA is currently working with several pastoral businesses in the Pilbara developing an innovative approach to whole of business planning. The project aim is to develop a planning 'template' that integrates business, livestock and ecological systems to develop practical cattle business management plans that maximise profit whilst maintaining or improving range condition.

The need for this exercise arose out of the growing need to more effectively support Rangeland producers to ensure positive industry development. It is also important that scarce government resources are allocated to projects/businesses that are well structured and will lead to gains in profitability and sustainability in the Rangelands.

The business and property planning project will help participating stations to more confidently direct their resources to optimise herd productivity, profit and land management. It will also assist DAFWA to develop a more targeted and holistic extension service pertaining to livestock production systems and natural resource management.

This project has been designed as a participatory process and relies on the active involvement of pastoral managers and station staff for its development and implementation.

Specifically this pilot project aims to:

- Provide pastoral operations with a thorough planning process that accurately benchmarks:
 - current herd production
 - current environment and landscape function
 - current economic benchmarks and business performance.

Using these benchmarks the project team and station managers will work together to develop:

- property appropriate best practice cattle management production systems
- best practice grazing management systems

- best practice environment and landscape management and restoration activities as appropriate
- detailed business plan with profitability, production, economic and ecological goals identified.

The project team includes Peter Smith and Manus Stockdale from Karratha, Sam Harburg from Geraldton, and the ESRM team based in Carnarvon, all working closely with Phil Holmes, a private consultant specialising in the economics of rangeland beef production.

Upon completion of the initial planning exercises all information will be incorporated into the first draft of the Pilot Pastoral Business and Property Plan. This will form the 'where we are now' or the starting point of 'where to from here'.

Given our current progress, this pilot project in the Pilbara should be finalised by September 2009. Further work will be dependent on the feedback from participating businesses and the team, but at this stage it looks promising.



*Peter Smith (Karratha), Sam Harburg (Geraldton)
and Manus Stockdale (Karratha)*

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Cattle identification for management in the Southern Rangelands

A number of pastoral producers have or are contemplating changing enterprise from small stock to cattle production. There are several issues which must be addressed when making this move.

Identifying your cattle to meet legal requirements is a fact of life and involves meeting your responsibilities to both the *Stock (Identification and Movement) Act* and the *Enzootic Diseases Regulations*.

The steps to moving cattle onto or off your property are clearly explained in the new free DVD and booklet *Owning, identifying and moving cattle in Western Australia*, which is available on request from DAFWA offices, by phoning (08) 9753 0302 or emailing beth.green@agric.wa.gov.au.

The needs:

- A registered stock brand and Property Identification Code (PIC) which indicates where the stock you own are run, even if you don't own the land, i.e. lease and agistment.
- Cattle in the pastoral areas must be branded or earmarked before 18 months of age or before being removed from the property, whichever comes first.
- All cattle leaving a property must have an electronic NLIS device, either as an eartag or a rumen bolus. (Exceptions for cattle leaving property of birth direct to abattoir or export depot.)
- All cattle leaving a property need to have a waybill.

The wants:

The prescribed identification above is legally required but is not necessarily adequate for those who want to be able to visually identify their stock from a distance or for management.

Management flag tags are the easiest way to provide this option. They offer you the choice of colour coding for age and tagging different ears or using different size tags to differentiate between bulls, steers, cows, etc. in the paddock or in the yards and race. If you have your PIC printed on them, they may also satisfy the NLIS for homebred cattle going for export or to the abattoir.



A tagging system allows sex/age/ownership distinction from a distance.



NLIS ID is for traceability; flag tags are more useful for management.



Different colours/sizes of flag tags allow for easier ID.

Brands are applied to either the left rump or shoulder of cattle over the age of one month using a hot iron fire brand or a freeze brand. They can be used for visual identification but are not always easily seen in the race or obvious from a distance. Fire brands also damage and devalue the hide.

Earmarking is an easier and less painful method of identifying your cattle than branding but unlike with sheep, earmarks for cattle are put in the same ear, regardless of sex, and are then not so useful for visual identification.

NLIS electronic devices are not designed for visual identification, however they provide an excellent option for individual management when used for production recording with the appropriate equipment. These devices allow you to record treatments such as drenching and vaccinations, weights, age, breeding and weaning history for each animal, giving you objective records to select your best performers, to cull, breed or feed your stock.

Free workshops can be run to explore your production recording options. 'Better beef with NLIS' is run with small groups and comes with a comprehensive manual which includes case studies on what other producers are doing.

Producers requiring additional information or assistance can contact DAFWA's NLIS team in Bunbury on (08) 9780 6100, email nlis@agric.wa.gov.au or search for 'NLIS Cattle' on the website <http://www.agric.wa.gov.au>.

Technical information regarding cattle management may be found in Meat & Livestock Australia's publication *A guide to best practice husbandry in beef cattle—branding, castrating and dehorning*. This can be downloaded from the MLA website <http://www.mla.com.au>.



Drafting is simpler if you tag right ear of females and left for males.

NLIS exemption for home-bred live export cattle—Get it right or lose it!

NLIS regulations in WA allow for the use of transaction eartags for lines of home-bred cattle consigned from their PIC of property of birth directly to depots for live export. This exemption is on the condition they are not mixed with other cattle with NLIS electronic tags and have a separate NVD/waybill.

The PIC on the transaction eartags in a consignment must match the PIC on the NVD/waybill. Cattle belonging to different PICs must not be mixed.

Pastoralists must keep lines of live export cattle fitted with transaction eartags separate from those with NLIS electronic devices and write a separate NVD/waybill for each line, or the exemption may be removed.

The exemption from the use of NLIS electronic devices is conditional on export depots being able to manage transaction eartagged cattle as separate lines. Audits of export depots have detected mixed consignments of transaction eartagged and electronically identified stock. Mixed lines cause trouble for depots and operators.

If you are going to use transaction eartags, consign them as a separate line with a separate NVD/waybill.

If pastoralists cannot maintain the integrity of the identification system they risk prosecution and the exemption will be lost and all cattle will require NLIS electronic ID.

For more information contact:

Maree Glasby

Phone: 9194 1425

Mobile: 0404 819 626

Jack Nixon

Phone: 9780 6222

Mobile: 0427 089 860

Where is your breeding program going?

Peter Smith, Development Officer, DAFWA, Karratha

Making the best of the science of genetics can increase the profitability of breeding enterprises. While herd and grazing management changes are likely to produce more immediate visual effects on herd productivity and profitability, genetic change is cumulative, either positive or negative, and will be happening in isolation from management changes and seasonal events. It is therefore important to be sure that your breeding program or genetic change within the herd is going the way you intend!

To be sure that your breeding program is heading in the right direction it is important to establish a clear **breeding objective**. This breeding objective should be comprised of all the traits that affect profit, market specs, numbers (fertility), breed, etc. plus some indication of the relative emphasis each trait should receive. For example, as live export cattle are traded on weight; growth rate will be more important than say marbling score; temperament is also likely to be more important at this stage of the live export market than retail beef yield.

The information used to select animals to effect a change in the breeding objective is called the **selection criteria**. This information may be visual estimation, measurements or Breedplan Estimated Breeding Values (EBVs). While visual inspection is important for fitness traits like leg structure, testes, sheath, temperament, etc., Breedplan (EBVs) provide valuable information on many measurable traits that may form part of the breeding objective.

Probably the most important issue in selecting replacement bulls is some confidence that they are physically capable of delivering the genetics and traits that they have been selected for. A Bull Breeding Soundness Evaluation, including semen evaluation and sperm morphology assessments, and which is supported by an Australian Association of Cattle Veterinarian certificate provides for greater confidence in a bull's 'calf getting' ability.

The Breeding EDGE workshop developed by MLA in association with the cattle industry is designed to assist producers to develop breeding objectives and manage breeders and breeding programs to improve the future direction and profitability of their businesses.

The workshop program:

- works through the steps involved in developing a successful breeding program
- provides a thorough understanding of reproduction and genetic principles
- helps evaluate the reproductive and genetic options best suited to specific situations
- develops skills that can be applied on property.

There is already some interest from pastoralists about attending a Breeding EDGE workshop in the Rangelands. Depending on responses to this call for 'Expression of Interest', at least one Breeding EDGE workshop in each of the Pilbara, Kimberley and Gascoyne could be conducted later in 2009.

For further information and to register your interest in participating in a Breeding EDGE workshop contact:

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Planned breeding using new technologies

John Bertram, Queensland Department of Primary Industries

Identifying breeding objectives is fundamental to planned cattle breeding. So who sets breeding objectives? If we are honest with ourselves we will answer 'I do', though maybe not under that heading. Breeding objectives are the combination of various selection criteria with their respective 'weightings' or emphasis that we choose to place on each criteria.

The decision made when choosing a bull/s for the herd this year will influence the enterprise profitability for the next 10 to 15 years. When buying bulls, or selecting bulls to use in the herd, producers make their choice by 'weighing up' many factors, including their current herd performance, the environment under which the herd is grazed and the market specifications for the turnoff animals. The selection decision is based on identifying which bull/s, from those available with relevant information, will meet the needs of the herd and enterprise, while balancing the incremental differences in one trait relative to another.

Recently, beef producers have had increased opportunity to use new technologies additional to BREEDPLAN and a Bull Breeding Soundness Evaluation in their selection decisions. These technologies include DNA markers for Marbling and Tenderness, flight speed measures for Temperament and feeding pen trials or blood tests for Net Feed Intake. The often agonising question for commercial beef producers is: 'How much emphasis should I place on the various tools when making a selection decision?'. Or do we believe there is a single 'magic bullet' that will be the answer to all decisions?

Selection is frequently based on intuitive 'feelings' about the relative value of a range of traits, including fertility, growth, structure, carcass and temperament, with the producer comparing all the relative traits in all the animals on offer to come to the choice of one, or a few, bull/s or heifers as the case may be. The process of combining a number of attributes or traits into a single breeding decision is setting a breeding objective. The breeding objective should be comprised of all the traits that affect profit plus some indication of the relative emphasis each trait should receive. Hence, there is no single bull in a 'multi vendor sale' that meets the needs of all producers and all markets.

With respect to bull selection, the bull for your herd must FIRST be fertile in order to pass on the desirable traits to the progeny. Too often I am told by beef producers that they want fertile bulls; yet they pay top \$ for the fattest bull on offer. Reasoning and beauty can get confused! Therefore, the number one criteria must be for a bull to have passed a Bull Breeding Soundness Evaluation as evidenced by an Australian Association of Cattle Veterinarian certificate. The certificate is your passport for greater confidence that he can pass on his desirable genetic traits to produce adequate progeny. The development of structural soundness genetic differences (EBVs) for leg and hoof conformation (in some breeds) will provide marginal benefits in a fertility trait largely influenced by semen quality and mating ability.

To establish the genetic selection criteria, start planning by identifying the relative impact of the various traits affecting on-farm production requirements alongside the market specifications by qualifying:

- the current herd performance for a range of economically important traits
- the costs of production in the current herd
- the target market specifications
- the returns for the traits affecting market specifications, and
- the alternative sires with relevant information to achieve these selection decisions.

A computer program makes easy work for you in matching all the above values. It is called BREEDOBJECT whose output is a \$Index that is the combination of the weightings applied to a range of traits. The single \$Index is reported as a genetic difference between the animals to which it is applied and quoted as an Estimated Breeding Value (EBV).

Many beef producers have experienced the definite benefits afforded the bull buyer using the various growth EBVs in addition to carcass EBVs. With increased attention to meat quality, more recently, genetic differences have been developed for temperament from either flight speed measures, crush or yard test scores. These are used similar to the regular EBVs with a positive larger docility EBV being more desirable (available by limited breeds). Since animal temperament is an important component of meat quality, the docility EBV is incorporated with the DNA markers for tenderness to produce a Tenderness EBV. Likewise for marbling, the ultrasound scan measures for % intramuscular fat have been available for some years.

Never before has cattle breeding had so many opportunities for selection. The completion of the cattle genome will further enhance the identification of additional markers to better quantify the attributes of each trait. However, the basic criteria remain the same with the need for beef producers to remain objective and focussed on traits that are heritable and of economic importance to their business.

Funding opportunities for producer groups in the Southern Rangelands

The Minister for Agriculture and Food has indicated that he is a keen supporter of representative producer groups taking control of their destiny and providing the important links between DAFWA and government.

There is plenty of evidence that government support and policy is best delivered when independent producer groups provide the local knowledge and the commitment that are necessary for sustainable development.

There are fewer and fewer people in the Rangelands and the problem of multiple producer groups puts too much responsibility on those providing leadership. The new Recognised Biosecurity Groups that will assume ZCA responsibilities could **eventually** provide the business infrastructure on which a number of different projects (including productivity projects) could be managed. This would minimise the administration and spread the leadership load where Landcare District Committees are no longer functioning.

Irrespective of the structures chosen, producer groups find it very difficult to work well without solid administrative support. In the Southern Rangelands, DAFWA funds are often not sufficient for administration as well as for doing project work. Below are some funding opportunities for groups wishing to work together to do the hard yards of redesigning production systems for the 21st century.

Possible funding opportunities

- *Caring for Country*

The last Caring for Country funding Business Plan did not include any targets that were relevant to the WA Southern Rangelands. It focussed on wind erosion rather than water erosion. The Business Plan for the next round of funding is to be released in September 2009. I am not aware of any information about what its priorities will be. The last Business Plan provided support for Community Groups up to \$100 000 when the priorities of the Business Plan were the focus.

Information on Caring for Country programs can be found at <http://www.nrm.gov.au>

- *FarmReady program from the Commonwealth Division of Climate Change*

<http://www.farmready.gov.au>

The FarmReady Industry grants (\$80 000 per year) and training grants (\$2000 per year per person) seem to be the best opportunity for the Southern Rangelands. They both focus on supporting producers adapting to climate change. It would seem a 'no-brainer' that managing for improved groundcover and more stock fodder is about the best insurance against the predictions of climate change: less winter rain, more wind and more intense summer rain.

A number of Southern Rangelands shires have expressed interest in working with pastoralists to slow down the flow of water across the country. The shires have to cover massive costs of repairing roads after heavy rainfall which could be substantially reduced when water is held up in the catchment so it can soak in and grow good fodder and soil protection.

The Climate Change Division of the Commonwealth is supportive of the catchment management approach to managing the flow of water and the risks associated with climate change. With the groundbreaking work done on these areas by the EMU team and continued by the ESRM team in the more northern parts of the Southern Rangelands, this region should have a 'stand-up start'. Peter Andrews is getting lots of publicity for a similar approach and many in this region are familiar with the similar activities described by Bob Purvis of Alice Springs.

- *FarmReady industry grants*

The FarmReady industry grant program provides a maximum of \$80 000 per year for two years from January 2010. There has been one round and the second round, I'm told, will probably be called for in August or September this year.

- *FarmReady training grants*

Each person on a farm/station involved in management decisions is eligible for \$1500 course costs plus \$500 travel, accommodation, meal costs each financial year. The training programs must be approved by the FarmReady program.

<http://www.farmready.gov.au>

- *Meat and Livestock Australia Partners in Innovation program*

This program supports innovative programs across a range of issues. It requires 50% cash contribution from the participant. MLA has shown interest in the past in funding such a program for the development of a sustainable goat production system for the WA Southern Rangelands. It may be an opportunity for a combined or individual effort from mining companies that have an interest in getting on with the opportunities for sustainable livestock productivity, wild dog control, control of total grazing pressure (domestics, goats and roos) and the opportunity for carbon sequestration investigations in the WA rangelands.

For details, search on the MLA site for Partners in Innovation (<http://www.mla.gov.au>).

- *Department of Agriculture and Food, WA*

As you'd be aware, WA government funds are suffering from the world financial crisis but DAFWA management will be doing its best to support, as best it can, committed groups targeting sustainable productivity improvements.

If you need any assistance with finding the above links or want additional information, please contact:

Greg Brennan

Phone: 9956 8554

Mobile: 0418 222 406

KLR Marketing offers new direction to pastoral producers

Richard Glover, Development Officer, DAFWA, Carnarvon

A cattle marketing course, run by Rod Knight and Grahame Rees of KLR Marketing, was held in Carnarvon on 28–29 April. It was well attended by cattle producers from the Gascoyne, Murchison and Northern Agricultural regions, as well as a number of DAFWA staff. The course, organised by the Gascoyne Catchments Project and DAFWA, aimed to provide producers with a set of marketing principles that can be applied to any cattle



Participants in the KLR Marketing school grapple with 'a new way of looking at cattle marketing'.

operation in Australia. The 30 attendees found the course challenged traditional marketing principles but they came away feeling that they could definitely make use of the 'new way' of looking at how they sell their cattle. The course developed the skills to market stock with confidence and on time. Delayed sale decisions can be a huge cost to a business and the condition of the country.

Sean D'Arcy of Lyndon Station, Carnarvon said, 'There was lots of good stuff in the KLR course and of particular importance for me was understanding which costs of breeding livestock are the key drivers of profit and how they can be managed. For instance, understanding the true cost of running a breeding cow for a year was particularly interesting'.

The course highlighted the need for producers to be aware of their 'grass balance' in the paddock and make adjustments to stock numbers so that there is always a reserve of feed. The concept of 'Sell → Buy' rather than 'Buy → Sell' was a major paradigm shift for participants. The basis of the concept is to sell your cattle when they are overpriced and buy back underpriced replacement animals (of the same or different class). The difference between the price received and the price paid (after the estimated cost of growing out the replacement animals has been subtracted) is your profit.

Traditionally livestock are sold at certain weight classes or according to calendar dates. The KLR course works on the basis that neither of these factors support effective business decisions compared to a producer armed with good market information. This trading system exploits the large variations in the livestock market. It was explained to us that the livestock industry across the world operates with gross inefficiency.

By following the KLR Marketing principles the need for market predictions is removed because the transactions of 'Sell → Buy' are done on the same market. The price paid for the cattle you sell also becomes irrelevant as the profit is made when you replace overpriced stock with underpriced

stock. These two important points greatly reduce the stress and guesswork that is part of 'traditional' cattle marketing.

We learnt how to calculate the cost of running a cow for a year and for taking a weaner heifer through to confirmed pregnancy. Knowing these costs can determine whether it's cheaper to buy or breed your cows.

The KLR Marketing school has been run previously in the South West but has never been run before in the pastoral region. The positive response from participants leaves the door open for future courses in the area. The real challenge lies in the ability and willingness of producers to experiment with this trading system. In order to assist in this DAFWA staff are discussing options with several pastoral businesses involved in the course to work together to test some of the ideas and principles in real life.



*Jodie Caunt (left), Tony Gray, Sean D'Arcy and Annie Salamouris
at the KLR Marketing school held in Carnarvon.*

Cattle industry a major growth opportunity

Luke Bayley, Project Leader, DAFWA, Carnarvon

The Carnarvon Cattle Industry Forum, attended by 120 people, was held in April and was testament to the opportunities and actions that can be generated when the department and industry groups work effectively to achieve their goals.

Organised by the Gascoyne Catchments Committee of livestock producers and the Ecologically Sustainable Rangelands Management (ESRM) project, the forum was designed to be proactive and focus on one of the most important issues facing the pastoral industry in WA—unity.

Pastoral and rangeland viability must be dealt with through building strong relationships, an approach the department is working hard to support. When pastoral businesses work together, the bigger picture issues can be managed effectively.

Agriculture and Food Minister, Terry Redman outlined the government's strategies for agriculture which included a vision for a doubling of the value of the northern beef industry. Minister Redman supported the cooperative effort and stated his strong encouragement for the formation of industry groups to take a leadership role in setting directions.

The Gascoyne Catchment Project in partnership with the department and producers in the Pilbara will begin developing a proposal to support rangeland industry groups. The focus will be on the industry development and extension activities required to raise Gross Agricultural Product.

It was promising to see rural businesses, international exporters, government staff and Aboriginal groups all sharing enthusiasm and perspectives. The strong working relationship that has been developed between the ESRM project and the Gascoyne Catchments Project has created a keenness for action and change which has been an inspiration to all involved.



Minister Redman addressing the Forum



Attendees at the Forum

Carnarvon Cattle Industry Forum

Carnarvon – 30 April 2009

'We have a great chance for change but this can only happen if we work together!'

'We won't necessarily have a silver bullet answer at the end of this forum, but we will have a broader range of people all talking together and hearing what concerns everyone else in the industry.'

Luke Bayley, Facilitator

In the short life of the Gascoyne Catchments Project (GCP) there has been tremendous enthusiasm to develop, produce and promote the sustainable industries of the whole region. The GCP sees itself as a true local body of vision, voice and opportunity. The format of this Forum was designed to promote discussion and interaction between each sector of the beef industry and to give the opportunity to outline the challenges and opportunities evident in each sector.

In all, over 120 people attended the forum and heard from 15 speakers from a broad range of backgrounds presenting their views on the Western Australian cattle industry. Many speakers highlighted the evident opportunities of **working together** to develop a much stronger (productive and profitable) cattle industry.

Outlined below are some key points from each speaker on the day

Sean D'Arcy – Lyndon Station, Chair of the Gascoyne Catchments Committee

Sean D'Arcy opened the Forum and welcomed all attendees. Sean explained that the Gascoyne Catchment Committee was formed in 2007 to enhance the years of Landcare initiatives by the Lyndon, Upper Gascoyne and Wooramel LCDCs and to unite their efforts to increase the biodiversity, productivity and general rangeland health in the broader Gascoyne catchments.

Sean highlighted that Landcare initiatives in the rangelands aimed at reversing historical degradation are very costly and the rewards are often many years off. For that reason they must be coupled with the ability of the businesses to fund them, the potential for increases in productive capacity to follow them and the belief in the region by managers to form a more vibrant community for future generations.

'Our mission therefore is the development of an ecologically sustainable, profitable and respected pastoral industry that supports an adaptable and vibrant community.'

Sean discussed how the Gascoyne Catchments project is currently closely affiliated with the Ecologically Sustainable Rangeland Management project that provides support and expert advice to the GCPC and are currently engaged doing property plans across our region to eventually develop a broader catchment plan.

'In the short life of the Gascoyne Catchments Project we have seen a tremendous amount of enthusiasm for this process by all pastoralists within our region. Because of our grass roots-up approach through the various LCDCs, this group is a true representative voice for our region. For the first time there is a body that can speak on behalf of the Gascoyne Industry and we hope that both public agencies and private business will realise this and use the Gascoyne Catchments Committee as a sounding board and access point on regional issues.'

'The Gascoyne Catchments Committee have great faith in our industry and we are confident there is enough profit in beef cattle for all industries along the supply chain; it is just a matter of working together to streamline the process to ensure this.'

Don Heatley – Meat and Livestock Association (MLA), Chairman

The reality of the global financial crisis is that we are seeing one of the most unprecedented financial times ever. Lines of credit for international markets (import and export trades) have been greatly affected as markets continue to 'play it safe'.

'Global financial impacts are really influencing the domestic markets. In the major beef producing countries of the world there is a lot of change going on. On the back of these changes comes huge opportunity for Australia to take advantage of the game.'

This opportunity that Mr Heatley was referring to was the strength of Australia's policy and technology adopted within the industry including:

- NDV (National Vendor Declaration)
- LPA (Livestock Production Assurance)
- NLIS (National Livestock Identification System) and
- MSA [QA] (Meat Standard Australia – Quality Assurance).

Australia's regulation and traceability of products ensure it is recognised as being some of the cleanest, greenest, freshest and healthiest primary produce in the international markets. With many countries now opting for stronger food security and safety, these attributes see the Australian meat products well in front of competitors. Along with food safety and security being at the front of consumers' minds, so is animal welfare. Mr Heatley mentioned that *'the Australian industry should be immensely proud of how far we have come in animal welfare concerns, with an average of 99.28% delivery of stock in live export to the Middle East'*. On the back of these successes MLA feels they need to maintain a stronger presence throughout the international markets (of particular interest currently is Indonesia).

Mr Heatley mentioned that *'MLA would like to see more of the industry runners approaching MLA with ideas and concerns of what impacts and influences the industry, so together something can be done'*.

'MLA would welcome proposals from producer groups in WA's Rangelands.'

'Manage as best as you can, everyone is greatly influenced by the global financial crisis, so manage your resources, manage your stock, manage your business and you will manage' and 'keep your eye on the consumers to maintain their confidence in our product...'

Chris Chilcott – Department of Agriculture and Food WA, Rangelands Manager

From an outsider's perspective looking into Western Australia, it may seem obvious why the majority of the agricultural focus is on the south-west corner of this state. It is in this region that it is more likely that financial investments will achieve the highest returns. Of the agricultural production which does come out of the remaining 910 000 km², known as the Rangelands, over half of it comes from the horticultural industry. *'Inherently we have a system which is low in productivity (compared to other agricultural systems), generally poor fertility (production is most limited by nitrogen and phosphorus) and unpredictable and changing rainfall patterns.'* From this perspective it can be seen why most financial investments and public interests are directed elsewhere.

Dr Chilcott mentioned that *'following reviews of the Kimberley and the Pilbara, it shows those regions are currently carrying about as many livestock as they will ever be able to carry'*. With this in mind, it opens up opportunities in discussions of diversification and the development of further markets through:

- **Improving the efficiency of production systems:** Optimise utilisation, even utilisation, rotational grazing systems. Improve herd performance. Lower costs of production and/or make

more per animal. Improve business decision making. Support alternative land use options (stewardship, carbon farming). Increase turnoff from Aboriginal owned properties.

- **Developing feed-on options:** Support diversification on property, small scale irrigation, agro-forestry, improved pastures. Irrigation precincts. Develop finishing systems (linkages between rangelands agricultural regions).
- **Development of new markets:** Take advantage of natural assets. Target near-Asian markets, Halal products, organic, short-transport regional brands. Develop northern abattoir.

'Growth of 5% of GVAP (Gross Value of Agricultural Production) across the Rangelands region equivalent to an increase of \$250 million across the different sectors where we can have an impact.'

A strong driver in the future of the agricultural industry is the change in distribution of rainfall and climate change. The *'significant changes in rainfall patterns are things we need to prepare for'*.

'For the development of a successful beef industry in northern WA certain features will be needed: adoption of modern technologies to assist with improvements in productivity, improvements in infrastructure (fencing, roads, stock handling facilities, ports), development of indigenous property opportunities (expansion and improved efficiency), processing plant improvements (increased efficiency and new site development) and diversified irrigated pastures.'

Lachlan McTaggart – Bidgemia Station

As a *'refugee of the Wool Industry'* Locky McTaggart feels that *'after many mistakes and opportunities to learn, he is now at a time where he can feel pride in what has been achieved'*. There are many things which can be learnt from mistakes, but we can't forget our peers, if we make the effort to ask, listen and act.

Mr McTaggart feels WA's cattle industry can learn a lot from our eastern counterparts (particularly with the strong Brahman genetics coming out of Queensland) and just as much can be learnt in the local sale yards. Mr McTaggart stressed that while there is a strong need for improvements in genetics of herds, things are looking alright considering a bulk of the herds of the Gascoyne today started out from poor quality breeders from the Kimberley. However, there does remain a concern about the dependence of the live export markets for the breed of choice in this region.

'Ten years from now, I'd like to say that if you're not in Brahman cattle, you're in trouble! But I probably shouldn't say that.'

Over in the eastern states the markets are underpinned by a much stronger domestic demand. The Gascoyne (geographically and climatically) could easily take advantage of the southern markets of WA.

'In 10 years we can hope we may have James Point processing facility running, Muchea processing facility running, ports and road infrastructure improved, widespread use of chemical spaying, improvements in technology, improved knowledge of animal nutrition, an increase in land care initiatives, reduction in animal welfare concerns, and hopefully we'll be a long way into land tenure agreements with the government.'

Trevor Hinke – The Western Australian Lot Feeders Association

A majority of stock entered into feedlotting scenarios enter at no lower than 300 kg (generally *Bos taurus* or low content *Bos indicus*), consuming 2–3% of their bodyweight each day. Rations are equivalent to between 700 and 900 kg per 70–day period. Generally speaking the performance of these animals is strongly linked to genetics. When breaking down the costs per day per stock unit, prices have decreased in the past 12 months, mostly due to fuel prices (\$3.12 last year and so far

this year \$2.30). Due to the variable nature of mustering times and what is available and when, Mr Hinke described that all cattle must be 300 kg on arrival and generally arrive no later than June (between February and June) to best cater for the competitive southern markets. *'In 2009 the opportunity to place pastoral cattle in southern feedlots may be limited.'*

'Pastoral cattle can and do satisfy these requirements, providing there is the right type, weight, sex and breed. There are many pastoral cattle that won't suit the premium markets—but these could still be considered for secondary markets in the future.'

'The way I see it, the opportunities for rangeland cattle other than the boat could include the economy beef market, the grinder beef market and the 100–200 day boxed beef market.'

Kim McDougall – Harvey Industries Group (HIG)

Since the restructuring of Harvey Beef hit the news several months ago, a whole suite of changes have occurred. Mr McDougall described the logic, reason and basis as to why Harvey Beef has taken the path it has. It was described that many little things needed tightening up, but none more so than the *'accountability of product and consistent control of procurement, production and sales'*. This major restructuring program was also driven by the relatively high labour costs.

'Core relations are critical.' The main challenges for Harvey Industries Group which most strongly align with producers concerns include: seasonality, weight, competitive markets (lot feeders, live export) and breeding. Mr McDougall sees many opportunities for beef production away from the south-west corner of the state, as competition for urban sprawl is forcing primary production further and further away. *'The future of cattle is in the north, the south is getting expensive!'*

'The winter lean period can kill production at Harvey. This is where the opportunity for the Gascoyne exists, as you aren't as affected by the bitterness of southern winter—the south is void of cattle and the Gascoyne have cattle, perfect market opportunity!'

'I don't think it is a coincidence that we are all singing from the same hymn sheet; we are all on the same track.'

A Pastoral Grid was being considered to attract cattle when there was a shortage from the agricultural areas. This grid would a bruising penalty. Bruising is a major issue and can cause big losses in overall weight of carcass and revenue, so *'reduce **your** losses by sending us de-horned cattle'*.

'You've got the product. You've got the opportunities for feedlotting, export, domestic slaughter. Research and decide what best suits your business and follow through!'

Cameron Hall – CEO, LiveCorp

Feedlots and abattoirs in domestic and international markets rely on good temperament and genetics for successful and profitable operations.

'It is important as a producer to know you have many options.'

An independent report completed by Hassall and Associates in 2006 entitled *The live export industry: value, outlook and contribution to the economy* found the livestock export industry creates 13 000 jobs and contributes \$1.8 billion annually to the Australian economy. (In 2008 the livestock export industry contributed \$975 million.)

Of the live cattle exported from Australia, 75% goes to Indonesia, followed by 5% to Israel, 4.3% to Libya, 2.3% to Malaysia, 2.2% to Japan, 2% to Saudi Arabia. Last year, of the 520 000 head

exported from Western Australian ports, 123 000 left from Geraldton, Port Hedland and Broome, the remainder left from Wyndham and the southern ports. Almost 98% of the live sheep market goes to markets in the Middle East.

'How we regard seafood in Australia is how the Middle East regards red meat. Fresh is best; that is why the live markets are still favoured.'

Continuing to invest in research and development, the process chain and training and education will improve delivery rates and animal welfare outcomes. There are three key influencers of animal welfare within the livestock export supply chain including the post arrival markets. They are the education and skill level of people who interact with the animals; the quality, design and management of the facilities and infrastructure that animals are transported in or where they are located for periods of time; and lastly the weather conditions that the animals experience either while in transport or at the different facilities where they are located, in particular it is the extremes of any weather conditions.

'Last year 80 000 goats left Australia; 85% of those left by air and it is likely that will increase in the future, as the future of the goat industry is looking very strong!'

On the edge of this global financial crisis the future of international markets is still looking very strong; particularly Indonesia. *'Both the livestock trade and the meat trade has shown huge growths in Indonesia in the last 10 years. You cannot deny that 227 million people eating an increased amount of protein, so close to Australia, is not a good opportunity'*.

Mr Hall described that the key issues in the livestock export supply chain included horns (greater than 12 cm pose AQIS issues and will be discounted), pregnancy status (particularly stock going to feedlots), out of spec cows, ill prepared cattle (opportunistically harvested cattle). *'If it should not be loaded, don't load it, don't send it!'*

The main issues that Mr Hall identified within the industry included vessel and port access, port infrastructure and competitiveness and general transport, staff and feed difficulties. There is *'a lack of commercial confidence from carriers to complete shipments as there is not a consistent supply of cattle (perhaps due to limitations in road or port accessibility) and may not warrant return visits'*.

Scott Braithwaite – Wellards Rural Exports

'Having a small industry means you are only three handshakes away from your final customer.'

The industry views of live export (and international feedlots) being *'shoddy and shonky businesses'* are now a thing of the past. The current situation is a serious and grown-up business boasting significant investment and highly modern infrastructure. Mr Braithwaite described Indonesia's feedlots as *'some of the best in the world'*. Australia is generally one of the most solid suppliers to the Indonesian market. Competition with other international markets ebbs and flows, but *'Australia can be confident that our name of quality will stand firm'*.

'It's been a long time since we've seen a feedlotter, a backgrounder and exporters having so many positive things to say about this industry as we are today.'

Mr Braithwaite suggested to the landholders in the room that *'when selling your stock, **promote quality and consistency**. Put your cattle up in lines, don't try to hide the crap! Even if they are consistently crap, make sure they and you are consistent!'* Consistency and promotion of quality builds a relationship with the purchasers which will turn out to be highly valuable to your business. This is the *'low cost of high trust'*.

'You should chase production, not money. The loss of weight costs more to get back than a loss of 5¢ here or there does!'

When Mr Braithwaite was asked if there was a market for stock to be finished here and then shipped direct to Indonesian markets he responded that *'it could be difficult, but December, January, February and March is when stock should be turned off, as that is when supply is short elsewhere in Australia'* and *'if you are going to sell a cow in Indonesia, it should be a Brahman—they travel, they wait, they rest and they respond when needed!'*

A question presented to Mr Braithwaite regarding the hold-up of boats in Port Hedland last year and how these 'hold-ups' could be reduced, received the response, *'If you want the business, the infrastructure will have to be upgraded to match it. The likes of Port Hedland has a major focus on mining and is set up and managed accordingly'*.

Pastoral breeding farm finishing — Craig Forsyth, Farmer, Dongara

'If they can cart cattle across to the Middle East, we can cart cattle from the Kimberley to the southern domestic markets.'

A successful farm and pastoral alliance must be driven by *'symbiosis, trust and communication'*. Mr Forsyth described that *'alliance agreements must be specific and transparent'* and *'will only ever work if they are like a parachute...when it's open!'*

Mr Forsyth believes it is vital that stock be preg-tested on station before sending to southern markets. Better bred stock in quality lines can demand 20–30 cents per kg more in the Geraldton saleyards and *'the key to good lines is presentation, presentation, presentation, and if you stuff one of those up, you're bugged.'*

'For an alliance to be successful you need to have mutual respect for each other's knowledge!'

When two producers build trust and cooperate with one another to best take advantage of climatic situations and markets, the rewards achieved are great. By working with **improved pastures** (as is the case with southern farms) **strong genetics** (coming from the pastoral region) and **sound marketing** (both farm and pastoral), the scope of opportunity is noticeably broadened.

Well bred, quiet *Bos indicus* weaners bred in the rangelands can be finished for the live export on the highly productive subtropical perennials in the Northern Agricultural Region (NAR). When the management and communication is streamlined at both ends, good profits can be made for the pastoralist and the farmer. By sending a portion of the turnoff to this market, a pastoralist can reduce the risks of markets and the risks of dry seasons.

An emerging opportunity that is being tested this season by Jim Quadrio of Granite Peaks, Wiluna, is to send heifer weaners for growing out on the perennial pastures in the NAR. They will be grown out and mated at around 300 kg, preg-tested and returned to the station at around 350 kg as two-year-olds with their bulls. Their weight gain performance can be monitored on the farm and poor performers and empties can be sold. Projected costs for landing this two-year-old heifer back on the station are similar or less than what was calculated at the KLR course for taking a heifer weaner to PTIC as a three-year-old on a pastoral station. The additional benefits are that the heifer is less likely to die, won't be getting in calf to a mickey (with the risk of vibrio) and will be calving in a short calving span at the right time to a good bull. Being well-grown, it is unlikely she will get a price penalty for being below 190 kg dressed weight at slaughter when cast for age.

Peter Smith – Department of Agriculture and Food WA, Karratha
Sam Harburg – Department of Agriculture and Food WA, Geraldton

For the purpose of this Forum Pete and Sam developed an unidentifiable herd of 5000 *Bos indicus* cattle units, with a 66% weaning rate and 3% mortality rate from a property called 'Gascoyne Downs'.

Breedcow and Dynama is a valuable herd modelling tool developed by Bill Homes (Principal Agricultural Economist of QDPI) and was used for the purpose of this exercise. By comparing and modelling five of the most accessible markets available to Rangelands beef producers, Sam and Pete concluded:

The NAR has great potential for alliances, not as a weaner market: The scenario modelled was a profit share alliance where the NAR farmer received \$1/kg LWG for ex-pastoral weaners backgrounded on-farm. To match the gross margin of this scenario, a pastoralist **selling** weaners into the NAR would need to receive a net price of \$441 per weaner to return the same gross margin or \$421 to match the gross margin of the next best alternative. It is highly unlikely that NAR producers will pay these prices.

Understand how market fluctuations affect the profitability of different turnoff options:

Based on the assumptions and prices used in this modelling exercise, the net steer sale price for the feedlot and 320 kg live ex steer needed to increase by just \$20/hd to match the profitability of the 450 kg live ex steer. However, this is inclusive of the change in herd structure (more breeders and more steers for sale) that a shift to a younger turnoff allows. In reality the necessary adjustment of herd structure takes a long time, therefore a much higher price shift is required to immediately justify a shift to a younger turnoff while the herd structure adapts accordingly.

Pastoralists must look beyond c/kg and gross \$/hd: It is a common misconception that selling prime young stock with a hefty c/kg premium relative to older, heavier stock is the most profitable option; especially given more younger stock can be turned off than the corresponding number of older, heavier stock in the equivalent AE herd. The implications of younger, lighter turnoff on herd structure must be considered. Experience by numerous researchers across northern Australia suggests younger, lighter turnoff is usually of lower profitability. Given the inherent lack of productivity within pastoral breeding herds (65% weaning and 10% mortality), decreasing age and weight off turnoff to accommodate a younger turnoff strategy increases the breeder component of the herd. This therefore increases the proportion of animals within the herd that fail to produce anything for the pastoralist in a given year. These non-producers are all being carried in the place of animals (growing steers) that were **all** producing for the pastoralist. It needs to be remembered that these older steers, while not growing as profitably as younger animals receiving a price premium, are still growing profitably; ultimately achieving a gross price per head that justifies their retention.

Furthermore in the example above, removing all the heavier steers to accommodate a younger turnoff, only produces an extra 187 320 kg steers for turnoff from an additional 552 breeders. This is an insufficient additional turnoff relative to the price premium of the younger steers to enable the profitability of the 450 kg steer option to be matched. This does not mean price is unimportant nor is the heaviest possible turnoff always the most profitable, as ultimately the higher gross sale price for heavier does not always exceed the return provided by the additional turnoff of other options. The 550 kg meatworks steer was found to be the least profitable option, perhaps on account of the poorer prices WA producers receive for slaughter cattle. An equivalent animal in Queensland was found at time of writing to receive an extra 30 c/kg LW or an extra \$165/hd, thereby having a significant effect on the attractiveness of this alternative if these prices could be achieved.

Know the limitations of your system: Every station is different; location alone affects the selling costs and thereby the relative profitability of each market when compared to other stations. Some

stations may also be incapable of growing out steers or unable to adopt more than a 'harvesting' to producing animals for sale that makes marketing difficult. These limitations must be accounted for in establishing a turnoff strategy and herd structure.

Adopt a flexible strategy: Carrying more growing steers to reach heavier turnoff weights provides the pastoralist with the opportunity to sell down on their steer inventory to take advantage of attractive prices for younger steers. This flexibility does not apply to those adopting a younger turnoff, given the time needed to grow steers out to heavier weights if such animals become a temporarily attractive option. Furthermore, herd structures need to also be viewed in the context of drought risk, whereby structures with a smaller breeder component may prove beneficial in the event of drought.

'Every little bit of information you can maintain helps you out in the end.'

Mark Lewis – Department of Agriculture and Food WA, South Perth

'Growing the north!'

Following a recent market survey it was outlined that the most likely accessible 'new' market was in animal-related production and/or services.

In particular:

Domestic boxed-meat market: Out of season to southern markets—both cattle and sheep meat and supplying the mining industry (10 million meals/year).

Export boxed-meat market: Principally based on utilising the northern cow herd—Malaysia (driven by FMD status).

Provision of services: Backgrounding facility for export cattle, spelling, etc.

Pre-mixed **animal nutrition** rations (SE Asia and exporters) and hay (Japan and the local station).

But in order to be able to meet these markets the industry needs *'three key planks to be developed:*

- 1) *build a 'feed-on' industry from the Gascoyne north*
- 2) *establish a northern abattoir*
- 3) *develop key infrastructure facilities.'*

To meet these markets serious investments will be needed in:

- a) northern feed-on industry: cheap power—gas, electricity, black-top/access
- b) contract supply or secure marketing approach
- c) northern abattoir: needs 356 days consistent supply and quality, likely to be Malaysian (or Middle East), Chinese, local interest or joint-ventures
- d) infrastructure and facilities.

Mr Lewis suggested that the best location for establishing a development inclusive of all of the above requirements would be where there is easy access to *'plenty of cheap water'*. The Pilbara offers significant opportunity in this regard. Unused surface areas of mine sites could provide opportunity for centre-pivot irrigation to value-add to the cattle industry (e.g. perennial pastures).

But where should a system like this be set up? The Kimberley, the Pilbara/Gascoyne or one in each? A feasibility study is currently underway. It should be completed by the end of 2009 to assist governments in determining the next steps.

These proceedings can be accessed at <http://www.gascoynecatchmentsproject.com.au/> under the tab 'events and media'.

Using livestock guardian dogs in the Rangelands

Cindy Benjamin (reproduced from the *Australian Farm Journal*, July 2009)

Hughenden graziers Ninian and Ann Stewart-Moore have been overwhelmed by the increased interest in livestock guardian dogs in recent months. 'We are getting two or three phone calls each week from graziers wanting to know more about using Maremmas to protect their livestock', says Ninian Stewart-Moore. The Stewart-Moores currently run 12 000 sheep and 5000 cattle on Dunluce, a 46 500-hectare property on the Flinders River, west of Hughenden in north Queensland. 'We are one of only a few left in the sheep industry here', he says. 'In 2002 losses to wild dogs were costing us around \$30 000 a year; we decided to invest in 24 Maremmas, costing us around \$20 000 in total set-up costs, as a last resort to stay in the sheep industry.' Another benefit of having the Maremmas has been the reduction in kangaroo numbers. While the dogs do not hunt the kangaroos, the 'roos simply avoid the dogs, so more grass is available for the sheep and cattle. Stewart-Moore estimates the reduction in 'roo numbers to be as high as 90% compared to the years before the Maremmas' introduction. Since incorporating the Maremmas into their management system, the Stewart-Moores have seen the losses to wild dogs drop to almost nil, while there are still plenty of dogs in the area.' We have learnt a lot about the management of the dogs on a large-scale property and are keenly interested in the information that will come from Lee Allen and Damian Byrne's study using GPS collars on eight of our dogs.' Stewart-Moore recently began bonding three Maremma puppies with a small group of heifers. After a couple of months the pups were taken, with 'their' heifers, into a mob of 350 head. 'The dogs need proper bonding and people starting out with guardian dogs need to be willing to commit themselves to the management of the dogs and to be ready to understand how they work.' Maremmas are nocturnal and will often travel 10 or 15 km at night, patrolling the boundary or investigating sounds. They also bark fairly constantly, which can be a problem in closer-settled areas. The Stewart-Moores do not have any dog-proof fencing so the dogs are free to move between paddocks and onto neighbouring properties. 'In the first few years we lost some dogs and assume that they roamed and took baits from neighbouring properties', says Stewart-Moore. 'Now that the dogs are well and truly settled here, they have formed their own social networks and that problem has reduced. We invested considerable time and money in setting up the dogs seven years ago but this investment has given us a long-term solution to the wild dog problem', he says.



Find out more:

Guard animals for livestock protection: existing and potential use in Australia by David Jenkins (2003): download from <http://www.dpi.nsw.gov.au/agriculture/livestock/sheep/management/general/guardanimals>

Professor Chris Johnson – Christopher.johnson@jcu.edu.au

Linda van Bommel – linda.vanbommel@anu.edu.au

NWDMAG facilitator – Greg Mifsud (07) 4688 1333

Ninian and Ann Stewart-Moore – <http://www.dunluce.com.au>

Leading Sheep field day notes (September 2008)—notes on guardian alpacas, donkeys and dogs: download from www.leadingssheep.com.au/predator.doc

Invitation to producers in the Meekatharra ZCA area (shires of Cue, Meekatharra, Mt Magnet and Yalgoo)

Professionally facilitated public forum
Cue Shire Hall

'Taking control of our industry and formation of the
Recognised Biosecurity Group'

Tuesday, 8 September 2009
9.30 am cuppa for a 10.00 am start, finishing 4.30 pm

Producers taking control of their pastoral industry

James Pitman, Deputy Chair, Meekatharra ZCA

This is an edited version of a document distributed at the APB Pastoral Conference in Perth during April this year—*James Pitman has made some changes to accommodate recent developments—Editor*

An important development required in the WA Rangelands could be the formation and support of single stakeholder groups in each district or region. These groups could represent the majority of pastoralists as well as other interest groups. The Recognised Biosecurity Group (RBG) model seems an OK model for this purpose as the legislation for replacing the ZCAs has been written so that a group awarded **Recognised Biosecurity Group** status can also do things other than just biosecurity, for example activities towards improving pastoral profits. However, it will be important to ensure that the Declared Pest Rate money, and the matching State Government money, must be quarantined for biosecurity work to meet statutory obligations and to ensure there is no 'leakage' to other activities.

When a district or region has a representative body (where members are all elected, not appointed by government) it has local credibility and the responsibility of meeting the needs of its people.

When there is a body like that setting the agenda, the services of government can be accurately directed to where the needs are and to where producers are already keen to do something. It also develops local leaders and the capacity of local people to plan their industry's future and work towards making it happen. This process is similar to the existing ZCA for district biosecurity management, except that the RBGs will be independent incorporated bodies.

I am told that even the experts in the CSIRO are now saying that to be effective, their experts need to work with strong local producer groups. Without local knowledge and community support, expert support can only spin its wheels.

Minister Terry Redman is reported to have said at the Carnarvon Cattle Forum in April, that he wanted to support industry groups that were committed to taking control of their destiny. Maybe we need to organise ourselves to take advantage of these new attitudes?

All the funding bodies like MLA and Caring for Country, require strong local support for funding submissions. Projects worked up through the RBGs could get that support. The RBGs could be self-supporting eventually and government has given its commitment to provide executive officer support. When projects are identified, other funds could come from FarmReady grants which can provide \$80 000 per year for producer groups working on adapting to climate change (www.climatechange.gov.au). Caring for Country funds are also available to support communities addressing targets contained within the CfoC Business Plan.

Also, there could be real advantages if the RBGs form partnerships with the shires to control rainfall run-off rates. Improving profits from pastoral stations by getting rain to soak in and grow feed, instead of running off, could also drop the costs to shires, which otherwise have to spend heaps repairing roads after heavy rains. Several shires have already shown interest in this idea. The Department of Climate Change also has funding programs supporting shires adapting to climate change so there could be joint funding opportunities in the future between the RBGs and shires.

It's a pity that the Recognised Biosecurity Groups were given that name, as it suggests they will only do biosecurity work. But any group that aims to control Declared Pests can apply to be an RBG, and that won't stop them doing other projects. The name they choose is up to the group's members.

For producers in the Meekatharra ZCA zone, we have the opportunity to come together as an industry and as a community to discuss the issues we want to address and to decide how to make best use of the new Recognised Biosecurity Group mechanism when it replaces the ZCA. We could also discuss whether or not we want to eventually roll other responsibilities like LCDs, etc. into the one organisation.

I have discussed this action with a number of ZCA members and Chairman Rob Gillam who has provided his support.

Please keep Tuesday 8 September 2009 free for a professionally facilitated public forum, commencing from 10.00 am, Shire Hall, Cue. This forum follows the ZCA meeting on 7 September.

Critter camp at Muggon

*Della Otway (Yr 11 Carnarvon High School, DAFWA Carnarvon school-based trainee),
Kaz Johnson (ESRM Project, DAFWA Carnarvon)*

During the first week of August, 23 students from both Carnarvon and Meekatharra School of the Air made their way by car, bus and aeroplane to Muggon Homestead (DEC property) for a three-day 'Critter Camp'. The camp was organised by the staff of School of the Air, Department of Agriculture and Food (DAFWA) and Department of Environment and Conservation (DEC).

The primary school-aged students were invited to attend this camp to gain a better understanding of how our native and introduced critters fit into their rangelands habitats. Techniques and skills learned at the camp included how to capture, observe and identify different species of both native and introduced small animals.

The students were introduced to several methods of humanely capturing and releasing critters by Shane Heriot (DEC Geraldton) and Steve Toole (DEC Carnarvon). After learning about the rules in handling native critters the students equipped their own Elliot traps and set up pit-fall traps before dark. In the Elliot traps they used an unusual mixture of ingredients as bait in their traps, which consisted of peanut butter, sardines and rolled oats. Shane explained how the three ingredients making up the bait would each attract different types of animals. Hopeful that the bait was made of the right stuff to attract plenty of critters, the students busied themselves with plenty of other activities in the wait for something (or someone) to be lured to the traps.

Brisk early morning starts saw the troop of students, parents and critter experts setting off to check their traps for any wild critters that may have made their way into the traps overnight. The traps produced a Dunnart, two small dragon lizards and a field mouse for all to examine and learn more about. The students were also given the opportunity to gently handle a couple of Burton's legless lizards.



Students taking a close-up look at the carnivorous stripe-faced Dunnart.



Harry and Cobb (Meekatharra School of the Air) discussing the week's events.

After being set free back into their habitats, the students were also set free to explore their artistic sides, with the students producing brightly coloured images of Muggon which have proudly made their way into the Muggon Museum.

Entertainment was not only confined to the daylight hours. Evening activities were full of fun and rhythm with a few new songs being invented—courtesy of Mr Jim (Jim Peletier, Carnarvon SOTA Principal)—whose guitar skills and the youthful voices of students in combination was great.

Given that 2009 is the International Year of Astronomy, several activities were designed by Kaz Johnson (DAFWA) to explore our vast solar system. Equipped with plenty of props, high powered telescopes and a night sky-scout, the students were able to identify almost any star seen in the sky—with the full moon, Jupiter and six of her moons and the constellation Scorpio all putting on a show. Through the telescope, the visibility of the moon’s craters prompted many creation stories by the students with one mentioning, *‘I can see where the spaceships must have landed on the moon 40 years ago by the dark round patches’*. The students were also granted the chance to explore Mars by looking through groovy 3D glasses, at fascinating posters of Mars’ surface and handling small chunks of meteorites.

After a sad farewell, the students departed for home, but left with a whole new outlook on things they would normally see every day at home. A number of students mentioned, *‘I had an awesome time on Muggon, and can’t wait to return for more critter catching next year!’*.

A big thanks to all the parents, teachers and members of DEC, and the Carnarvon Department of Agriculture and Food, and especially the kids, who made this camp such a great success and a very memorable event.

