

Tropical Grassland Society of Australia Inc.

TGGS news & views

about pasture development in the tropics and subtropics

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Special issue

"The tree clearing ban in 2006 is good for Queensland" – the debate

The Society exists to improve knowledge and understanding about matters that affect grazing lands.

The tree clearing ban has been a contentious topic between rural producers and city dwellers, between conservation scientists and agricultural scientists.

We take this opportunity to use this issue of the newsletter to improve each other's understanding about the ecological, social and economic arguments of all sides by making a record of the talks of speakers at the debate at the RNA Showgrounds on 4th August 2004.

Ian Partridge, Editor

There is a gap opening up between our urban and rural societies, some would say even a chasm, and the reason for this is largely to do with perceptions about the environment.

Urban people feel uneasy; they hear that agricultural activity is degrading the environment, they hear about dryland salinity, loss of biodiversity, loss of habitat, erosion. This causes a great sense of disquiet to the urban population. On the other hand, rural people feel equally uneasy. They feel frustrated, they even feel angry sometimes because they feel that there is misrepresentation and exaggeration, they feel that it is difficult for them to have their voices heard.

This debate is an effort to redress that information gap. It is clearly important to balance the conservation needs of our

country with the economic, environmental and production needs of our rural societies.

We hope that this debate will provide information in an open forum, to help us understand better the issues on both sides.

At the University of Queensland, we have declining enrolments in agriculture and even environmental science. Part of the reason for this is, I think, concern about the environment.

So it is with great pleasure that two of our degrees – Agricultural Science and Environmental Science – have sponsored this debate.

Dr Max Shelton

Cell grazing
field day
& AGM

30th November
near Gympie
See page 3

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Society News

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I have been having a lot of trouble with our Web site over the past months. This started when our ISP changed server and system. It lost all the links in our Pasture Picker database, and this took some time to fix. Then the Domain registrar knocked us off –

without any warning—when our registration expired after 2 years. Now we have found that the ISP new system will not allow me to access our site. So I have been unable to update the pages recently. Phew!

Our Society e-mail address is tgs@csiro.au

The **41st Annual General Meeting** will be held on Tuesday 30th November 2004 on Tressa Vale, Portas Road, Glastonbury, via Gympie. (See page 3 for details)

Agenda

1. Apologies
2. Minutes of the 40th AGM held in Toowoomba
3. Executive Committee Report
4. Treasurer's Report
5. Journal Editor's Report
6. Newsletter Editor's Report
7. Harry Stobbs Memorial Fund report
8. General Business
9. Election of Office Bearers
10. Presidential Address

Your Executive for 2004

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Field Day on cell grazing

Tuesday 30th November 2004 on 'Tressa Vale'

sponsored by the Harry Stobbs Memorial Fund, TGS and ASAP

Jim Viner has been a recipient of a National Landcare Award for his innovative management.

His property developments include fencing off riparian zones, adding reticulated water, farm forestry and a system of cell grazing. In the cell grazing system, large mobs of cattle are moved quickly between the paddocks according to the feed consumed and feed available.

There is considerable interest amongst graziers about cell grazing- and controversy about its costs and benefits.

Come along and see and hear for yourself some of the pros and cons.

Field day program

9.00-9.45 Arrival, registration, book stall, smoko

9.45 -10.00 Welcome by TGS, ASAP and Gympie DPI&F

10.00-12.30 Inspect property, cell grazing setup, cattle management, pasture improvement

12.30-1.00 Lunch

1.00-1.30 Address by Dr Max Shelton, President TGS

1.30-3.00 Invited speakers

3.00-3.30 Smoko and refreshment

3.30 TGS Annual General Meeting (See page 2 for Agenda)

Lunch and refreshments will be provided by the local CWA. For catering purposes, please let the Gympie DPI&F office (07 - 5482 1522) know if you are coming to the field day.

Lunch and smoko will cost \$ 10 per person.

(ASAP is the Australian Society for Animal Production)

How to get to the Cell Grazing Field Day at Portas Road, Glastonbury, via Gympie

Turn off the Bruce Highway at the Caltex Pineapple service station

“The tree clearing ban in 2006 is good for Queensland” – the debate

Transcript

This text has been transcribed from the video taken by the University of Queensland. Editing has been minimal, just enough to try to change spoken language into text. I have run through the tapes many times where the spoken words are indistinct; I offer apologies if the speakers thought they had said something different from this text. Editor.

The speakers

The speakers for the affirmative were Felicity Wishart, Sarah Moles and Dr Barry Trail; for the opposition: Dr Jennifer Marohasy, Dr Bill Burrows and Wally Peart.

Felicity Wishart took up a role of National Lobbyist for the Wilderness Society based in Melbourne in May of this year. For the previous four years, she co-ordinated the Queensland Conservation Council and, over that time, the partnership of the QCC, the Wilderness Society and other groups in the campaign to end land clearing.

Sarah Moles is a riparian land holder from the Warwick Shire – upper Condamine Catchment Area. She has lived in the Murray Darling Basin since 1987, is an outspoken advocate for conservation causes. She worked for the Toowoomba & Regional Environment Council for 8 years, and now is Wetlands Conservation Officer with the World Wide Fund for Nature.

Dr Barry Trail has worked for 20 years on environmental issues and in positions as a research ecologist, as an environmental consultant to industry and as a conservation advocate. He has a doctorate in wildlife ecology. He is currently an ecologist with the Wilderness Society.

Dr Jennifer Marohasy has a Bachelor of Science and a Ph.D. from the University of Queensland. She worked for many years as a field biologist on rangeland weed issues including seven years in remote parts of Africa and Madagascar. Last year, she started with the Melbourne-based Institute of Public Affairs where she is Director of the Environment Unit – her work is focused on the Murray Darling and her aim is to inject some ‘real science’ into public policy decision-making on environmental issues.

Dr Bill Burrows’ scientific qualifications include a Master of Agricultural Science from the University of Queensland, a Ph.D. in Environmental Biology from the Research School of Biological Sciences of the Australian National University. He was awarded a Centenary Medal in 2002 for contributions to Australian society in the field of ecology. Bill recently retired from his position as Senior Principal Scientist with the Queensland DPI after a 40-year career.

Wally Peart is a long-time farmer and cattleman from Injune in Central Queensland. He has been President of the Cattle Council of Australia, he is chairman of the National Farmers Federation environment committee, was a Board Member at one time of Greening Australia and Landcare Australia, was the inaugural Chairman of Landcare in Queensland.

Felicity Wishart - For

I am delighted to be here because I think that the land clearing issue has been one of the most significant and important environmental debates in Queensland over the last decade.

I want to set some definitions first of all because there is a lot of common knowledge and there are a lot of facts. This is a great opportunity to clarify what the so-called tree clearing ban is all about. To begin with, when we talk about clearing, we mean broad-scale clearing of native mature bushland.

We are not talking about stopping every tree from being chopped down, we are not talking about stopping house sites or fencing or interfering in routine management.

Not actually a ban

And secondly it's not actually a ban. So when is a ban not a ban? It's when it's part of the new Vegetation Management Act for Queensland that was introduced into the Queensland Parliament around May this year. It regulates the clearing of vegetation in Queensland. Up until the late 1990s we had a situation in Queensland where everybody on freehold land could clear that vegetation without a permit. In the 80s, you could clear any land but then we brought in some controls on leasehold lands and later in the 90s we saw for the first time ever controls on freehold land.

Part of bigger environment

And that was a huge challenge and shift for many people who have been on the land for a long time; it had always been the case that they had always been free to do essentially what they could. It was their right to do what they could on their land. What we have now is a scheme where essentially you are no longer simply to go out and clear that bush and that is because that bush is not just an individual's resource to be used, it is part of a bigger environment that is significant for all of us and which has implications for all of us.

Regrowth not affected

So the legislation controls broad-scale clearing of remnant vegetation that is mature native bushland. It does not control a number of things, it does not control regrowth vegetation. If the area has been cleared and has been defined as regrowth, it can be continually cleared into the future.

It does not stop routine management, fencing, a whole range of activities that have been done every day; these are exemptions to the Act and can continue to be carried out.

It does not stop fodder harvesting. We recognise that the communities have been pushing and pulling mulga for cattle, particularly in times of drought, over a long period of time out west and this practise is not something we can simply stop immediately. The implications would be very severe for a range of landholders. So there is a process

going on now to try and work out how we, on one hand, protect the environment but we do try to regulate the pushing of mulga for drought and for use by cattle as a way of ensuring that we do not destroy those communities into the future.

We do not have all the answers on that. We admit that up-front, and we are in discussions with pastoralists to see the best way forward. That particular activity is exempt under the Vegetation Management Act at the moment and has not been banned.

Compensation

Along with the regulation that was introduced in May this year, we saw \$150 million offered by the Queensland Government to rural communities for adjustment and incentives. The environmental movement actively sought that funding; we were prepared to accept that it was not fair to have a major policy shift that was going to affect communities across western Queensland without actually providing some sort of financial assistance to allow that adjustment to take place. And not just to regulate but to actually provide incentives so that people would continue to look after the bush into the future.

Why and how?

So in terms of the affirmative team's challenge, there are two questions: Should we control clearing? And how best do we control clearing?

It would not surprise me today if the other side tries to tell you that greenies are emotional tree huggers, that we don't care about rural communities, that we are happy to drive the economy to ruin. They might suggest that we know nothing about science. They might even tell us that run-off from sugar-growing areas is good for the Great Barrier Reef.

The reality is that we take the issues of environmental protection and regulations very seriously. We know that it does mean the future of our planet in terms of protecting the environment and in terms of doing the right thing for communities.

So should we be controlling clearing? There are a number of good reasons for protecting biodiversity and plants and animals and their habitats, for controlling salinity and ensuring we have good land management without the risk of long-term economic costs into the future and because of the consequence of greenhouse emissions that come from clearing land. My learned colleagues will talk about biodiversity and salinity issues in more detail.

Climate change

But I will touch briefly on the issue of climate change. When vegetation is bulldozed, the bush comes down, pushed up into windrows and either left to rot or burnt. The carbon stored in the bush, in those trees, is emitted into the atmosphere. It has been estimated that around twenty five mega tonnes of carbon dioxide equivalent is the net outcome, the amount of greenhouse emissions going into the atmosphere and not being recaptured as consequences of Queensland land clearing. Now what is twenty-five mega tonnes? If you took the cars and trucks off the road for a year in Australia you have about that much greenhouse

emissions going into the atmosphere. It is around 10 % of Australia's emissions nationally. Those greenhouse gases are going into the atmosphere and are creating what I call the 'double doona' effect. We have carbon dioxide around the planet, which is keeping this a habitable environment, and as we continue to put more carbon dioxide into the atmosphere the doona gets bigger, thicker and the planet warms. The long-term consequences for both city and rural folk are going to be enormous if we allow climate change to occur. So a really good reason to bring clearing to an end is to do our bit to control greenhouse emissions. And that is going to be good for Queensland.

Regulation or education?

The other reason that is important is how we end clearing. There has been an argument that we could have done this through incentives and education but the reality is that we have to regulate – it does not mean we don't need to have incentives as well but, for many many years, there has been a significant denial about the impacts of clearing across the rural communities. The truth is in no district, in no region, in no state in Australia and, as far as I know, nowhere in the world has the loss of native vegetation, with the consequences that this brings, been stopped through education and incentives alone – it has had to have regulations. While that is often hard for rural communities to take because no one likes being told what to do – that is the harsh reality. It does not mean there aren't good land managers out there and I commend all the good land managers that are there, but the collective impact of clearing across Queensland has been 250, 000 hectares at least going down every year and devastated environmental consequences. The regulations have been crucial, allowing the financial incentive to ensure that into the future our kids and their grandkids have an environment worth inheriting.

From our point of view, the tree clearing ban in 2006 is absolutely good for Queensland.

Dr Jennifer Marohasy - against

Slogans

'Land clearing – turning Queensland into wasteland' was the campaign slogan used by the Wilderness Society in the lead-up to the last state election. This slogan helped force the 2006 ban and Felicity was part of this push – posters, TV advertisements. It was relentless 'Land clearing – turning Queensland into wasteland'. But is Queensland really being turned into a wasteland? It might just be that saving trees could make for a good environmental campaign.

An environmental campaign can give meaning to the lives of those who would like to have something to save. After all, they campaigned hard and have won. They have achieved a ban on tree clearing in Queensland and they turn around now and say, 'But you can still clear.'

Open minds

I am apart of a team; I will focus on the environmental aspects of the 2006 ban. Dr Bill Burrows will follow with the economic aspects and Wally Peat the social. Our vision

is for a beautiful, healthy, productive and biologically diverse Queensland. This can be best achieved if we are honest to the data and proceed with our minds open to the evidence. Boxing at shadows and running television campaigns can be tiring, but if you do not have your mind open to the evidence, if you have your eyes closed to the facts, then you may achieve nothing. You may actually end up achieving more harm from an environmental perspective than good.

Misinformation

As I said, outlawing broad-scale tree clearing by December 2006 was a key state government election commitment driven by this intense campaigning. The message to farmers still processing the new legislation has been to stop whingeing because the government has a clear mandate. But what if all the election hype was based on misinformation? What if forest cover has actually been increasing not decreasing in Queensland? What if? When you do your budget at home, imagine if you were never allowed to record your income, only what you spent. You could not record and you could not talk about your income and how much you are saving – you could only talk about what was being spent. It would always be awfully depressing. The deficit would always be increasing, irrespective of how much money you earned and how much money you saved. This is how the Wilderness Society and WWF have reported tree-cover in Queensland. They only report the clearing, they only tell half the story; this really is very deceitful and destructive. The official Queensland Government statistics tell us that there has actually been a net increase in forest cover. Over the last ten years, the net increase – when you take away the clearing and you add up the regrowth – we have 5 million hectares more forest. Five million hectares. This is about 10 million football fields of new forest.

Losing or gaining trees?

This is an issue in the context of the 2006 bans for two reasons: The 2006 ban has been devised on a very false premise. We are pretending that we are losing forest when we are actually gaining it. And too many trees can actually be harmful to the environment – biodiversity is enhanced when there is a lot of different habitats types including grasslands. Aborigines kept a lot of the landscape open with fire: Europeans brought broad-scale tree clearing. Yes, some animals have escaped and some animals died. But if we are going to eat meat and bread, some trees will need to be cut down on an ongoing basis. What can be cut down on an ongoing basis? We have been misled into believing we are losing forest when we are actually gaining it – the power of propaganda. And Felicity talks about how the control was only on remnant vegetation. How much of Queensland is covered in remnant vegetation?

Remnants or plenty?

When you think about remnant, we usually think that a remnant is a scrap – a little bit that remains, it must be a small amount – only a small amount that cannot be cleared. Did you know that if that you ask the Herbarium – the Queensland Herbarium – which is a part of our Environmental Protection Agency – how much of Queensland is covered in remnant vegetation, they would

tell you it is 81% of the land area of Queensland. 81% of the land area of Queensland is currently classified as remnant. The use of the word 'remnant' is deceptive as it suggests only a small amount of natural vegetation remains when, in reality, more than 80% remains, and this area is increasing. Queensland is not being turned into a wasteland. The Brigalow Declaration, a 2-page letter signed by some 420 scientists for the Prime Minister and Premier, urged them to stop the clearing of forest and grasslands, wetlands – but graziers were clearing forests to create grasslands and maintain grasslands and maintain open woodland. I asked a signatory to the declaration why she signed it – 'The end justifies the means.' was her response. 'The end justifies the means.' She is against trees being cut down but she does not understand that the overall trend is one of increase in forest cover in Queensland, and she does not care where or how her food is produced – but I know she eats it.

The new urban religion

People are easily hood-winked by environmentalism. Activists are always recruiting new members with their moralising. Indeed environmentalism is now really the religion of choice for urban atheists, with WWF and the Wilderness Society the new church, complete with charity status and tax exemptions, the new church preaching that cutting down trees is sinning; indeed, trees have become sacred in Australia – like cows in India. But could some members of the new church really just be screwing the environment rather than saving it. More trees can be harmful to the environment; biodiversity is enhanced when there is a diversity of habitat types including open grassland. Not all plants and animal species can survive in gidgee thicket or rainforest. Both of these vegetation types are currently increasing. On Cape York, the now-endangered golden shouldered parrot is losing grassy nesting sites because of tree encroachment.

No recent extinctions

Then again, the majority of the world's plants and animals are naturally rare relics of former times and different environments. Our ancient land has seen many extinctions – there were once giant wombats and even dinosaurs. But with respect to greenhouse – did you know that carbon dioxide levels were 20 times higher than they are today when dinosaurs roamed the Mitchell grasslands of north-west Queensland. There were also extinctions soon after European settlement; in the early days, crocodile and koala populations were decimated by hunting but over the last two decades there have been no new extinctions. I repeat, according to the ABS statistics – no new extinctions over the last two decades; there have been rediscoveries, some possums in central highland Victoria 1966, mahogany gliders in north Queensland in 1988 and the list goes on. Species rediscovered because population numbers are increasing; the reality is that we now as a society, as a community, place a premium on nature and the protection of vulnerable and endangered species. Crocodile numbers have increased from 3000 to 70 000 in the Northern Territory over recent decades. A koala-specific contraceptive pill has been developed in Victoria to curb koala population numbers escalating out of control.

Environment improving

In conclusion, it may seem counter intuitive, but the statistics show that the condition of the environment in developed countries including Australia is actually improving. Forest cover is even increasing in Queensland.

Finally, I would like to quote from Greg Easterbrooke, 'The western world today is on the verge of the greatest ecological renewal that human kind has known, perhaps the greatest that the earth has known.' Environmentalists deserve the credit for this remarkable turn of events, yet our political and cultural institutions continue to read from the script of instant doomsday. Environmentalists who are surely on the right side of history are increasingly on the wrong side of the present. Risking their credibility by proclaiming emergencies that do not exist, and through their recent forceful campaigning in Queensland, forcing regulations, prohibitions and bans that will do much more harm than good.

Sarah Moles - For

The Earth as a whole

I want to start by painting a bit of a big global picture. Some of you would have been aware of the work of James Lovelock, an eminent scientist who developed the Guey hypothesis – in a nutshell, it is a notion of the earth as a living organism and, whilst there is certainly a spiritual element for many people in that hypothesis – it is also based on very sound science. It encourages us to look at the Earth as a thoroughly integrated system. It is so precious, as far as we know Spaceship Earth is the only one that harbours life. I mention this because the notion of integrated systems will be familiar to any of you who have been involved in integrated catchment management. Those of us who have been involved in ICM know that when you make an impact on our land, our soils, our vegetation or our water resources there are impacts on the others because they are so connected and interrelated.

Learn from the south

I think it is fair to say that the role of deep-rooted vegetation, native vegetation in the discussion that we are having here today, and the maintenance of our ground water levels is undeniable, and if any of you have not been to the southern part of the Murray Darling Basin, and had a good look at the kind of damage that is going on around places like Shepparton, Karangi and in the south-west of Western Australia you will know what I mean, and those of you who have not seen it should talk to the landholders in those areas because it is a stunning revelation and should frighten the pants off anybody who gives a toss about the future of Australian agriculture.

What we are risking here today is the future productivity of many of our soils. One of the integrated systems that we need to understand is the global hydrocycle – as I have said the role of deep-rooted vegetation looking after our ground water resources is undeniable.

Local effect on climate

There is some global research that talks about the role of large areas of forests and woodland as a moderator of climate, as a bringer of rain, as a supply factor in the hydro cycle. For the driest continent on Earth, it seems to me criminally negligent that our scientists and our policy makers have not repeated that experiment here in Australia and demonstrated the value and the impact of vegetation on our weather patterns. Not only are we the driest continent on earth, we also have the most variable climate on earth. And when I was a little girl and went to school, I learnt that large bodies of water maintain and moderate the effects of heat and cold, that those processes are slowed down by the presence of water. Every one of us is seventy-five or more percent water and it is exactly the same for forests, for trees, for all sorts of things. Water is very much part of life. We need to be aware that globally salinity is an issue. Every year, thousands of acres of productive land are being lost to salt. Every year this generation, individual members of this generation, seem to reserve the right to go and repeat those experiments without thinking of the consequences of future generations to be able to feed themselves, to provide safe, clean drinking water and to provide habitats for thousands of creatures with whom we share this planet. Australia has an appalling record on extinctions. In the two hundred years since 'white fellas' came to this land, forty-nine species of mammals have become extinct. That is the worst record in the developed world, and we should be deeply concerned, deeply ashamed, of our record and deeply committed to doing something about protecting those species whose activities we put at risk.

The precautionary principle

So somewhere in this whole debate that we are having about whether this is good science or bad science and should we ignore it because it doesn't actually back up our case well; we will take this piece on-board because it supports our case; and we might blur the distinction a little; and we will mix up some figures to deal with greenhouse with some figures to do with tree clearing so that everybody is confused about what we are really talking about here. And let's have this thing called a precautionary principle that says, 'If in doubt, if it looks like we going down the gurgler, let's take a deep breath, a step back, do nothing more to exacerbate that problem and find out what really is going on'. Let's invest in the science that we need to make sound decisions.

Now I am not a scientist, but I've been involved in natural resource management for over 10 years now. I've spent a lot of time talking with farmers, many of whom are great conservationists and I have spent a lot of time talking with eminent scientists.

Our wetlands

My role at the moment with WWF is that of wetland conservation officer and rubbing shoulders with people who have spent a long time studying particular complexes of wetlands in Queensland. This has led me to understand how tree clearing, broad-scale tree clearing across landscape and catchments, is changing the ecological character of our wetlands. Now, like other parts of the globe, Australia also

has a sorry record in the way we looked after wetlands and we have lost 50% and probably more of the wetlands in the Murray Darling Basin since 'white fellas' came along. I certainly understand the economic pressures that drive those kind of management actions but I also understand that many of them are beyond our control. We don't set commodity prices, we have no control over what the exchange rate is, we are looking at a long planning horizon. There is a whole raft of reasons why things are very difficult. But I am sure that many of us are committed to finding more sophisticated solutions – how do we share the costs of the reforms that we have to have if we want to have a future for agriculture and if we want sustainable rural communities. And I for one certainly do want sustainable rural communities.

Salinity hazard

Early mid-2001, there was much made of the release of the salinity hazard mapping for the Queensland Murray Darling Basin. A lot of people do not realize that the Murray Darling Basin extends into Queensland but 25 % of it is in Queensland – that is about 15% of our state. So we need to look closely at the lesson from the southern basin and not to repeat them in other parts. Certainly the conversation I have had with the eminent John Williams, who is arguably Australia's leading salinity expert, is that if we manage Queensland in the way that we have managed the southern Murray Darling Basin, we risk repeating that devastation over very large areas of what is currently productive country. And John's take on that was, 'Madness – we should not go there'.

Community values

So we have this dilemma, we need to talk about rights and responsibilities, Felicity has pointed out why we need regulations because voluntary measures anywhere in the world have failed to do the job. This is a discussion about values. Do we as urban residents value the fact that landholders are producing for us things like fresh water, like clean air, keeping our soils healthy, well I sure do and I am happy to pay for it. This is very much about values, it's about long-term, big-picture discussions, outcomes and it's about how do we share those costs, how do we make a framework that meets all those needs and keeps people viable. There are going to have to be changes in our farming systems if we are going to meet the challenges that are facing us; but, above all, we have to strike a balance, we have to strike a balance between economic benefit and long-term environmental benefit. And the rural community cannot do that alone. We need to be careful. We need to learn from the mistakes of the past and we need to have a very rich and meaningful dialogue about the best way to make the land-clearing ban in Queensland the best thing that has happened to agriculture in Queensland for a very long time.

Dr Bill Burrows - Against

Enormity of ban

Our opponents ignore or greatly underestimate the huge area of Queensland affected by the bans. They ignore the reasonable expectation of private landholders to responsibly

improve their assets. They ignore the reality that the bans condemn owners of woodland to declining production and viability in future years. They ignore the cost of reconstruction schemes that must inevitably follow. And most of all, they ignore woodland thickening and the enormous carbon sink it provides on our grazing land. Ignorance of the truth about the impacts of the bans on production economics and greenhouse may be bliss to our opponents, but it's not to our team.

Using science

We present a case based on published fact and publicly available information. We believe that legislation founded on half-truths, deliberate obstruction and shonky science is not good for Queensland. There are 76 million hectares of forest and woodlands with crown cover greater than 20% in Queensland's total area of 173 million hectares. Forest and woodland on private holdings cover 60 million hectares; this alone equates to the area of all rural land in NSW.

Subtracting identified regrowth – 8 million hectares – there are around 50 million hectares of grazed woodland in Queensland – one third of this state's total grazing resource. This huge area is the subject of the bans. Clearing trees inarguably increases food and fibre production; state-wide trials commonly show a 2 to 4-fold increase in livestock carrying capacity following tree clearing. Areas cleared a century ago still support double the cattle numbers of the uncleared state. Government has long recognised these benefits and, for 100 years, made clearing of trees a condition of granting pastoral leases. Many studies confirm the economic benefits of tree clearing; the wide-spread nature of the practice brooks no other conclusion.

Lost dollars

Published results show that reducing tree cover by half increases cash flow by \$90,000 per year for a self-replacing cattle property of 20,000 hectares near Charters Towers. Clearing box woodlands near Dingo with 20 percent retention in retained blocks and strips gave net present values of \$40-64 per hectare greater than uncleared controls. In north-west New South Wales sheep country, the gross margin for land cleared of unwanted woody plants is double that for land with high tree-shrub densities. The setting aside of \$150 million to compensate land holders for clearing benefits forgone—a stark acknowledgement that the clearing bans will cost land holders dearly. How can it be good for Queensland to pay out millions upon millions of dollars in compensation while at the same time depriving the state's economy of a much more profitable grazing sector and the additional export income generated in the absence of the bans. Also, this compensation assumes that production will remain at current levels in the remaining uncleared woodland – this is plainly false. There is now considerable scientific agreement that widespread tree thickening increases in woody plant density and cover are occurring throughout Queensland.

Lost production

Carrying capacity is decreasing where the thickening is not addressed; for example, a doubling of tree basal area from 4 to 9 square metres per hectare over 40 years reduces

potential past production by one third. Mustering problems are also greatly increased. The net present value of lost grazing production and reduced property values from tree-thickening can be readily calculated. A net present value cost to the community of \$900 million was canvassed in the media earlier this year – this figure was not challenged and led Minister Robinson to confirm the existence of research by government officers into the cost of thickening. Published multipliers for converting industry into community benefit suggest a value of three times. So it can be deduced that the net present value cost of unaddressed thickening to affected land holders will be around \$300 million. This cost has not been factored into the proposed compensation package. If landholders are inadequately compensated or are not allowed to effectively address thickening, they will inevitably place more grazing pressure on the remaining pastures. Overgrazing leads to soil erosion and encourages proliferation of weeds. Thickening changes biodiversity in flora and fauna, and livestock carrying capacity falls. Government figures suggest over half of Queensland's grazing properties are presently less than a viable living area; unaddressed thickening exacerbates this problem and has already led to expensive property reconstruction schemes in Western Queensland.

In the black to be green

It has been stated that the only sustainable agriculture is profitable agriculture. How can it be good for Queensland to pay out millions of dollars in compensation while simultaneously promoting processes that will make more rural properties unsustainable and unprofitable? It is claimed that thinning of thickened vegetation will be permitted after the bans are in place. In fact, published research shows that for the majority of woodlands with no commercial timber value, thinning by individual tree treatment as stipulated by the government does not pay, whereas leaving the same proportion of tree cover in intact strips and blocks while fully clearing the remainder is very profitable. The government has spent millions of dollars on woodland management research and related staff training over 40 years but then ignores the results of that investment. How is that good for Queensland?

Kyoto's Australia clause

The biggest promoter of tree-killing bans on grazing properties, apart from misguided conservationists, has been the Australian government. It claims that we need the bans to reduce greenhouse gas emissions. Let us examine the facts: the Australian government has not ratified the Kyoto protocol yet it says that it will still meet targets in greenhouse gas emissions set by that protocol for the 2008/12 commitment period. The basis of this target is the Australia Clause, Article 3.7 of the Protocol. This allows countries for which land use change and forestry was a net source of emissions in 1990 to include emissions from land clearing in their 1990 baseline for the purpose of estimating the assigned amount in 2008/12. But where land use change and forestry is a net sink in 1990, this method of inflating the baseline is not permitted. So provided emissions from tree clearing exceed reported forest sinks in 1990, we add emissions from 1990 clearing onto our baseline. Any reductions in land clearing

by 2008/12 can then be counted towards meeting the overall emissions target.

Carbon sink

Australia is one of the few Kyoto signatories (not ratifiers) that are actually allowed to increase its net emissions in 2008/12 relative to its 1990 baseline. This is a further perverse incentive to maximise our reported 1990 emissions; make sure net emissions from land use change and policy are as large as possible in 1990 and ban all land clearing through to 2008/12. We have seen that banning is obviously easy—to maximize our net emissions in 1990, count every land clearing source but only partially record carbon sinks resulting from forest growth and woodland thickening. The Australian national greenhouse gas inventory currently reports change in carbon stocks on only 10% of the 157 million hectare national forest estate—compare this with the USA, where all 302 million hectares of its forested land are included in its accounting. Only about 6% of the 76 million hectares of forested land in Queensland is currently reported in our inventory.

Grazing increases woodies

Tree-thickening on grazing land is deliberately ignored on the pretense that it is not man-induced, but there is a huge scientific literature which shows that grazing by domestic livestock and active fire-suppression controls have led to proliferation of woody plants in most of the world's savannas, including Australia's.

In 1955, M. R. Jacobs prophetically observed in his definitive book *Growth habits of the eucalypts* that if fires were controlled the eucalypts would make a closer forest in the north of Australia.

GHG targets

Still the plot thickens, a senior Australian Greenhouse Office manager, Ian Carruthers, briefed State Government officials four years ago. He advised that the cost of having woodland thickening included in Australia's target could be around \$4 billion per year to the energy sector. But by triggering the Australia Clause, that is by not counting woodland sinks resulting from tree thickening, the energy sector is effectively allowed a 20% increase in emissions from 1990 levels. My colleagues and I reported in *Global Change Biology* in 2002 that Australia's total net emissions would be reduced by 25% if we included this sink resulting from Queensland's grazed woodland thickening in our inventory. That is, at a time of peak clearing activity, the carbon accrued in Queensland's grazed woodlands each year exceeded that being lost as a result of clearing. Why is this published scientific fact being ignored? It's because, if not, the free ride from banning tree clearing in Queensland to meet Kyoto commitments would not exist. And the nation would have to do much more to reign in fossil fuel emissions. Yes, this would cause much more angst to urban voters, the federal government urged this total clearing ban on Queensland so it could misleadingly claim it could meet targets according to Protocol rules. The Queensland Government introduced the bans to shore up its Green vote while claiming this also benefit greenhouse abatement. Both governments are complicit.

Inadequate compensation

In summary, I have highlighted the huge area of this state affected by the bans. I have detailed the reality of vegetation thickening and its deleterious impacts of future productivity, biodiversity and sustainability. And I have destroyed the only rejoinder, thinning as proposed by government and our opponents just doesn't pay. Likewise I challenge our opponents to justify the government's totally inadequate compensation package. Finally, I have detailed scientific flaws in the Federal Government's case for banning tree clearing in Queensland to achieve its Kyoto objectives. There can be only one honest conclusion—the 2006 ban is neither good nor smart.

Dr Barry Trail - For

Where have all the bell birds gone?

I might actually start with an anecdote from two years ago. I was out looking at some land clearing sights near Augathella. It was around an 800 hectare paddock of mature poplar box which had just been pulled. It was completely done, under the terms of the Act then but, for whatever reason, there were not many shade trees left. But what really stuck in my mind was a bird calling from the roadside vegetation—a little bird called a crested bell bird—because I had just documented as a part of my research on declining woodland birds, the extinction of bell birds in northern Victoria the year before. That was the last population in northern Victoria. But that example of bell birds, that if it was just one population going or just one species declining, it might be no big deal.

Local loss

But bell birds are declining right throughout the east and south of their range. It seems that they need very large intact areas for them to survive, up to high tens of thousands of hectares, and that's not the only species. Species like babblers, also called catbirds or yahoo birds, are still common in most of central Queensland but are now declining or extinct in most areas in the south, in New South Wales and they are now declining in the Darling Downs and parts of Central Queensland. It has been systematically documented by myself and a whole range of other researchers that there is a widespread wave of extinction that is occurring, first documented in woodland birds, but also in some other species throughout Australia. Jennifer got it half right—we have been fortunate in Australia in the last 10 or 20 years that there have actually been no documented extinctions because, as a society, we have actually got to the stage where we are very good at stopping things becoming globally extinct, and it is good that we still have these things around even if they are very rare. But we are still very bad at stopping things becoming threatened or close to extinction; and when they are threatened or close to extinction they are actually extinct in most of their range. This is what is facing a whole number of species now in the southern woodland and we now see that trend increasing in Queensland.

Big kill

Because of the rates of clearing that we have in mature bushland, not regrowth, conservative estimates are of around 2.1 million native mammals, 8.5 million birds and

89 million reptiles, being killed each year as a result of clearing. When we talk about those statistics to land holders they often say, 'We still have plenty of birds around here, still plenty of wildlife, still plenty of lizards.' This may be true because there are two parts of the complexity. What happens to wildlife when a landscape is largely cleared?

Roos abound

One is that some common animals love paddocks—kangaroos, crows, magpies, ibis, white cockatoos love cleared land; some become pests, pastoral pests and environmental pests like kangaroos at times. But the great majority of species that are more specialized, that have to have brigalow, that have to have a large area of mulga, or they have to have this because that's what they evolved with, these ones start to decline and to disappear locally. The other point which many landholders do not perceive is that there is this lag between clearing and local extinction because it is very rare that a landscape is cleared all at once, you have little pockets of bushland and little populations hanging on. These populations are not viable and will start to slowly disappear in the next 10, 20 or even 50 years; that is what happened to the bell bird population down in Victoria where clearing finished in the 1960s but did not become extinct until the late 90s. That is happening to a whole range of species—so I just wanted to really nail that point because let no one be in any doubt about the cost to wildlife.

Danger signs

You may decide that to you it is not important, but there are two arguments: one is that these things are the canaries in the coal mine, they are the canaries of our landscape. When these species start to disappear from an area, these are the signs that the environment is starting to unravel. It may sound like a bit of a generalisation, but can have real impact—which we can now see in the Darling Downs as you can through the south where you start to have tree die-back because there are not enough insectivorous birds to eat insects and keep the trees alive, to keep them healthy. You start losing the small blocks of the trees that remain in the landscape and then that flows through to control salinity and land degradation and so forth. There are actually real impacts that affect the bottom line. And secondly, and this is what obviously drives me and many others, is the importance of those species in themselves—they have been there for hundreds of thousands of years, they are beautiful, they are part of the landscape and most Australians want to keep them in the landscape.

Regulation first

For this reason alone, I strongly believe that the controls on clearing mature bushland are absolutely crucial in Queensland but I re-emphasise what Sarah said—that understandably it may be said that bringing in many regulations, that's it but, as I've discussed I think with many of you here in the audience, my organisation and a whole range of other environment groups see these as just the first step in what, or the second or third step, whatever step it is in 100, 200 years of being in Australia with our culture and our economy and try and get it right in a landscape which is radically different from wherever we came from.

So yes, we do need the regulations because that is a framework, but we must get beyond that to get better incentives, better stewardship because urban Australia is not paying its way. It does want the environmental services but it's not that we haven't even got the proper system to get the support or dollars to fully pay for that – and there's certainly unfinished work which environmental groups are equally engaged with and responsible for, for getting for all landholders. So yes, for wildlife alone, it's logical that this is vital for Queensland for the future but it's still a lot more work yet.

Wally Peart - Against

Good hearts, fuzzy brains

Tree density is not a new debate. Thomas Mitchell, the famous explorer, complained in 1840 that the imperial government had restricted burning and caused country that he once used to gallop through to thicken so much that he could hardly walk his horse through it. I note the opposition are mainly from large organisations with multi-million dollars budgets and millions of supporters—not members, just supporters. Few have a say in policy, most don't. However, we won't criticise them too much because their hearts are in the right place, it's their fuzzy thinking that really worries us. On the other hand, we are basically private individuals who are angry and dismayed at the myths, lies, half-truths, red herrings and political expediency that lead to this ban that is bad for Queensland.

Dynamic changes

Australia is a dynamic island with many recorded changes; these changes have sped up over the last 200 years because the human population has gone up about 2000 percent. We could reverse the trend and ask for volunteers to leave the place, but where would they find a cleaner, less polluted home? When Ludwig Leichhardt first saw my country, he had travelled for six weeks trying to live off the land and, with the aid of Aboriginal trackers, five dogs and plenty of guns, he was only able to get two kangaroos for the pot. I think kangaroos have probably expanded about the same as the human population.

Open, closed, open, close

The first lithograph described my land as semi-open brigalow with opens plains. When I arrived 80 years later, it was wall-to-wall brigalow, 600 trees to the acre, dingos had not been controlled for about 80 years and they had eaten all wildlife that lived or nested on the ground and they were starving. Now we're back to open plains, the place abounds with wildlife of many types, and we've counted 300 species of birds. Now we are told this must stop.

Sustainability

The main generators of real wealth in this country are manufacturing, mining, fishing, agriculture, tourism, forestry. I would argue that agriculture is the most sustainable of all these. It's the most visible and the most diverse and, as such, receives most criticism—you can always find a bad example. However, given the right signals, information, and encouragement, the vast majority of farmers want to be sustainable and pass on their land to their offspring in good shape. They're emotionally, if not

spiritually, attached to their land. We think this ban has something to do with sustainability, a thing some people talk a lot about with others trying to define it with limited success. Some try to tell you how to do it with almost no success; farmers on the other hand try to practice it everyday of their lives. The first prerequisite is that it must be profitable because a sustainable farm is not one that is going broke. With an average return on capital of 2% and an average taxable income of about \$25,000, we cannot afford mistakes. We do not need more stress; we already have one of highest suicide rates. This ban will put stress on social harmony and profitability in the bush.

Biodiversity

In terms of biodiversity, nobody wants to lose species. Many species have thrived; one farmer recently supported 250,000 of a variety of macropods through the recent drought; it cost him a bundle and this in an area that traditionally went totally dry and none would have survived. The fact is that some species have multiplied under European settlement and some have diminished; some of the endangered and extinct species became so before widespread tree clearing started. In terms of species decline, let us be more specific and understanding why it happened. It is well known that foxes and cats are particularly savage on our wildlife—we would take the opposition much more seriously if they were wearing cat or fox fur coats!

In this whole debate, the biodiversity under the soil is one aspect that is largely ignored but it is the most important—if we lose our soil health, we lose everything. There is a far greater weight and diversity of living organisms under the soil than above it.

Some myths

There are many environmental myths knocking about. One is that locking up country saves it—it doesn't. Wilderness is a myth; virtually all of Australia has been occupied and managed for thousands of years. Another myth is that trees stop erosion. They do stop wind erosion, but not water erosion—grass stops water erosion. When I first saw my land at 600 trees per acre, there were lots of break-away gullies throughout it; now that it is well-grassed these valleys have disappeared and the problem is getting enough run-off to fill the dams. Grasses and pasture legumes evolved under periodic grazing by animals according to the season and they thrive under this regime. If left ungrazed, they will become moribund and unhealthy and will eventually carry a fire that is so hot that it damages the environment. A properly managed grazed pasture that includes legumes and grasses will store as much carbon as an old growth forest but, in Greenhouse calculations, pastures are largely ignored. Over the years, farmers have made mistakes, often under government direction, but have often rectified those mistakes—the mallee, the wheat belt, some western grazing lands are in much better condition now than they were. Producer-initiated innovations such as strip pulling, cell grazing, pasture monitoring, leucaena planting, tree planting, no-till farming, are all having an effect on sustainability but little credit is given. Eco-tourism would help but it is hard to compete with a government that provides a free service through the national parks.

Landcare

It was a grazier initiative that started the Landcare movement to raise the profile of sustainable development; it was a very successful movement and created enormous good-will trying to reach our goals through education and understanding, not through regulations. Queensland now has 85 Landcare branches. All the good will created through the Landcare movement will be destroyed by this jack-boot approach of banning all tree planting by 2006. People who have over-cleared, and we admit they are out there, are not affected by this ban and the people who have left trees are being punished, hardly the right message. The first post-ban property sales are indicating that uncleared scrub country is almost worthless; before the ban it was worth about half the price of developed country.

Local knowledge ignored

The alternative to this ban is to follow the recommendations of the regional development committees who had, over 4 years, put together plans for the responsible sustainable development for their regions. This legislation makes all their good work obsolete. If this debate is about biodiversity, then let us do a proper audit and decide what is needed for viable communities with no unthreatened species. Let us collectively pay for their preservation by targeted actions and stories like the bilby and bridle nail-tailed wallaby. We can soak up more carbon by rewarding people with carbon credit, we can maintain community harmony by respecting people's assets and treating them fairly.

Equalise pain

If we have to sign a Kyoto-like agreement, let us share the pain equally and be honest and upfront. To make one small relatively powerless group of people pay the bill for a perceived good environmental outcome for everyone is wrong. It is amazing how often government regulations create exactly the opposite effect to the one wanted. These regulations will create thickened woodlands that are foreign to our wildlife, and the farmer will have to overwork his remaining land to make a living. Government will not get good outcomes without farmer cooperation. Pieces of silver and big fines will not be successful; demonstrate the need with good science and logic, offer encouragement and assistance and you will achieve harmony, good will and a good result. History will show this ban to be a costly mistake.

Rebuttals

The 5 minute rebuttal for the affirmative by Dr Barry Trail

Bushland, not trees

One of thing that has come up in this debate, as it has again and again over the last several years, is trees, trees, trees, trees, trees. And I'll kick myself I actually didn't better define it at the start, because certainly what drives us is protecting bushland, and that's not necessarily protecting trees and I know that's not the standard picture that people might have of conservationist groups but, especially in western central Queensland, the argument to me is not about trees, it's about protecting bushland.

Trees aren't increasing - the Herbarium

Firstly, native vegetation cover in Queensland is not increasing. Jennifer has been told this, she's been told that she's been mixing up different data sets and confusing them and may be want to call the Herbarium again. They'll explain it to you again Jennifer, that native vegetation cover in Queensland is not increasing. If anyone wants to check on that I can give you the mobile number of the number of people in the Queensland Herbarium that keep the statistics and you can check directly with the source.

Secondly and probably more substantively, Bill's very technical comments about thickening. Thickening is a real ecological issue and a real production issue in much of the woodlands we are talking about. However, I would point out that Bill has neatly failed to mention the alternative theory to the fact that simply changes in fire and grazing and trees causing thickening. This is that there is an alternative theory, which is not necessarily mutually exclusive, and I'll go through it quite carefully because both processes can be acting at the same time.

Major droughts kill trees ...

This theory is that you have long-term cycles of thickening and then major kills during drought. In the parts of Queensland that I've seen since the last big drought, which is still going in many places, some finishing sort of 18 months ago, there have been massive tree kills in large areas of Queensland. Rod Hensham from the Herbarium has mapped this quite carefully including areas that haven't been grazed since European settlement and find out that the same sort of tree deaths in drought as long-term cyclical droughts come. Now my personal view having looked at Bill's literature and looked at the literature from the Herbarium is that both processes are probably acting. You do have large-scale tree death-causing droughts and I've seen paddocks of up to 80, 90% tree deaths. It looked like the paddock's been rung or poisoned, but it's just drought death. And then of course what will anyone come in along of that paddock— in the next 10, 20, 50 maybe even 100 years see, what will they see?

... which regrow

They will see thickening, they'll see thickening in their lifetime, maybe their children's lifetime and their grandkids lifetime. So those processes are going on it's not necessarily simply an artefact that they've changed management. That said, thickening is something that, I'll be very honest here, we're really struggled with, and we decided in the end to push for allowing to lobby for only thinning in areas where it has proven to be thickening and not to allow for, and not to allow chaining because that, again and again, has been shown to lead to loss of bushland.

No chaining

Chaining, including chaining the understorey and the consequent changes in wildlife, runs the risk of salinity because of change in how water goes to the landscape. Now, how we deal with the thickening issue that is a problem going on quite separate to the land clearing debate, is tricky and will require more science and a whole range of other tools such as perhaps getting fire back into the landscape.

It's not easy to solve and I'm not pretending to have the answers but to say simply you will fix it by chaining the country is vastly simplistic.

Need more money? - Ask the Feds

The final point I will make is money. The key one is mainly how much it costs? I don't pretend to have the expertise on the costs for individual landowners. It will be a cost in some areas because in many areas the benefits of someone keeping trees may be felt by someone down-stream - but the person keeping the trees doesn't get a return. So the community needs to pay for that - and if \$150 million is not enough then collectively we probably should be looking to the Federal Government because, so far, they have been getting out of this one very lightly.

For the negative rebuttal, Dr Jennifer Marohasy

Environmental fundamentalism

Australians do perceive themselves generally to be affable and rational, and part of the secular society that determines that the public policies, including policies on environmental issues, are established on the basis of evidence. Most of us feel comfortable in that the belief that our fellow citizens, and especially our policy leaders, are unlikely to be ever swept along by quasi-religious ideas and beliefs. The reality, however, is somewhat different. There is ample evidence that environmental fundamentalism drives public policy decision-making on a range of issues, and these decisions are having significant social and economic impact while delivering little, if any, environmental benefit. In the case of the 2006 ban on tree clearing, the prohibition will do much more harm than good.

Trees are increasing - Dept NRM

Firstly a little bit of rebuttal. I would like to touch on the issue of trees as Barry discussed, birds as Barry discussed, salt and water, and hopefully I've got enough time to summarise.

Barry suggested that if you ask somebody they will tell you that tree cover is not increasing. Words are cheap—but the Queensland Government spends a lot of time through its state land SLATS tree program collecting statistics which I understand the Wilderness Society and WWF recognise as being the best statistics out there. If you go to their most recent report - Queensland Department of Natural Resources and Mines:-Land cover change in Queensland 1999 to 2001 (issued January 2003) - it explains that the 2001 estimate that forests cover 81 million hectares of Queensland is an increase, an increase of 5 million hectares over a 1992 estimate that put forest cover in Queensland at 76 million hectares.

More birds, not less

Birds - Barry started again with anecdote- talk is cheap and then continued with more anecdote. While much has been said about regional bird extinction, let us have a look at the overall trend, let us get an idea of the big picture, I think that is the direction in which Felicity had mentioned which we should go. According to the Atlas of Australian

Birds, over the last 20 years an analysis of 422 mainland bird species shows the frequency of 28 % remain the same, 37% are more frequent while only 15% of species were less frequent. This is actually great news, most bird species - 85% looking at the official records over the last 20 years, are common or more common than they were 20 years ago. Barry talked about this issue of listing species as vulnerable, let me tell you something about that—activists access government funding every time a new species is listed under the Environmental Protection/ Biodiversity Conservation Act. Three hundred and eleven new species were listed over the last 2 years; they can be listed even if population numbers are currently increasing but can be classified as regionally isolated and distributed, etc. Money is allocated to develop recovery plans and run education programs that can double as membership drives, for example for the Wilderness Society, even though the population numbers of the species may be increasing. But the claims that bird species are generally in decline is just not supported by official statistics.

Salinity in MDB declining

I have to say something about salinity. Much is made about the salinity threat, the salinity risk, and Sarah has talked about rising water tables. I have spent the last year looking at that issue in the context of the exact region that Sarah was talking about. If you actually look at what the situation is now—yes, there were problems in the 1960s and 70s. People put in clever drainage work and the area at high risk under irrigation of dryland salinity has reduced by 90% since 1995 in the region that Sarah refers to.

If I can say something about the Murray Darling Basin being a cot case (because that is the indication, the image that was presented to us), and that we live on the driest continent—the driest inhabited continent on earth. Yet when I hear that I say 'How can we export so much food, how do we manage to feed so much of the world?' Did you know that rice producers in the Murray Darling Basin export enough food, enough rice, to feed 40 million people a meal every day of the year. The Murray Darling Basin region that is apparently in such a bad state produced a record wheat crop last year. We should be celebrating our natural heritage and our capacity, our proven capacity to farm sustainably and feed the world. We should be encouraging innovation in the farming community.

Trees now sacred

Instead, because the act of pulling or cutting down trees so offends environmental fundamentalists, it is their belief, their righteous ravings that now take precedence, threatening the long-term sustainable management of our rangelands for cows and birds. Trees have indeed become sacred in Australia—like cows in India. [End]

The video

Get your own copy of the video of the debate for only \$22.

Contact Dr Max Shelton at the School of Land and Food Sciences, The University of Queensland.

E-mail: m.shelton@uq.edu.au

Droughts and degraded grazing lands

The Sinners (Climate Impacts and Natural Resource System) group of Queensland's Department of Natural Resources and Mines have produced an 'opus magnus'.

Learning from History: Pasture Degradation and Recovery in Australia's Rangelands describes the effects of climate variability on the condition of our native grasslands.

Editors Greg McKeon, Wayne Hall, Beverley Henry, Grant Stone and Ian Watson have put together a major scientific work of 250 pages. The main point of this treatise is that extended droughts, allied with unknowing grazing management, have caused irreversible damage to the native vegetation.

The authors have identified 8 degradation episodes since white settlement and ask how we can learn from history to prevent a 9th episode.

Chapter 1 covers the historical degradation episodes in Australia and how global climate and economic forces interact with rangeland grazing systems.

Chapter 2 is an anthology of degradation and recovery episodes.

The third chapter describes modelling the effects of climate and management on shrub populations in regions of Western Australia and South Australia, while Chapter 4 is an analysis of grazing pressure on two western Queensland pastoral properties from their long-term livestock records.

The degradation episodes that have been identified are:

1. 1890s in western New South Wales during the extended drought of 1898 to 1903

2. 1920s-30s in South Australia and western NSW during the drought period of 1925-1930

3. 1930s in the Gascoyne region of Western Australia during the drought of 1935-1941

4. 1940s in western New South Wales during the drought period 1941-1945

5. 1950s in western New South Wales involved woody weed infestation but the impact was not revealed until the later drought period of the 1960s.

6. 1960s in central Australia during the drought period of 1958-1966

7. 1960s-1970s in south-west Queensland from the period 1964 to 1968

8. 1980s in north-east Queensland from the period 1984 to 1988.

The episodes have created landscapes with degraded soils and also environmental and economic damage caused by increasing or invading woody plants, the loss of palatable perennial grasses and animal suffering through starvation, deaths or forced sales.

Drought on its own does not cause the degradation identified; the rangelands are adapted to droughts over the millennia. The main feature was that areas under stress from drought were carrying too many animals (domestic, native and feral), for too long.

Copies of this 250-page volume can be obtained from:

For Australian addresses (free of charge) by sending an email to Greg.McKeon@nrm.qld.gov.au

For international addresses (at the cost of postage and packaging) by obtaining an order form from the following web site <http://www.longpaddock.qld.gov.au/AboutUs/Publications/ByType/Reports/LearningFromHistory/>

Managing Parthenium weed

The Parthenium Action Group and a consortium of government organisations under the Natural Heritage Trust have produced a very attractive and readable book on Parthenium weed management. Edited by John Chamberlain of DPI Clermont and Amanda Gittens, the book has 90 pages of colour describing this weed of national significance. The contents cover:

Section 1 – Parthenium weed: its ecology and threat including its habitat, distribution, germination and reproduction, seed dormancy and longevity, colonisation and spread and its ability to compete with pasture and native species.

The threat is covered under the impact of agricultural viability, health issues, and the legislation.

Section 2 is on management. Topics include minimising spread, preventing new outbreaks, managing the pastures, herbicide treatment and potential biological control – with some great colour photographs of the potential beetle saviours.

Section 3 has some eighteen case studies. These range from very valuable producer experiences to descriptions of parthenium problems in states besides Queensland.

To cap it all, the book is free, having been published under the National Weeds Program.

Those free copies can be obtained through your local Land Protection Officer with the Queensland Department of Natural Resources and Mines or from Land Protection, NRM, PO Box 1762, Rockhampton Qld 4700, phone (07) 4938 4600; e-mail: CentralLP@nrm.qld.gov.au

Anthracnose-resistant stylos

High-yielding anthracnose-resistant *Stylosanthes* for agricultural systems is a new monograph from ACIAR, edited by Sukumar Chakraborty.

This comprehensive publication reviews three decades of international research on Stylos and their bane, the fungus anthracnose. International authorities have accumulated published and unpublished work in the 27 chapters.

Topics include:

- *Stylosanthes* species diversity
- Their forage potential
- Cattle production from stylo pastures
- Their use in mixed crop-livestock systems
- Biotic and abiotic constraints

- Anthracnose disease and diversity
- Promising germplasm for Brazil, India and China
- Weather dependency and risk mapping
- Yield loss
- Stylo leaf meal for livestock
- Stylo seed production

This 250-page full colour book has been purchased for A\$45 from ACIAR National Mailing and Marketing PO Box 7077 Canberra BC ACT 2610 email: aciarn@nationalmailing.com.au

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