SAVANNA LINKS

Cooperative Research Centre for Tropical Savannas Management

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Established and supported under the Australian Government's Cooperative Research Centres Program

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Photo: Susanne Vetter

Challenges of bridging the historical divide

SOUTH Africa's savanna and rangeland landscapes have much in common with Australia: hot spots of land degradation, climate change challenges, and landcare policies. But the differences in our populations and history make their challenges very different. On a recent trip to South Africa *Kate O'Donnell* talked to researchers about some of the issues the country faces today: pp. 4–7.

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To burn or not to burn?

THE summer's bushfires in the south highlighted perennial fire-management questions.

David Bowman writes on southern bushfires and how land managers could take lessons from the north; and land holder Keith Atkinson relates his views on limiting burns to manage pastures: pp. 8–10

Food for thought ...

If Africa is 'Horns & Thorns', what is Australia? Call us or email ideas to: <savanna@ntu.edu.au>

Controls, guidelines and legislation

LAND clearing controls are on the agenda for both the Northern Territory and Queensland, while WA is rewriting its entire biodiversity conservation Act. The Northern Territory has introduced guidelines for clearing native vegetation while it reviews current legislation and Queensland has flagged a reform package that increases penalties for illegal land clearing. It is also reforming pastoral leases with security of tenure to be linked to environmental outcomes and recognition of indigenous land interests.

The new controls in the NT apply to all freehold and Crown land of 2 hectares or more outside of Darwin, Katherine and Alice Springs. They do not apply to pastoral leases which continue to be managed under the Pastoral Land Act, parks and reserves, or land where clearing is controlled by the Mining Act. Landholders whose properties fall within the guidelines need a permit to clear any more than one hectare of native vegetation. Where a hectare or more has already been cleared on a property a permit is required for any additional clearing.

Queensland's penalty reforms are in response to satellite imagery that indicated 2150 instances of suspected illegal clearing during 1999–01, covering 61,000 hectares. According to the Queensland State Government, 8000 ha of this was endangered vegetation and 36,000 ha of suspected clearing was on leasehold land.

Proposed penalties include cancelled leases for repeat offenders on leasehold land; five-year bans on vegetation clearing permits for those convicted of illegal clearing; and compulsory remediation of illegally cleared land at landholder expense.

Land tenure reforms in the state are looking to use a performance-based lease-management system with 30, 40 and 50-year terms. Under the Draft State Rural Leasehold Land Management Strategy leases would be granted in return for on-farm conservation based on regularly audited Property Resource Management Plans and voluntary agreements addressing indigenous access and land-use issues. It also provides for regular 10-year 'top-ups' of a lease term as an incentive to reward good performance.

WA Conservation reforms

WESTERN Australian is rewriting its 50-year old biodiversity laws with a new Biodiversity Conservation Act currently in preparation. Proposed reforms include developing an overarching State Biodiversity Conservation Strategy with the legislative backing for actions such as recovery plans. A significant increase in maximum fines for unlawfully taking threatened species is also proposed. Penalties are currently limited to $10,000, compared with up to $500,000 for an individual under Commonwealth legislation.

Read the WA Consultation Paper at: <www.naturebase.net/biocon_act_consultation.html> Contact: Kylie Dyson Tel: (08) 9442 0300

Queensland's latest Statewide Landcover and Trees Study (SLATS) 1999–2001 is also now available <www.nrm.qld.gov.au/slats/>

Draft Rural Leasehold Land Management Strategy: <www.nrm.qld.gov.au>

Copies of the NT guidelines can be picked up from all branches of NT DIPE. Comments and responses can be sent to: Natural Resource Management Division DIPE, PO Box 30 Palmerston NT 0831 Email: naturalresources.ipe@nt.gov.au Read the guidelines at: <www.lpe.nt.gov.au/advis/land/clearing/default.htm>

CRC: Linking the North

The Tropical Savannas CRC is a joint venture of the major organisations involved in land management of the savannas of north Australia.

It comprises three universities, government agencies from the NT, Qld and WA and the Commonwealth, CSIRO, and representatives from Aboriginal groups and the pastoral industry. The Centre promotes sustainable use and conservation of Australia's tropical savannas by acting as a bridge between agencies engaged in land and resource-management research, and research users and decision makers e.g. pastoralists, conservation managers, Aboriginal land managers, and the tourism and mining industries.

The Centre communicates outcomes of research and other knowledge about the savannas and ensures this knowledge can be used effectively by people living and working in the savannas.

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Prickly acacia spreads to Kimberley

ONE of the pastoral industry's worst weeds, *Acacia nilotica* (prickly acacia), has been found in the Kimberley near the Northern Territory border. Prickly acacia infests about 7 million hectares, mostly in Queensland, but also in the NT and has been declared a Weed of National Significance.

It is very invasive and proliferates at a great rate in good seasons that makes it of particular concern. One large tree growing on an artesian bore drain can produce 70 kg of pods (more than 200,000 seeds) per year. It forms an umbrella-shaped small tree and has pairs of thorns up to 10cm long. AgWA is keen to eradicate it quickly and wish to hear of any sightings in Western Australia.

Contact: Noel Wilson, AgWA in Kununurra, (08) 9166 4047 Web: <www.weeds.org.au/natsig.htm>

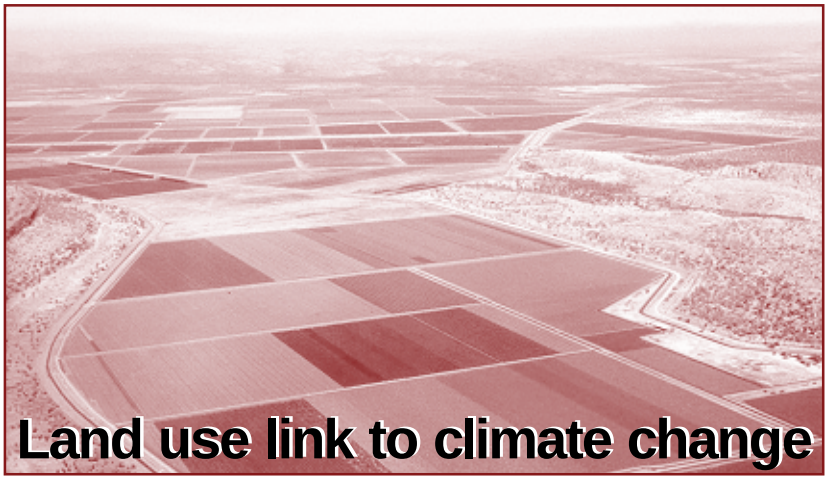

Photo: Stephen Tapsall

Land use link to climate change

A NEW NASA-funded study points to the importance of human-induced land-use changes as a major added factor contributing to climate change, distinct from greenhouse gas emissions. It highlights the potential implications of these findings for tropical regions like northern Australia.

Prof. Roger Pielke, climatologist at Colorado State University, and his team's research suggest that land-surface changes (albedo surface changes) such as urban sprawl, deforestation, reforestation, agricultural and irrigation practices strongly affect regional surface temperatures, rainfall and larger-scale atmospheric circulation. Landcover changes over the last 300 years may have already altered the climate more than would occur than through the effect of a doubling of carbon dioxide.

Types of land surface strongly influence how the sun's energy is distributed back to the atmosphere. For example, if a rainforest is removed and replaced with crops, there is less evaporation of water from leaves, leading to warmer temperatures in that area. Similarly, forests may influence the climate in more complicated ways than previously thought.

"Reforestation could increase transpiration in an area, returning more water vapour to the air. Water vapour in the troposphere is the largest contributor to greenhouse gas warming," Dr Pielke said.

Implications for the north

Dr Pielke says tropical land surface changes can be expected to play a greater role on global climate than El Niño, given that thunderstorms prefer to form over land, and that the large area of tropical land-use changes far exceeds the relatively small area of water responsible for El Niño.

"Alteration of tropical landscapes, particularly from forests to agriculture and pasture, has the effect of less transpiration associated with the land surface, thus resulting in less thunderstorm activity in the region," he suggests. Dr Pielke and his colleagues propose a new method for measuring the impacts of both greenhouse gases and landcover changes that they hope will achieve a more accurate picture of human-caused influences on climate change in future research. **—Julie Crough**

Global land-use change from 1700 to 1990:
<www.gsfc.nasa.gov/topstory/20020926landcover.html>

Complete paper at the Philosophical Transactions of the Royal Society of London:
<blue.atmos.colostate.edu/publications/pdf/R-258.pdf>

Forum examines tree clearing in savannas

MORE than 300 people have viewed the comments posted in the CRC's first Internet forum which was on vegetation management and tree clearing issues. The forum asked if the CRC should become more involved in research about appropriate management of the savannas' woody vegetation, the form any such research should take and if so, the specific issues it should address.

As a result of the views expressed in the forum, the TS–CRC plans to hold an expert workshop to come up with landscape design rules for tree retention in the savannas. Read all the posts at: <savanna.ntu.edu.au/forums/>

We welcome ideas on forum subjects! Email us at: <savanna@ntu.edu.au>

CRC web updates on savanna vegetation, references and GIS

THE seamless map of tropical savannas vegetation, developed by Queensland's Environment Protection Agency for the TS–CRC is available online on our website. The map has layers drawn from a Geographic Information System database that can be overlaid and interrogated simply by clicking the mouse. Layers include vegetation communities at 1:2 million scale; broad vegetation groups; land zones defined by soil and geology features; roads, towns, communities, and waterways. You can find out about more than 120 vegetation communities, where they are, what plants they contain and the soils on which they occur.

Go to: <savanna.ntu.edu.au> then Savanna Information, then Savanna Map Maker.

Savanna research references

WE have re-designed and expanded our database of thousands of references to scientific research relevant to the tropical savannas. Topics include fire, weed and grazing management, studies of savanna mammals, reptiles, amphibians, birds and invertebrates, water and carbon cycling, and papers produced by the TS–CRC. If you use Endnote software, you can download references and store them in your own Endnote library.

Go to: <savanna.ntu.edu.au> then Savanna Information, then Savanna Search.

VRD fire management CD

The TS–CRC and the Bushfires Council of the NT have released a CD–ROM on fire management in the VRD and Sturt Plateau region. It features satellite maps, grassy fuel load management, impacts of fire on plants and animals; as well as examples of the costs of fire management on various stations. It also features excerpts from the books *Savanna Burning* and *Slower than the Eye can See*, a study of landscape change in the VRD. The CD was produced by Rohan Fisher and the project supported by Meat & Livestock Australia, Natural Heritage Trust and NT Department of Business, Industry & Development.

To order: Price: $10 (runs on PCs or Macs)
Contact: Janely Seah, Tropical Savannas CRC,
Tel: (08) 8946 6764 Fax: (08) 8946 7107
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Traditional lands: the case of nature divided

South Africa's savanna and rangeland landscapes have much in common with Australia, including hot spots of land degradation and debate over land tenure, especially for indigenous people.

But with a population of 45 million, the case is more pressing in South Africa—where a century of dispossession and overcrowding in former black homelands has left its mark. *Kate O'Donnell* writes.

Photos: Susanne Vetter

Above, traditional South African farmers

Left, erosion gullies in one of the most degraded areas of South Africa: the Herschel disctrict of the north-eastern Cape. Cattle in the mid ground of the picture show just how large and dangerous these gullies can become

When Nelson Mandela swept to power in 1994, a process of rebalancing the power structures of the country began that continues today. Inequitable legislation that forced much of the country's black population into native reserves that eventually became the 'homelands' was thrown out, and legislation enacted to help redress unbalanced land ownership.

Legislation that included the Native Lands Act of 1913 and Group Areas Act of 1951 in effect shuffled millions of black Africans, from urban centres and white-owned farms, into locations outside of white areas and, eventually, out of the Republic of South Africa. However, only a small percentage of the country's land area was given over to the homelands (7 per cent in 1913, increasing to 13 per cent in 1936), despite an ever-increasing population of those who lived there.[1] Today, it is estimated that 13 million South Africans still live in the former homelands, facing poverty and continued tenure insecurity.[2]

Many programs to improve land management in communal lands have taken place over the past century, the most influential being the betterment programs of the 1930s, which concentrated scattered rural settlements into villages with prescribed grazing regimes and stocking rates. However, the reasons underpinning traditional land-management practices were often ignored, the communities became alienated, and the problems remained.

Research in the homelands

So what is the extent of land degradation on communal lands? In the past decade there has been an explosion of research into these regions. Prof. Timm Hoffman, director of South Africa's Institute for Plant Conservation, says communal lands were poorly researched and understood.

"We know people are very poor, we know they use medicinal plants," he explained. "We know they are reliant on fire, even though there is a shift to electrification, and we know livestock play an integral part. But, how many herds are in a particular area, what the daily livestock herding practices are, how many animals, who owns the animals, the herd structure, its production coefficients, stock routes—this we didn't know.

"We also don't know the effects on the landscape, other than to say it's heavily grazed, nor what species were being affected or the long-term implications."

Two years ago Timm helped produce South Africa's first national land degradation survey which has contributed to the development of South Africa's recent National Action Programme under the Convention to Combat Desertification. Timm's conclusion was that just as South Africa's population had been divided along racial lines in the past, so too had its landscapes.

"The country was divided into black homelands on the one hand and the Republic of South Africa on the other, and there hadn't been a national survey of land degradation," he says.

The team used workshops, a major literature review and the results of seven case studies and historical data to produce the survey. Overall, 34 workshops were held with 450 people who worked in resource and environmental management. Local farmers and community leaders were consulted about their perceptions of land degradation in the areas they managed. The workshops produced soil and veld degradation indexes, and a combined (soil and veld) degradation index for each of the 367 'magisterial districts' in South Africa. These districts range from the 10s to the 1000s of square kilometres, and are well-understood geographical units within South Africa.

"We had to develop a methodology that could straddle deserts, savannas, tropical woodlands, fynbos, as well as different technological standards. These units were meaningful to people across all these areas," explained Timm.

The survey found that both socio-political and environmental factors had a significant impact on South African land and that the communal lands face the greatest problems. Increases in land degradation, combined with the country's propensity for drought, can only mean less productive land in these areas with the likelihood of increased urbanisation and attendant social problems.

However, while the survey concludes that communal areas are in the greatest need of government support, it warns sustainable land-use programs in commercial farming districts must continue because it is these areas that produce most of South Africa's food. [3]

Communal grazing in Herschel District

One of the key questions is traditional land-use grazing practices. One researcher interested in pinning down the cost of degradation in terms of land-use objectives is Susanne Vetter, an ecologist at Cape Town University. Susanne is about to complete her PhD on communal grazing in the communal lands of the Herschel District, which is located in the north-eastern Cape.

Communal grazing works on the principle that while people own livestock individually, the land is held in common, and people have free access to grazing land. The Herschel District has a population base of almost 100 people per square kilometre, and with such high human densities, average herd size is small, with most people running 10 animals or less.

Yet despite severe degradation, livestock numbers had not shown any decline in the past 100 years. Susanne wanted to find out just what were the motivations for keeping stock, how the graziers had managed to keep up such high numbers over the years, and what the implications were for future impacts on the land.

"You can see that people are not really going to make a living from farming in that kind of situation," she said. "Traditionally every household has some arable land allocated to them, but already in the early 1900s there was a strain on that, so now there are many households that don't have any arable land at all," she said.

Animals kept in this district are sheep, goats and cattle, with owners' objectives differing between each species. Besides keeping cattle for milk and ploughing, their most important function was as a store of wealth.

"Most people don't have easy access to facilities like banking," she explained. "The Herschel District is 170,000 hectares and there is one small town with a bank. If there is any kind of expense, people will sell a cow or an ox to get a few thousand rand; it's like having money in the bank."

Sheep and goats however, were primarily kept for production, slaughter and sale. However, even with these animals farmers still tried to maximise stock numbers, and a regulated stocking regime was far down on the list of priorities. Grazing patterns had changed from seasonal to all-year round, and as stock were generally in poor condition, there was increased dependence on feed supplements. Replacement stock were usually purchased as the calving rate is only about one calf every three years. The costs of degradation, Susanne concluded, were both the expense to maintain less productive stock, and the environmental costs of severe soil loss.

Land reform in South Africa and Australia

There are substantial differences in the history of Australian and South African land rights legislation. Colonisation of Australia progressed on the basis of *terra nullius*: an empty land that belonged to no one. The High Court's Mabo decision in 1992 overturned that concept and Australia's *Native Titles Act 1993* recognised that indigenous Australians had a system of law and ownership of their lands before European settlement. Continuous connection with the land under claim has to be proved, and it cannot take away others' rights to land, including holding a pastoral lease or mining licence.

In South Africa there are three processes of land reform: restitution, redistribution and tenure reform, the aim of which is to redress imbalance in land ownership, develop the agricultural sector and improve the livelihoods of the poor. [4] However, there is significant criticism of the program's performance with the Programme for Land and Agrarian Studies (PLAAS) recommending far-reaching revisions of all three processes. It says that the Government's approach, which relies on market mechanisms, tight public spending and minimal intervention in the economy is unlikely to achieve the scale of reform needed.

The *Restitution of Land Rights Act, 1994,* applies to those dispossessed of rights in land between June 1913 and 1994 in terms of racially based law or practice. The Act provides for either restoration of the land, granting alternative land or financial compensation. Land Redistribution for Agricultural Development (a reworked version of the original program) draws on experience in Brazil, Columbia and The Philippines, and aims to produce an entire class of full-time black farmers.

Tenure reform addresses a number of challenging areas including a chaotic system of tenure on communal lands and long-term security of tenure for residents on privately owned farms. Almost all communal lands are still owned by the state, and administration is spread between tribal authorities and provincial departments of agriculture. Development initiatives are often put on hold because of disputes around land ownership. Since the Zimbabwe farm invasions of 2000, however, PLAAS notes an increased awareness of land reforms, with a number of groups across the political and social spectrum calling for accelerated pace of reform.

References

1., 3. Hoffmann, T., Ashwell, A., *Nature divided, land degradation in South Africa*, University of Cape Town Press, South Africa, 2001.

2., 4. Lahiff, E. *Land Reform in South Africa: is it meeting the challenge?*, Policy brief, debating land reform and rural development, September, 2001, Programme for Land and Agrarian Studies.

More information: Timm Hoffman, E: <thoffman@botzoo.uct.ac.za>
Susanne Vetter: E: <svetter@botzoo.uct.ac.za>

National Review of Land Degradation in South Africa <www.nbi.ac.za/landdeg>
Programme for Land and Agrarian Studies: <www.uwc.ac.za/plaas>
UN Desertification Program <www.unccd.int/convention/menu.php>
Australia's National Native Tribunal: <www.nntt.gov.au/>

As Darwin prepares to host the annual Landcare conference, Richard Holt, an Australian team leader with Landcare South Africa, talks about the burgeoning movement in that country.

Landcare builds the capacity to link two worlds

Community-driven landcare has to take into account the enormous cultural gulf between black and white farmers

Photo: Susi Vetter

Originally from the Northern Territory, Richard Holt has worked with land holders and managers in Kenya, Somalia, Inner Mongolia, Ethiopia and Zimbabwe, and is now bringing that expertise to South Africa. Richard heads up a Landcare project that is currently Australia's largest commitment to rural projects in South Africa. With $4.2 million over four years, and a staff of just one, his focus is on institutional strengthening. He has used workshops to develop training programs for the last two years but that will shift this year when he starts work on assisting with policy at the government level

Landcare began in South Africa in 1997, but initial enthusiasm and community participation was severely dampened when South African landcare moved towards providing employment rather than building capacity and training, understanding and long-term sustainability in land management.

Since Richard began his project in 2001, the greatest emphasis has been in building capacity in training—not in technical understanding, but in the skills of participatory development, particularly with communal farmers. Community-driven landcare has a whole new slant in South Africa compared to most countries as it has to take into account the enormous cultural gulf between black and white farmers.

Working between two worlds

"What you have is a first world living inside a third world, and the whole first world system doesn't know how to deal with that third world system," explains Richard.

"Because the way things have been under apartheid, [management of] the system has been extremely top down, far more than I have seen anywhere else in the world. The system was geared around commercial white farmers."

According to Richard, government extension programs did a good job with commercial white farmers, but when they tried to take that to communal black farmers, they didn't know how to do it.

One challenge is developing appropriate technologies for resource-poor people. About one-third of landcare projects in South Africa are related to gully and erosion control—in just one catchment, there will be hundreds of gullies as far as the eye can see, often joining up because there is no soil left. However, under the top down approach, says Richard, only the problem will be treated rather than working with the community to work out its causes and develop a long-term solution.

"They will engineer a solution. They will put in Gabion baskets (wire netting basket filled with large rocks) then they will leave again. People will be employed to do the work, but they haven't set up any system, haven't looked at the causes, and haven't worked with those communities to find out really what their problems or priorities are, and then come up with Landcare win-win solutions."

Landcare began within the country's Department of Agriculture, and much of it is still housed in that department with a network of core coordinators in each of the districts and provinces around South Africa. There are now 200 projects across all of South Africa's nine provinces, and in the past 18 months Richard has seen a growing enthusiasm for Landcare.

And he's been busy. Over that 18 months he has conducted about 35 training courses, attended by landcare coordinators from all over the country. Richard has also worked in building capacity in adult education, as there was a lack of participatory development there.

"We've had to get into designing courses ourselves or getting other people to design them. It's about capacity building," says Richard. "We're trying to give landcare in this country a shot in the arm so it's got a good chance of being sustainable and having an impact.

"We are now developing some quite good projects and I'm getting much more optimistic, because the senior people here are changing their attitudes enormously.

"We've been able to bring in quite a few different elements and changes which will ensure that future projects mainly will succeed. But it's taken that long really to change the attitudes and beliefs—they have to learn to trust you and see what you're about."

Home-grown examples

One of the reasons for that trust is that Richard spent time with consultants travelling the country collecting examples of good natural resource management. They then developed a set of criteria for good landcare practice. They came up with 10 examples of projects that worked well, and all run by black farmers. Training and promotional materials based on those projects were then shown to other farmers and senior policy people within government.

"We can use those to take to people and we say: 'Look! You guys can do it. There's sustainable development.

Continued page 13

Land management across two savannas

Dr Bob Scholes, systems ecologist and Fellow with Environmentek at South Africa's Council for Scientific & Industrial Research (CSIR) talks about research issues in savanna management in that country, and some of the key differences between South Africa and Australia

There is a core body of savanna ecosystem theory, says Bob Scholes, which applies equally well in southern Africa and Australia. "The more I see, as we start to do cross-continent comparisons," he says, "the difference is in the details rather than in the central issues."

However, one of those key differences is in what Bob describes as a conceptual model of savannas that does not divorce people from the ecology of the savannas. He says there isn't debate in Africa in the way we have here about how the arrival of Aborigines changed the land from some previous state into its current state.

"People have always been here and animals have always been here and it's the one continent where people and animals and savannas actually had a three-way co-existence and that's our point of departure," he explains.

He says that this especially informs the South African attitude towards fire management. At the technical level, fire is not regarded as something unnatural, or even human-induced in the savannas.

"Concepts such as anthropogenic fire emissions to us are something of a nonsense. Just because people have ignited the fire doesn't mean that that's unnatural.

"People have been the principle agents of ignition in African savannas, probably for a million years. So that it is done now by lighting a match rather than rubbing sticks is irrelevant, as far as we're concerned."

Tree clearing, weeds and fire

South Africa has major weed invasion problems just as in Australia. Poverty relief funding is used to help run a huge exotic plant clearing operation—mostly, however, taking out Australian invaders. Eucalypts in particular take up large amounts of water out of the system, a compelling reason to be rid of them in such a dry continent.

Based on CSIR research into the impacts of alien vegetation on water yield, it is actually cheaper to take out alien vegetation rather than build new dams. While the poverty-relief project costs R800 million annually, it has been very successful and the program is now being used as a model for areas such as fire control, where fire-management regimes are implemented through poverty relief–rural uplift linked enterprises.

Biodiversity conservation

Just as fire has worked as a uniting point for different landholders in northern Australia, so has nature conservation performed a similar function in South Africa.

"In our savanna areas and increasingly, our semi-desert areas, there's a massive swing over into either dual use, which is partly conservation, eco-tourism, partly beef and sheep; or else completely into wildlife uses.

"Probably one-quarter of our savanna areas are now pure wildlife uses, and that's increasing still," he explained. He points out though, that views of Africa's famous fauna are polarised. "There's the white urban view of 'aren't they cute and isn't it wonderful' and then there's the on-the-ground reality of 'that damn elephant has taken out my pawpaw patch.'" he said. "But what's helped a lot is the increasing economic value of the fauna."

To illustrate this, he cites the land restitution process that targeted national parks early on because many were created during the period of alienated lands (see boxed story, p. 5). Parts of Kruger National Park were given back through judicial process to the tribes of that area, which initially caused some alarm.

"Everyone was up in arms," he says. "'There's a piece of the Kruger Park going to be hacked off and given to some guys to run their cattle on'. Outrage!

"In fact what happened was that the tribe immediately said, we can see that by far the best use of this piece of land is for it to continue to be a wildlife resource. We simply want a chunk of the benefit flow. So that's the way things have been going. A lot of these areas have gone across into wildlife use even under communal ownership."

Climate change effects

Megafauna, though, may well be under threat through climate change. Ten months ago CSIR began a new project examining the impacts of this change on South African biodiversity, and is part of a larger international undertaking called Assessments of Impacts and Adaptations to Climate Change (AIACC). Previous park management models were predicated on a stable climate and "the moment the climate shifts, there goes your plan," explained Bob.

"It's clear we have a major impact, but it's absolutely a virgin field of research. So what we are trying to do is develop robust layouts that will survive climate change.

Modelling currently under development may be able to be used elsewhere, and the CSIR team is working with a number of Australians in this area.

CSIR is also taking part in the Millennium Project which is assessing ecosystem services: the current state of ecosystems, the recent past and near future, likely scenarios for the future and the possible responses.

"It's basically asking the question of how are we doing, has the flow of ecosystem services been reduced, is it going to be reduced further, and are there any critical points?," said Bob. "It's also providing a scientific basis for guiding international agreements about ecosystem management." **—Kate O'Donnell**

Assessments of Impacts and Adaptations to Climate Change <www.start.org/Projects/AIACC_Project/about/about.html>

Millennium Project: <www.millenniumassessment.org/en/index.htm>

CSIR: <www.csir.co.za/>

Dr Bob Scholes, Environmentek, CSIR, PO Box 395 PRETORIA 0001 South Africa, Email: <BScholes@csir.co.za>

To burn or not to burn? This issue we look at pasture burn-off in the tropics and southern fire management. Here grazier *Keith Atkinson*, of Camel Creek Station in the Burdekin, relates his experience.

Pasture burns: not so hot tool?

Droughtmaster bullocks graze at Camel Creek station, north Queensland. Graziers Keith and Alma Atkinson have followed a policy of not burning pasture for the past 30 years

Until the 1970s we burnt every year, if there was grass to burn, as did our neighbours. Information opposing this started coming to my notice around then, and I took it on board, amid much criticism from neighbours. These same neighbours now say that Camel Creek has consistently better feed than they do because it is 'better country' while 30 years ago it was the same as theirs, same soils, same grass types and same stocking rate.

After 25 years of not burning our pastures, we have found we have more variety of grasses co-existing in our paddocks. Because moisture is being retained by leaf litter, the pasture has a longer growing period, followed by a better response after winter, resulting in more feed being available in a given year.

The leaf litter mulches down to form topsoil, but is being continually replaced, so the process is ongoing, making it sustainable in the long term. If you think about it, by burning regularly, you are destroying the very thing that makes grazing livestock sustainable. You cannot keep 'taking out of the soil' without putting something back.

Burning off and land management

The 'burning off' of pastures has been a part of land management probably since humans came to Australia, the practice being continued for one or more of the following reasons: "The Aborigines did it." "Grandad did it." "Everyone does it." "You must burn the grass to make it grow." "It gets rid of regrowth and fallen timber."

Aborigines burnt grass because the fresh green pick after the fire concentrated the game, and made hunting easier, and the fire caught and cooked a certain amount of wildlife. Grandad burnt pasture partly to concentrate cattle on the fresh feed to make mustering easier and partly for some of the above reasons. These days, with better mustering methods and smaller paddocks, cattle can be mustered efficiently without such drastic measures.

Increasers and decreasers with fire

More and more graziers are seeing the benefits of not burning. Grass does not need to be burnt to make it grow. In fact, many grasses are destroyed by burning, with only tougher grasses, such as black speargrass (*Heteropogon contortus*) etc. surviving. The Queensland and pitted blue grasses have a good survival rate, but most of the softer grasses decrease, as do stylos and forbs. Since ceasing burning, speargrass areas on Camel Creek have largely been replaced by curly bluegrass, a far more desirable species, with better palatability and protein levels. Also, the volume of fresh leaf on unburnt grass is greater than on burnt grass, which has to shoot from ground level.

Verano stylo is getting a good spread on now, apart from an area that was accidentally burnt where it was completely destroyed. The same fire burnt very little of the fallen timber and left the regrowth suckers behind too, so it did not do anything useful at all. Now, several wet seasons later, the burnt area is mainly speargrass, whereas across the road, 10 metres away, there is a good mix of grasses plus stylos. The cattle are not shy about showing that they prefer the unburnt side either.

Vegetation thickening

From my observations, I think that the general thickening of timber in many areas is because grass density has been reduced to the point where seedlings no longer have to compete with it and can grow freely. This is brought about by grass being thinned out by fires and overstocking in relation to the volume of grass available. Our stocking rate is now set so that around 30 per cent volume of grass is left over at the end of the year, compared to what it was at the end of its growing period. This enables it to get going quickly when it rains, ensuring a good volume of feed next year.

In general, our tree density appears to be fairly static as many trees die for some reason or another and new trees merely replace them. When surveying fence lines I am still surprised by the number of dead trees that I put a blaze mark on. These range from saplings to mature trees.

These observations apply to our type of country, but may not suit other areas. It was years before noticeable changes were apparent on Camel Creek, so don't expect massive changes quickly, but once the changes started, the whole process sped up.

Cattle grazing

We have noticed that, with a better mix of grass and herbage, cattle crop paddocks more evenly, so that we don't have areas stressed by overgrazing while others are untouched. We have a good spread of water which also helps spread cattle. Fires must also reduce dung beetle numbers, as since we stopped burning, beetle numbers appear to have increased to the point where we rarely find a cowpat that does not have beetles working in it. Thirty odd years ago the CSIRO carried out trials to boost the

Camel Creek vegetation and soils

Camel Creek Station is at the top end of the Dalrymple Shire in the Upper Burdekin basin. Soil types range from loam creek flats to ridges and hills based on slate, sandstone and ironstone sub strata. The top soils on the ridges are quite thin with the sub strata visible on most crests. There is also a small area of volcanic origin blacksoil and sandridge.

Vegetation comprises ironbark and grey box with areas of bloodwood, poplar and lemon-scented gum trees, along with small areas of false sandalwood. Grasses are mainly Queensland blue, pitted blue, curley bluegrass, kangaroo and speargrass, with various forbs, stylos and introduced grasses in small percentages.

protein levels in black speargrass by sowing Townsville stylo into these pastures. It seemed to work quite well, but we found that to preserve the stylo, you had to stop burning, which encouraged better grasses to move in, which, with the stylo made an even better pasture. Since then, the Townsville stylo has been largely replaced by verano stylo, which appears to co-exist with grass better than the taller seca etc.

The bottom line is that we are now able to breed, grow out and fatten Jap ox weight bullocks in four years or less. Previously it took at least five years, on what was only regarded as breeder country, due partly we feel to our change in burning habits.

More information: Keith & Alma Atkinson
Camel Creek Station, PMB 11,
INGHAM QLD 4850
Tel: (07) 4788 5985 Fax: (07) 4788 5919
Email: camelcreek@dnet.aunz.com

Fire regimes that can keep country healthy

Rodd Dyer, formerly fire researcher with NTDPIF gives his view on fire management

It is clear that graziers such as Keith and Alma Atkinson have had a long association with their land, have observed changes keenly and have managed it with care. Such knowledge and observations are invaluable for adding to our understanding of grazing and fire ecology and for directing future research.

In the case of Camel Creek Station, a history of good land-management practices over many years may well have reduced the need for use of fire. Experiences with fire elsewhere, however, suggest that significant changes to grazing lands and vegetation are occurring over the long-term as a result of changed fire and grazing patterns and there is often good justification for using specific fire regimes to maintain healthy grazing lands.

It has been demonstrated that fire has a role to play in managing tree and shrub populations, weed control, manipulating pasture species composition, maintaining pasture growth, protecting biodiversity, manipulating grazing pressure, reducing the risk of uncontrolled wildfires and improved pasture quality. Each of these uses requires implementing a suitable fire regime (frequency, timing, intensity) for the desired management objective. This program must be accompanied by an equally appropriate grazing management regime (stocking rate, strategic spelling etc).

Fire and pasture management

For example, periodic burning with the correct fire regime can be used to encourage 3P pastures (perennial, palatable, persistent) that will more effectively hamper the establishment of tree seedlings. The fire will control and suppress tree seedlings that do establish before they 'escape'. Occasional intense fire can be used to kill off larger tree seedlings.

Burning during the dry season or immediately following spring rainfall when perennial grasses are dormant has been demonstrated to cause negligible impacts on pastures. However, there is evidence that widespread practice of burning during periods of active pasture growth throughout Queensland could be damaging to pastures. As Keith suggests, serious pasture degradation is possible in areas burnt repeatedly in this manner, especially when accompanied by heavy grazing. It is under these scenarios that woody invasion and encroachment is most likely. However simply excluding fire will also provide opportunity for unsuppressed growth of tree and shrub suckers.

Another example is the case of grazing-induced bare patches. While in well-watered small paddocks with even pasture composition grazing may be quite even, fire has been shown to even out grazing pressure in large, variable paddocks, reducing localised over-grazing

As Keith correctly points out, pasture species are affected differently by burning. Black speargrass increases under intense late dry-season burns, while Kangaroo grass increases with less intense early dry season fires. Correct burning and grazing management can be used to reduce wiregrass (*Aristida* spp.). Fire is also an important tool for retaining appropriate balances of stylo and grass in paddocks, which under heavy grazing pressure can be dominated entirely by stylo, leaving the soil bare and vulnerable to erosion. Again, the fire regime must be matched with desired management objectives.

Removing old growth

In areas with high annual pasture production, especially under low grazing pressure, pasture biomass will accumulate over a number of years. While there are advantages of good ground cover from accumulated biomass for inhibiting establishment of tree seedlings, reducing run-off, increasing infiltration etc, failure to remove the build-up of previous seasons' old-growth will inhibit new grass seedling recruitment and survival, will reduce the proportion and availability of nutritious green leaf to livestock and over time will reduce the vigour and growth of perennial pasture plants.

Continued Page 10

A month before wildfires swept through suburban Canberra and Victoria's Alps, Dr David Bowman of NTU's Centre for Tropical Wildlife Management, wrote a research paper calling for radical change in southern fire-management strategies. He believes southern fire managers should look to northern Australia, where land managers have been influenced by indigenous burning practices. *Dennis Schulz* writes.

Time to tame the south's feral fires

The paper was inspired by a family holiday in the Victorian Alps where the Northern Territory ecologist and his family bushwalked the high country. Everywhere David looked he saw evidence of impending disaster. "It was absolutely obvious to me that a catastrophe was about to happen because of the extreme drought, the huge quantities of fuel, and the steep terrain: You had roads and people and there's no coherent management plan."

By the time David gave that paper at the Australian National University Fire Forum, it was February, and the worst had happened. He told ecologists and land managers that they must seek new management strategies or face ever-continuing wildfires. Many of the answers, he contended, lie in the lessons of the past.

The three eras of fire

"To understand the landscape," says David, "land managers must look to how it has changed. Australia has had three great eras of burning: The ages of wildfire, tamed fire, and the current feral fire."

Pre-human Australia would have seen lighting-triggered wildfires rage across thick, often dry vegetation that otherwise remained unburnt.

Then when Aboriginal people arrived they used fire: to hunt, to clear paths, as part of their lives and culture. Over tens of thousands of years they tamed the wildfires, periodically starving them of fuel and shackling them to a working landscape economy. Early European squatters on the edge of the frontier saw the advantages of this Aboriginal wildfire management and incorporated it into their sheep farming but that knowledge was lost once grazing was intensified with the establishment of fences.

Across the northern savanna, however, Aboriginal management practices still exist, and evidence of their past practices remain clearly visible to ecologists. "In the north you can still see that fire had been tamed before white contact," contends Dr Bowman.

"It was managed. On balance, Aboriginal economies used fire almost daily for 40,000 years and it had a huge effect on the landscape. The landscape had been molded and shaped."

David believes the same is true of southern Australia, but as Aboriginal cultural history is far less evident, the lessons of that heritage have been lost. Unlike northern Australia, where fire management is practiced as an integral facet of land management, in large parts of southern Australia fire is now untamed again—it has gone 'feral'—and there remains only a reactive management of wildfire with no coordinated landscape plan. Biodiversity is declining as wildfires rage. Firefighters attack wildfires by back-burning, a destructive regime that has the incendiary effect of sandwiching wildlife between two converging walls of fire.

Coordinated research needed

David told the ANU Fire Forum that it was time they realised that Australia is the most flammable continent on Earth and a higher degree of professionalism needed to be developed in land management.

"Ecologists must look at the big picture of fire on the landscape," said David. "They need to rediscover the lessons of the past and a coordinated research program is required to critically evaluate the overall successes and failures of a wide range of fire management regimes in order to develop sustainable strategies.

"And above all, these research and management programs must receive serious recurrent funding, rather than the haphazard financing that comes as a reaction to destruction and loss of life."

Once science turns its full attention to the problem, Dr Bowman believes solutions to the chaos of wildfire will follow.

"Other human beings have been able to apply their intelligence and happen upon a system of fire management which was sustainable ecologically and economically," he says. "If it can be done once it can be done in many other ways."

More information: David Bowman Email: <david.bowman@ntu.edu.au>
Bushfire CRC: <www.crc.gov.au>
ANU Busfhires Forum: <cres.anu.edu.au/fireforum/>
CSIRO's Project Vesta: <www.bbm.csiro.au/vesta/>

Healthy country fire regimes

From page 9

Particularly in seasonally wet/dry high rainfall areas, the forage value of previous seasons' growth is of little nutrient value. Such forage barely supports livestock maintenance and is almost never grazed unless serious feed shortages are experienced, for example during drought. There are many situations where fire has a role, however its impact and how it should be applied depend on land type, climate, seasons, pasture condition, paddock size, and grazing intensity. Therefore, whether or not we choose to implement prescribed burning, the final results can only be confidently determined from careful recording and monitoring of the land.

Contact: Rodd Dyer, The Macaulay Institute, Craigiebuckler, Aberdeen, AB15 8QH Email: r.dyer@macaulay.ac.uk
Also see the TS–CRC publication *Savanna Burning*

Remote living: freedom for enterprise

For young people living in the more remote parts of Australia's savannas, life is very different from those in the towns and cities. Here we talk to two young men who wouldn't swap their remote lifestyle on Shelburn Station in Cape York for anything.
Meet Bill and Lee Nixon—in Grades 9 and 6—whose jobs also include property managers, entrepreneurs and pig hunters extraordinaire.

Bill (at back) and Lee deal with the feral pig problem

How long have you both lived at Shelburn Station?

Bill and Lee: Five years permanently, but we have been coming here all of our lives.

Has your family lived there for a long time?

Lee: Yes they have. My family are the last of the original pioneer land holders still in Northern Cape York Peninsula.

Bill: Our grandparents first started coming to Shelburn in 1960 and in 1962 they started moving equipment here.

What about school?

Bill: Lee and I have been doing our schoolwork with the Cairns School of Distance Education all our school lives. One good thing about doing school work at home is that if you have to help Dad and you can not do school work that day, then you have to catch up the following day, which means that you never miss a day of school. Lee is starting Year 6 and I am starting Year 9.

What is special do you think, about living on a station in such a remote area?

Bill and Lee: Living here is special because you can do things that city or town kids can't do, like driving the car, chasing pigs and being chased by bulls. We also manage the country; like roads, cattle, fire, vegetation and water. The best thing is that you have no neighbours closer than 15km away and the quietness of the bush.

Do you use the internet or email at all?

Bill and Lee: No, we do not have access to these things.

What sort of station is Shelburn?

Bill and Lee: It's a biodynamic cattle station. This means we do different things on the property. It's poor, scrubby country so we only have one beast to 10 acres. We help AQIS out, we grow mangoes, sour sop, custard apple, and lime trees. We have a dead wood licence, which lets us pick up any dead wood on the property and sell it.

Do you have problems with weeds, fire or feral animals?

Bill and Lee: These things are not a problem as long as you control them. As for the pigs we have a business called Cape York Hippo©, where we make money by killing feral pigs (Lee provided us with a sample of his Cape York Necklaces: Pigs' teeth on kangaroo hide).

Would you like to go to a regular school with other kids at any stage?

Lee: No. **Bill:** No. I'd rather be doing things I enjoy. When I get to Year 11–12, I would rather do some good courses.

What is a normal day like for you both?

Bill and Lee: No day is normal, there's always something you've got to do. One day you might have to check the cattle licks first thing, some days it's school work. It could be an easy day, and then four weeks down the track you're still at home typing away with a big mob of work.

What sort of things do you do to help your parents run the property?

Bill: When Dad is working I try to keep things running smoothly, with the generator, water, car, garden, and feeding animals. **Lee:** On Saturday we do the cattle licks, get wood and burn the rubbish.

What do you do for fun?

Lee: Chasing pigs with the dogs. Building contraptions.

Bill: He gets chased himself half the time. I like to hunt pigs with stick, knife, car or trap yard. Take people out on hunting trips or on a tour down the creek.

Bill and Lee: Getting to town and spending our money, Talking to tourists. Telling yarns about our adventures. Driving the machinery, and working on the station vehicle.

Lee: I also like to look after the cattle and sell hippo teeth (feral pigs). I found a Sandgroper and now it is a specimen in Canberra. We also record birds.

Are there challenges in living so far from other people?

Bill and Lee: We don't think there are any challenges. To us there would be more challenges living in town.

Would you like to stay on the land when you're older or do you have other plans you'd like to pursue?

Bill and Lee: We would like to stay on the land and work it when we get older.

—Interview Kate O'Donnell. Interview printed with permission from Bill & Lee's parents, John and Ruth Nixon.

Intact dingo pack works in your favour

A JUST completed study of managing dingoes in the Northern Territory has found that culling the canine too heavily can exacerbate problems for graziers trying to protect their cattle. Kill too many dingoes and the strong male–female pack structure starts to collapse, females start producing even more offspring and hybrid dogs move into the area. Hybrids are more of a problem than purebred dingoes because they are not as efficient hunters, and cause more damage to cattle.

The three-year study, conducted by the NT Parks & Wildlife Commission, suggests that keeping a stable dingo pack structure in place, combined with strategic culling, will have a more effective outcome in the long term.

Steve Eldridge, of Alice Springs PWCNT, said that researchers had placed satellite transmitters on dingoes tracking them for 18 months, and examined more than 1000 scats. They found that the dogs' main prey was rabbits, kangaroos and rodents, though this finding was strongly influenced by the unusually good wet seasons that took place during the course of the study.

Nevertheless, it means that graziers could dispense with much of their baits during flush seasons, while keeping a good look-out in leaner times. Dingoes also keep to well-defined territories and defend them from other predators such as hybrid wild dogs.

The report on the project is in the final stages of preparation and will be available soon. Contact: Steve Eldridge Tel: (08) 8951 8220 Fax: (08) 8955 5190 Email: Stephen.eldridge@nt.gov.au

Wild dingo at Waddy Point, Fraser Island, Queensland. Pure-bred dingoes are more efficient hunters than their hyrbrid counterparts Photo: NewsPix © –Graeme Parkes

FireFax satellite images for WA pastoralists

THE Kimberley Regional Fire Management Project (KRFMP) has updated its website to include FireFax information. FireFax is a system developed between KRFMP and DOLA—Satellite Remote Sensing Services to provide daily fire information to station managers in the Kimberley about the location of fires on their properties. After station managers have registered, in the event of bushfires they will receive a faxed map showing pastoral lease boundaries and the location of any fires on their property.

Go to: <www.kimberley-fire-project.com> & click on Fire Maps. Contact: Nat Raisbeck-Brown Tel: (08) 9193 6550 Email: <krfmp@iinet.net.au>

Land-based reef impacts informs new plan

LAND-USE change, clearing, overgrazing, urban development, agricultural production and water use practices in north-east Queensland have all led to a decline in the quality of water draining into the Great Barrier Reef. The findings will form part of a new Reef Protection Plan, which will be released by the Queensland Government for public comment mid-year.

While the panel said the scientific evidence was incomplete, there was clear evidence of negative impacts on rivers, estuaries and inshore areas and the ecological function of some in-shore reefs had altered through enhanced nutrient availability or sedimentation.

The report on land-sourced pollutants, written by a panel chaired by Dr Joe Baker, found that while rangelands are the major source of sediments and nutrients transported to eastern Queensland waters, cropping lands (sugar cane and cotton) are the probable source of most sediments and nutrients on a per hectare basis, suggesting that improved management at the paddock and farm level could be beneficial. The panel recommended an integrated resource-management approach, saying future development of water quality targets and risk classification must include community input, using local water-quality data.

Go to: *A Report on the Study of Land-Sourced Pollutants and their Impacts on Water Quality in and Adjacent to the Great Barrier Reef*: <www.premiers.qld.gov.au/about/reefwater.pdf>

Land handback to the Wagiman owners

NEARLY 110,000 hectares of land, south of Pine Creek in the Northern Territory, has been handed back to its Aboriginal traditional owners: Wagiman (No.2) Aboriginal Land Trust. The hand-back follows years of extensive negotiations and meetings between the Northern Land Council and the former NT Government after four parcels of land were left outstanding from the original Upper Daly Land Claim.

As part of the settlement, the claimants withdrew their claim over a portion of land called Stray Creek Block and did not object to the NT Government compulsorily acquiring the Wagiman Native Title rights over Stray Creek Block and Douglas Station. In return, the Wagiman have secured Aboriginal freehold title for a portion of land known as Sawmill Block which is considered to be an important site to traditional owners, as it contains a variety of significant locations, including burial, birth, historical and dreaming sites. The Umbrawarra Gorge Nature Park is also included in the claim area. However, it is to be converted to NT freehold and will be jointly managed as a park between the Wagiman and the NT Government.

Sweeter baits on pest-management menu

RESEARCH into baits to replace 1080 could use sugar as a key ingredient to halt feral dogs and foxes in their tracks—and leave other animals and birds unaffected. 1080

is used widely in Australia because it is a cheap and effective way to contain pest animals. However, it is extremely toxic to birds and mammals, and attacks the animal's nervous system, causing a painful death.

Compounds under investigation by the Pest Animal Control CRC occur naturally and target biological weaknesses in the metabolism of dogs—by interfering with the dog's ability to process sugar, the potential bait could induce lethargy, eventually sending the animal into unconsciousness and death. As they are specific to dogs and foxes, this approach would leave other animals unharmed.

New baits could become a matter of some urgency, as the use of 1080 in Australia is currently under review by the Australian Pesticides and Veterinary Medicines Authority, which will be releasing a draft report on their findings by the end of 2003. The bait is already banned in several countries, including the United States.

The research is being funded by a $3.2 million grant from Australian Wool Innovation Ltd, whose stakeholders lose millions each year in production due to predation by foxes and dogs.

More information: Dr Paul Swan, Australian Wool Innovation Tel: (02) 9299 5155 Web: <www.wool.com.au/>

Charles Carroll, Pest Animal Control CRC, Tel: (02) 6242 1724 <office@pestanimal.crc.org.au> W: <www.pestanimal.crc.org.au/>

Australian Pesticides & Veterinary Medicines Authority, Chemical Review Program and Reports: <www.apvma.gov.au/chemrev/chemrev.shtml>

ILC sets new directions

A new strategy for the Indigenous Land Corporation has been launched to achieve better returns from land purchased on behalf of indigenous Australians. The ILC, receives more than $50 million a year from the Aboriginal and Torres Strait Islander Land Fund, and has purchased 151 properties at a total of $134 million covering 5 million hectares. It also has a land-management function.

The new strategy sets out land-acquisition policies and establishes four categories for purchasing land: cultural, social, environmental and economic.

Assistance will be tailored to comprehensive property management or business plans submitted with applications. These will be assessed by taking into account the capacity of the land and whether cultural, social, environmental or economic benefits can be achieved sustainably. The economic program will acquire land for land-based businesses, and it is anticipated that the environmental program will mainly involve joint ventures.

Local council State of the Environment

TOWNSVILLE City Council is now one of four Queensland councils that have conducted and produced their own 'State of the Environment' report. On the dry tropics and surrounding areas, the report uses the pressure, condition, response model in atmosphere, biodiversity, land, settlement, inland waters and coast and marine. The council is also developing a natural asset database.

Go to: <www.soe-townsville.org/>

south africa

Landcare builds the capacity to link two worlds

Continued from p. 6

They're black, they're making a profit, they're fixing the environment. It can be done.'"

"So we've got all these different models of people doing different things in different ways round the country and at least one now in every province.

He says it's not only been important as a way to change attitudes, but also as a training exercise, where extension workers can visit the areas and see for themselves.

"You learn far more and you inspire far more from that, than any amount of leaflets or websites."

Home-grown institutions

From this year Richard will be working much more in facilitating policy, and helping to set up institutions to fund and run Landcare.

Legislation is to be gazetted in 2003 that will set up a Landcare Trust, which will take Landcare out of the Department of Agriculture and act as an instrument that can attract funds from a number of places, rather than relying on poverty relief funds only. Leading farmers, unions, NGOs and the private sector will all be involved.

"It's important that we don't push what we've done in Australia. We provide some technical back-up and then facilitation to help them develop what they want."

It's experience gained in other resource-poor countries that is proving more useful here. Zimbabwe, though torn by conflicting land tenure and ownership issues has embraced Landcare.

"If you go to Zimbabwe, a lot of the things that we're working on have spread to thousands of people," he said.

However, any environmental solution must encompass economic development. The Landcare ethic can only work, he says, if advice on better resource management also leads to landholders making more money and a better livelihood out of that advice.

"The two have got to go together," says Richard. "In Africa, Landcare must economically empower people at the same time as the general environment.

"It's one of the key differences between Australian Landcare and here," he emphasised. "Although Australia is a bit like that, here it's *got* to be like that."**—Kate O'Donnell**

Traditional farmers attend a meeting in the Cape

Ricard Holt, Australian Team Leader, Institutional Strengthening, Department of Agriculture Project (ISDA) LandCare South Africa.
PO Box 12569, Hatfield, Pretoria, 0028, Republic of South Africa
Email: <richardh@lantic.net>

Cross-cultural approaches to land management

Planning for Country: Cross-cultural approaches to decision-making on Aboriginal lands has strong appeal and some important messages for a very wide audience. At one level it is an enormously practical, 'how to do it' manual for anyone working on a range of issues to do with Aboriginal land and landowners; natural resource management, land care, economic and social development and all forms of planning.

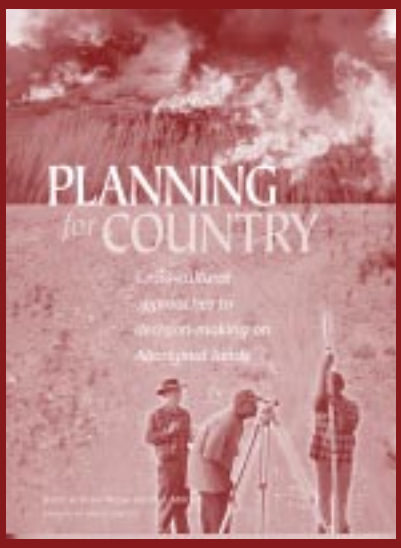
In this context, it is a valuable resource, well organised, generously illustrated and easy to approach. The book presents a positive perspective on the pathway to determination of their own future by Aboriginal people on their own country.

Without skirting around issues and challenges, the book emphasises problem-solving and positive outcomes in a participatory environment.

It imparts a strong sense that there are worthwhile outcomes, they can be achieved, and this is how it can come about. The sum total of the experience and insight assembled in these pages is impressive.

This should be required reading for anyone with an involvement or interest in working with Aboriginal people or on Aboriginal land, and has much of value to people involved in natural resource management and planning in the global arena.

—Review, Prof. Gordon Duff, CEO, Tropical Savannas CRC



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3 South Terrace, Alice Springs NT 0871
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Kapalga fire experiment

CSIRO will shortly release *Fire in Tropical Savannas: the Kapalga Experiment* which summarises the 10-year research program featuring the landscape-scale Kapalga fire experiment in the Northern Territory. Contributors discuss fire in relation to catchment dynamics, landscape ecology, biodiversity and ecosystem management.

Among the management issues addressed are carbon emissions, erosion and nutrient depletion, habitat management, biodiversity conservation monitoring, and traditional Aboriginal burning practices. This book will be valuable to tropical ecologists and fire managers whether they are interested in plants, animals, soils or the landscapes as a whole.

Springer Science Publishing. Contact: Barbie McKaige, CSIRO TERC
Tel: (08) 8944 8411 Fax: (08) 8944 8444 E: <barbara.mckaige@csiro.au>

Indigenous place names

The Land is a Map: Placenames of Indigenous Origin in Australia covers a broad range of issues associated with indigenous place names. Australia was once a network of indigenous place names, but while many of these names were taken into an official system, they were often cut off from any understanding of their original meanings. Attempts are now being made to ensure that additions of indigenous names more accurately reflect the traditions from which they originate. Edited by Luise Hercus, Flavia Hodges and Jane Simpson.

Pandanus Books, ISBN 1 74076 020 4, Price: $38
Australian National University, Canberra, ACT, 0200
Tel: (02) 6125 3269 Fax: (02) 6125 9975
Email: <Thelma.Sims@anu.edu.au>

Climate change trilogy

From the International Energy Agency (IEA):

CO_2 Emissions from Fuels Combustion: 1971–2000 recognises fundamental changes in recent years in the way governments approach energy-related environmental issues. It is aims to help understand the evolution of energy-related CO_2 emissions from 1971 to 2000 for more than 140 countries and regions by sector and by fuel.

Beyond Kyoto: Energy Dynamics and Climate Stabilisation details the options available in the energy sector to reduce climate change. It explores the type of agreement that could cope with uncertainty inherent in implementing climate programs nationally and internationally.

Dealing with Climate Change provides a comprehensive listing of policies and measures taken or planned by the 26 IEA member countries (including Australia) to reduce more than 200 energy-related greenhouse gas emissions during 2001. It shows how developed countries implement the commitments made under international agreements or at national level to reduce their emissions.

CO_2 Emissions from Fuels Combustion: 1971–2000, 540 pp. ISBN: 92-64-09794-5, Price: $US150
Beyond Kyoto: Energy Dynamics and Climate Stabilisation, 162 pp. ISBN: 92-64-19838-5, Price: $US75
Dealing with Climate Change: Policies and Measures in IEA Member Countries, 151 pp. ISBN: 92-64-19841-5, Price:$US100

IEA Books, 9, rue de la Fédération 75739 Paris Cedex 15. Fax: (+ 33.1) 40.57.65.59, Email: <books@iea.org> Web: < www.iea.org/books>

Challenge of science communication

Sharing Knowledge: A Guide to Effective Science Communication, by Julian Cribb and Tjempaka Sari Hartomo, is a guide for scientific managers, researchers, communicators and policy makers on practical, low-cost ways to add value to science by assisting its adoption or commercialisation.

The book includes chapters on communicating with the media, government, industry and the public.

Paperback, CSIRO Publishing, 212pp. ISBN: 064306799X
Price: $AUD34.95 CSIRO Publishing Freecall orders 1800 645 051
Fax: 03 9662 7555 Web: <publish.csiro.au/books/bookpage.cfm?PID=3277>

In Search of Sustainability Online Conference February-October, online

Papers (1500 words) are invited for an internet conference is being held over nine months from February to October, 2003. It will provide an electronic venue for the exchange ideas on issues that will affect the long-term sustainability of Australia. A different theme will be addressed each month. In November, a face-to-face conference will be held in Canberra to review the material covered.

Web: <www.isosconference.org.au/>

April

11th Symposium on Biological Control of Weeds April 27–2 May, Canberra

Venue: Manning Clark Complex, Australian National University, Canberra

Emphasis is the importance of ecology as the underpinning discipline for biological control. Program includes Biocontrol theory and new approaches.

Contact: Secretary, CSIRO Entomology,
Postal: GPO Box 1700 Canberra ACT 2601 Australia
Tel: (02) 6246 4001 **Fax:** (02) 6246 4177
Email: <Sharon.Corey@ento.csiro.au>
Web: <www.ento.csiro.au/weeds2003/index.html>

National Landcare Conference: Respecting Values — Working & Learning Together 28 April–1 May, Darwin

Venue: Carlton Hotel, Darwin

The 2003 National Landcare Conference will provide an opportunity for information sharing, discussion and debate on a range of landcare issues. Themes include

- Emerging natural resource management issues;
- Building capacity and working with diverse cultures;
- Social and economic aspects of natural resource management;
- Managing land remote from urban centres;
- International Landcare.

Postal: Desliens Conference & Event Management, GPO Box 2455 Darwin NT 0801
Tel: (08) 8941 0388 **Fax:** (08) 8981 8382
Email: <dcem@desliens.com.au>
Web: <www.landcareconference.nt.gov.au>

May

Economics and Environment Network Workshop 2–3 May, Canberra

Venue: Rydges Lakeside, Canberra

The workshop IS open to those interested in promoting research, learning and better policy in environmental, resource and ecological economics in Australia and within the profession.

Contact: Dr Quentin Grafton, Chair, Organising Committee
Email: <qgrafton@cres.anu.edu.au> **Tel:** (02) 6125 0663
Web: <een.anu.edu.au/workshop.html/>

CRCA Conference 2003: CRCs: Connecting Communities 27–29 May, Canberra

Venue: National Convention Centre, Canberra

Satellite Workshops (half or full day) are planned for CRC CEOs, CRC Business Managers and CRC Education and Training Managers.

Contact: Dr Anne Campbell, Executive Manager, CRC Association
Postal: RSISE Building, cnr North & Daley Roads
Australian National University, CANBERRA ACT 0200
Tel: (02) 6125 8835 **Fax:** (02) 6125 8836
Email: <crca@crca.asn.au> **Web:** <www.crca.asn.au>

July

IALE 2003 6th International Association for Landscape Ecology World Congress 13–17 July, Darwin

Venue: Carlton Hotel, Darwin

Theme: Crossing Frontiers: Landscape Ecology Down Under: Building bridges between cultures, disciplines and approaches

This is the first time the world congress has been held in the southern hemisphere, and the first time in the tropics. The dual goals of the congress are to highlight the frontiers of the science of landscape ecology and to develop the integrative nature of the science. Symposia relate to frontiers in landscape ecology and building bridges.

Local Organiser: Dr Diane Pearson
Postal: School of Biological, Environmental and Chemical Sciences, Faculty of SITE, NTU, Darwin NT 0909
Tel: (08) 8946 6046 **Fax:** (08) 8946 7088
Email: <diane.pearson@ntu.edu.au>
Web: <www.iale.ntu.edu.au>

MODSIM International Congress on Modelling and Simulation 14–17 July, Townsville

Venue: Jupiters Hotel and Casino, Townsville

Theme: Integrative Modelling of Biophysical, Social and Economic Systems for Resource Management Solutions.

MODSIM is the biennial conference of the Modelling and Simulation Society of Australia and New Zealand (MSSANZ).

Contact: Convenor David Post
Tel: 07 4753 8500 **Fax:** 07 4753 8600
Email: <David.Post@csiro.au>
Web: <mssanz.cres.anu.edu.au/modsim2003.html>

VII International Rangelands Congress 26 July–1 August, Durban, South Africa

Venue: International Convention Centre, Durban

Theme: Rangelands in the New Millennium

The conference involves 19 theme sessions and eight professional workshops. Themes include biodiversity conservation; vegetation change; global climate change;

managing grazing pressure and developing policy.

Contact: Sue Bumpsteed Conferences Ltd
Tel: +27 31 303 2480 **Fax** +27 31 312 9441
Email: <delegates@sbconferences.co.za>
Web: <www.ru.ac.za/institutes/rgi/irc2003/IRC2003.htm>

September

International Conference on Tropical Savannas & Seasonally Dry Forests
14–20 September, Edinburgh, UK

Venue: Royal Botanic Garden Conference Centre, Edinburgh

The conference will bring together leading researchers in major areas of concern in savanna and dry forests throughout the tropics. Principal themes are plant and animal biodiversity; palaeoecology and environmental change; vegetation and environment and human ecology and development.

Contact: Edinburgh Centre for Tropical Forests
Pentlands Science Park, Bush Loan, Penicuik, Edinburgh EH26 OPH, United Kingdom
Tel: 44 (0) 131 440 0400 **Fax:** 44 (0) 131 440 4141
Email: <savanna-conference@ectf-ed.org.uk>
Web: <www.geo.ed.ac.uk/bblza/sav2003/>

9th PUR$L National conference 'Salinity under the sun—investing in prevention and rehabilitation of salinity in Australia'
29 September–2 October, Yeppoon, Qld

Venue: Rydges Capricorn Resort

PUR$L (Productive Use and Rehabilitation of Saline Land) is a collaboration across all Australian states that promotes the positive use of salt land for profitable industries in agriculture, forestry, horticulture, aquaculture, minerals and energy.

Contact: Conference Secretariat, Eventcorp
Postal: PO Box 5718, West End Qld 4101
Tel: (07) 3846 5858
Email: <pursl@eventcorp.com.au>

October

3rd International Wildland Fire Conference & Exhibition
3–6 October, Sydney

Venue: Sydney Convention and Exhibition Centre

The conference will present a range of contemporary and future fire-management issues relevant to nations and organisations and enhance global and regional networks of fire management professionals, industry leaders and policy makers.

Global Wildland Summit, 8 October

This summit follows the conference and will bring the world's leading wildland fire-management professionals and practitioners together.

Contact: 3rd International Wildland Fire Conference and Exhibition Managers
Postal: GPO Box 128, Sydney, NSW, 2001
Tel: (02) 9248 0800 **Fax:** (02) 9248 0894
Email: <wildlandfire03@tourhosts.com.au>
Web: <www.wildlandfire03.com/>·

December

3rd International Wildlife Management Congress
1–5 December, Christchurch, New Zealand

Venue: University of Canterbury, Christchurch

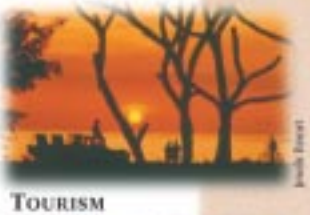
The congress will have a strong Pacific and southern hemisphere flavour with the main focus on contrasting wildlife management perspectives.

Contact: Wildlife Congress Secretariat, Centre for Continuing Education
Postal: University of Canterbury, Private Bag 4800 Christchurch, New Zealand
Tel: 64 3 364 2915 **Fax:** 64 3 364 2507
Email: <wildlife@cont.canterbury.ac.nz>
Web: <www.conference.canterbury.ac.nz/wildlife2003/wildlife.html#invitation/>

OUR STAKEHOLDERS


ABORIGINAL COMMUNITIES


PASTORALISM


TOURISM


CONSERVATION


DEFENCE


MINING

Savanna Links is edited and produced by the Tropical Savannas CRC. Articles can be used with permission. For story ideas or contributions, please contact us. Views expressed in *Savanna Links* are not necessarily those of the TS–CRC.

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