



SAVANNA LINKS

Cooperative Research Centre for the Sustainable Development of Tropical Savannas

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<http://savanna.ntu.edu.au>

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Tourism: the new outback enterprise

Across the northern savannas, pastoral and Aboriginal stakeholders are seeking new, sustainable economic opportunities on their land. *Dennis Schulz* reports that they are increasingly turning to tourism.

Lanky tour guide Wayne Turner leads the small group around the stony corner into the welcoming cool of a rock shelter where an enigmatic gallery of paintings look down from the high sandstone wall. "Oh my . . ." all seem to sigh at once. Turner smiles broadly, their awe-struck reaction one of the great unpaid rewards of tourism in the Territory.

He has driven the group of American tourists to Innesvale Station, 500 kilometers west of Darwin, to experience Aboriginal rock art for the first time. Then Turner hands the group over to Aboriginal traditional owner, Bill Harney, to explain the cultural significance of the ancient paintings. Innesvale is now Aboriginal land and Turner pays Harney's Wardaman people a fee for site access and for the Elder's exposition. "The tourists pay me and I pay for the advertising, provide the vehicle, the food, and the fuel," explains Turner, "and the Wardaman provide the Dreamtime culture. Everybody's a winner."

Turner's Aussie Overlanders is one of a growing number of northern tour operators taking tourists into the savannas, entering the gates of Aboriginal and pastoral properties where the cattle kings once ruled supreme. But the cattle industry remains a business all too prone to market fluctuations. 'Diversification' is today's industry buzz word, with more and more landowners finding opportunities in tourism. "If you're an owner/



Traditional owner Bill Harney explains the cultural significance of the Lightning Brothers rock paintings to tourists at Innesvale Station, Northern Territory
Photo: Dennis Schulz

manager on a place with a small amount of cattle, you're going to struggle forever," says Chris Holt, owner of Mainoru Station in the Territory's Top End. "If you can get some alternative form of income you can weather the peaks and troughs.

You're much more secure."

Holt is one of a growing number of pastoralists (see story page 4) turning their hand to tourism. It is a trend made possible by what appears to be an escalating northern self-drive market. Indeed, one of the prime ingredients for success in this most competitive of fields is a prospective site's proximity to a main road.

"You've got to be accessible", explains Northern Territory Tourist Commission's regional manager, Pauline Rainer. "You need to be near an arterial road, preferably an all-weather road. Then you can go into farm-stays, bed and breakfasts, caravan parks, or secluded camping areas. There's a lot of opportunities if you're near the flow."

The trend towards increasing savanna tourism outside designated parks is also a reflection of a changing market demographic. Tour operators have had to adjust to a new species of tourist, often a 'baby boomer' who is no longer willing to sit in the back of a gorge tour boat for three hours. "They're explorers. They want experiences that involve the locals, the landscape, the flora and the fauna," says Sharyn Innes, manager of the Katherine Regional Tourist Association (KRTA).

Continued on page 4

Fire campaign starts this dry

ONE of the issues that cropped up at the North Australia Fire Management Workshop held in Darwin last March was the problem faced by the tourist industry in dealing with northern fire patterns.

Pity for a moment the first-time visitor to northern Australia who arrives in the dry season and is confronted by blackened landscapes, fires casually burning by the side of the road and days of continuous smoke haze. For people who associate fire with the terror of southern bushfires a bus trip to Kakadu can become an alarming adventure, for others the blackened landscape is a major disappointment.

Pity also the local pastoralist who is burning off some country only to have some energetic tourists pull up to the homestead and announce that they'd seen his fire and bravely put it out. These are just a few of the problems caused by misconceptions about fire in northern Australia.

To better inform visitors to north Australia about fire in this part of the world, the three rural fire services of Western Australia, Northern Territory and Queensland, together with the Tropical Savannas CRC* will be releasing a brochure on northern bushfires aimed at tourists this coming dry season.

The brochure describes why fires in the north are often quite different from southern bushfires and how the nature and management of northern fires varies through the year.

It also offers a guide as to how visitors should report fires and where they can get more information on fires.

*The Fire and Emergency Services Authority of WA, the Bushfires Council of the NT, the Queensland Fire and Rescue Authority and the Tropical Savannas CRC collaborate through the North Australia Rural Fire Managers Forum.

For brochures contact:

WA: Fire & Emergency Services Authority
Public Education Centre Tel: (08) 9323 9300
NT: Deborah Bisa TS-CRC Tel: (08) 8946 6754
Qld: Bryan Cifuentes QFRA Tel: (07) 4052 3240

Savanna education database out now

THE TS-CRC's third edition of *Tropical Savannas: An Education and Training Database* is now available. Compiled by Rebecca Benson, the database draws together educational and training courses available across the region relating to sustainable use of tropical savannas. It includes courses on savanna ecology, environmental and land management, pastoralism, tourism training and mining. Providers listed include universities TAFEs, private providers distance education courses.

The database is distributed to libraries across northern Australia and is also available on our website at <http://savanna.ntu.edu.au/education/database.html>

Contact: Rebecca Benson
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Deborah Bisa Tel: (08) 8946 6754

Letter to the Editor

WRITE regarding the December '98–January '99 *Savanna Links* article 'How one Producer Broke the Bush Cycle of Debt'.

Dennis and Jan Fahey of 'Keen-Gea' must be commended in reversing the production and economic output from a property originally overstocked, and suffering self-inflicted drought and degraded pastures. The decreased stocking rates and spelling of paddocks are obviously a more sustainable approach and appear to have worked well for them.

The article's portrayal of clearance 11,000 hectares of Black Gidyea woodland in the sustainable development plan however is somewhat intriguing. This broadscale clearance would have been more accurately depicted as a major (if not fundamental or even fatal) compromise to the sustainable development plan (it is admittedly mentioned once in the preamble as a 'trade-off', but other references throughout the article can be interpreted as condoning or promoting Black Gidyea clearance, e.g. the 'before' and 'after' pictures).

It is worth remembering that the land clearance record for Queensland has been and continues to be disastrous. From 1991–95 an annual average of some 308,000 hectares was cleared in Queensland alone (1997 National Greenhouse Inventory) and the levels remain similarly high today. Not only is broadscale clearing clearly unsustainable for anything much more than livestock in the short term, it is too often demonstrably not sustainable in the

long term, e.g. vast agriculturally defunct areas of Victoria, SA, WA, NSW and Qld spring to mind; once subject to broadscale clearance and now salt effected and/or suffering severe erosion.

Please correct me if I'm wrong, but I've assumed to date that broadscale native vegetation clearance was not a part of the TS-CRCs vision of a sustainably managed savanna. The CRC must apply some intellectual rigour to the case studies it promotes or risk losing credibility as an honest broker of information on ecologically sustainable land management. The agricultural sector too often opts for self-congratulatory and emotive rhetoric about sustainability rather than the harder task of actually changing practices on the ground. The CRC should be working for the latter rather than promoting the former.

Fiona Fraser, TS-CRC PhD student

Fiona, thanks for your letter. *Savanna Links* aims to provide information and a forum for savanna stakeholders. As we acquire information on the impacts of land-use practices, including tree clearing, on sustainable use and conservation, we will make sure our stakeholders are advised. Dennis Fahey's story is an example of the kinds of decisions and attitudes that contribute to land management, and as such, are of interest to all concerned with sustainable development of the tropical savannas. -SL

Congress wants input from land managers

THE VI International Rangelands Congress is keen to hear from Australian land managers to make sure their views and experiences are heard by the world's top rangeland experts.

The congress will discuss the major issues affecting land management globally, and will be held from 17–23 July in Townsville north Queensland. It will bring together scientists, land managers, extension staff and government administrators worldwide.

Issues on the agenda include sustainable land management, land degradation and desertification, diversification of land use, grazing pressure and total property management.

“The theme of the congress is ‘People and Rangelands: Building the Future’,” said Dr Gordon King, the congress’s business manager. “We are offering a number of ‘scholarships’ to land managers who are involved in community participation projects, in particular indigenous land use, Landcare or Total Catchment Management, and innovative or different approaches to managing enterprises in the rangelands,” he said.

Chair of the congress, Professor Brian Roberts, said there would also be six professional workshops and a number of congress tours, which will visit the properties of some of the best land managers in the country. Professor Roberts said the workshops would be of particular interest to land users.

“We think there is a whole lot of good stuff there for property managers,” said Professor Roberts. “People might also want to know that it’s all good tax-deductible stuff!”

Also see Forum on Rangelands, page 6.

For more information, scholarship applications: Bronwyn Dawson IRC Secretariat
Tel: (07) 4771 5755 Fax: (07) 4771 5455
Email: bronwyn@harveyevents.com.au
Email: secretariat-irc@unsw.edu.au
<http://irc.web.unsw.edu.au>

TROPICAL Savannas CRC director, John Childs, presents much-appreciated cheques to new TS-CRC students at James Cook University in Townsville in March.

The students are Honours student Gill Carr, right, and PhD student Wendy Hillman below.

A similar get-together was held in Darwin for the TS-CRC’s new students there: James



Binney, Matthew Fegan, Zhang Yue, Jodie Pritchard (PhD) with Greg Lyons and Matthew Forner (Honours). You can read about their projects, along with our other students, on our website at: <http://www.savanna@ntu.edu.au/education/students/current.html>

Tropical Savannas goes online

EVER wanted to catch up on those back issues of *Savanna Links*, or find out more about the Tropical Savannas CRC, like what exactly is a savanna anyway? These wishes can now be granted if you connect to the Internet, because the TS-CRC is now online at <http://savanna.ntu.edu.au> Highlights of the site include:

Savanna Links online. All issues of our newsletter are now available in the site’s Publications section. Two formats are available—normal web display (called HTML) and portable document format or PDF. PDF allows documents to be printed in their original format. The contents of each issue can be browsed before opening. Hotlinks after each article take you straight to relevant websites or email addresses.

Education Courses relevant to the Tropical Savannas. These include courses on land management, savanna tourism, etc. which are listed in a searchable database in our Education and Training section. Each entry lists the course title, its level and duration, prerequisites and the institution involved. This section also has details on the TS-CRC’s Master and Graduate Diploma in Tropical

Environmental Management through NTU and JCU. It also features the TS-CRC’s student projects.

Radio Savannas. We have begun a regular series of interviews highlighting TS-CRC research on various radio stations across the savannas. For each broadcast we have a companion website which lists a summary of the interview and related links. To access Radio Savannas click on the microphone icon on the home page. You can also find it under the News and Events section.

Project Descriptions. Summaries of all 25 Tropical Savannas CRC projects are available in the Research Themes section. They include descriptions of research progress, staff lists, contact details and related links. The TS-CRC’s management studies are also featured and how all relate to our four research themes.

A feature of the website is the cross-referencing between *Savanna Links* articles and other sections—thus the site can act as a gateway to various stories on the tropical savannas.

Later this year this role will be extended by the more extensive Savanna Information Clearinghouse.



Cattle kings to tour operators: they've done it

Mark & Sheree Timms, Theda Station, Kimberley, WA

THEDA Station is situated in the rugged country north of the Kimberley's Gibb River Road. Mark and Sheree Timms opened their tourist operation three years ago, with Mark's father continuing to run cattle on a neighbouring property. The Timms offer fly-in or drive-in access, a homestead shop, camping facilities, accommodation, bush camps, as well as guided tours to waterfalls, gorges and to rock shelters that feature the famous Bradshaw rock art. "It's growing amazingly well—and quickly," says Mark Timms.

"We've got two kinds of people arriving: those that want to be shown things and those that want to discover it for themselves. We're getting lots of Australians who buy big 4WDs and do a trip along the Gibb River Road.

"They want to get out and explore. We've got Drysdale National Park access. People want to go out there and we give them a mud map of the road and they can pretty much discover it for themselves." Like many remote area tour operators, the Timms' take bookings via their website on the Internet and have recently linked up with tour operators from as far afield as Darwin. "It could come to



Tourists today are "explorers—they want experiences that involve the locals, the landscape, the flora and the fauna." Bill Harney shows one adventurous pair giant termite mounds in the NT
Photo: Dennis Schulz

the stage where we may say we'll destock the property to preserve the country and concentrate on the tourism," says Mark Timms. "I enjoyed cattle work too, but this is a lot safer than chasing mad bulls around."

Go to <http://www.wn.com.au/thedastation> Tel: (08) 9161 4329

**Owen 'Bluey' & Janelle Pugh
Coolibah Crocodile Farm, NT**

THE PUGHS' Coolibah Station is situated on the banks of the wide Victoria River in the western Northern Territory. Preferring to concentrate on farming crocodiles for the overseas skin market, the owner managers leased out the property's cattle operation in the early '90s. But the price of crocodile skins took a dramatic

downturn in Japan and Europe so they decided to diversify once more—this time into tourism.

Tourists passing by on the Victoria highway were already stopping in to see the crocs. "They were hard buggers to keep out," laughs Bluey. "They just invited themselves in and we were showing them around for nothing. It was taking up more and more of our time so we put a charge on it. Now we're fully into the tourism business."

The Pughs put up a sign on the highway and they

Tourism: the new enterprise for the outback

continued from page 1

More and more people are travelling to northern Australia demanding an experience as opposed to a holiday. "They're middle to up-market Australians or Americans or Europeans and they're looking to go out into the bush to explore it, experience it and learn about it from people who know," states Rick Murray of Odyssey Safaris. "They've done their homework. We send them reading lists and by the time they get here they're a challenge for any second-rate guide."

Savanna pastoral properties blend well with this emerging market, but providing knowledgeable, qualified, interpretation for educated travellers is a continuing problem.

After months of trying to answer searching queries regarding culture and the environment, Sharyn Innes began sending her KRTA employees for training with staff from Parks & Wildlife Commission of the NT.

Outback interpretation, however, is the forte of the Queensland-based Savannah Guides, who could provide an industry-wide solution. Savannah Guides have been in operation since 1988 providing informed, quality interpretation in remote areas.

The group trains guides and accredits operators after rigid assessments of their tours. They plan to spread into the Kimberley region of Western Australia and are already operating in the Territory at the invitation of the NT Government.

"The Savannah Guides are integral to our operation," says Bram Collins of the Undara Lodge, situated on a former Queensland cattle property. "Their attention to quality interpretation and ongoing training and their marketing network has revolutionised tourism in the savannas." But before pastoralists begin clearing a block for a prospective roadhouse or camping ground, it is necessary to check what diversifications are permitted on a pastoral lease. Government approvals are necessary especially as the status of Native Title on pastoral leases remains uncertain.

In some cases, tourism infrastructure developments can only take place after consultations with traditional owners.



were away. Just 8 kilometres off the highway, the Pughs now provide camping and fishing sites on the Victoria River as well as a chance to visit with saltwater crocodiles up close.

“Crocs don’t perform so you have to explain what they do and we can show people all stages of crocodile growth from babies hatching out, then there’s juveniles growing up and big old crocs lazing in the sun,” explains Bluey. “It’s paid off for us without having to put a lot into it. We’re having brochures printed now to attract a wider sphere of people into the place. We want them to know we’re here before they leave Kununurra or Katherine.”

Go to Coolibah Station outside Timber Creek
Tel: (08) 8975 0856

**Bram Collins, Undara Lodge, Qld
Owner and Assistant General Manager**

THE Collins family sold their Rosella Station Queensland property in 1988 and divided the lease into two. They sold one lease to a neighbour and retained the other containing the spectacular Undara lava tubes, part of the longest lava flow from a single volcanic crater anywhere in the world. The family built a lodge near the unique cave system in 1990. “We knew if we didn’t protect the tubes and interpret them properly, people would go in unguided and it wouldn’t be long before they were destroyed,” recalls former pastoralist, Bram Collins. “In our first few years of operation our growth in visitor numbers was about 60 per cent a year. Last year we had almost 29,000



Manyallaluk
Aboriginal guide,
Billy Yallowonga,
chats with tour
guide Wayne
Turner

Tourists are highly
appreciative of
Dreamtime culture.

Photo: Dennis Schulz

people to use it. We probably get 40 bookings a year off our website but there’s huge potential there. Part of our strategy is to make our website our central information vehicle.”

Go to <http://www.savannah-guides.com.au/>

Chris Holt Mainoru Station, NT

LAST year pastoralist Malcolm Holt was tragically killed in a traffic accident leaving wife Chris and their three children alone to operate their remote Mainoru Station. Situated on the southern border of Arnhem Land, the central Arnhem Highway cuts through Mainoru connecting the Stuart Highway with the regional centre of Gove. Burdened with multiple debts, Chris placed the property on the market, thinking she could never manage on her own.

However, since turning to tourism development she has found herself in a better economic position. The Holts opened a store and petrol bowser on the dirt highway, allowing travellers the opportunity of making the 500 kilometre trip to or from Gove without the need to carry petrol. They have also opened the property to barramundi fishing and safari hunting, accommodating operators who guide hunters in search of a trophy buffalo. The area is one of the last refuges of wild buffalo in the Territory. Hunters pay trophy fees to the Holts for buffalo, feral pigs and scrub bulls. “The ferals are now worth a lot of money,” says Chris Holt. “We rather like the ferals.”

The family still runs 5500 head of cattle for sale to the live cattle industry, but their diversification into tourism has made the property viable and a sale less likely. “Now we’re coping quite well,” says Chris. “If we can increase the hunters and get the store up to speed and sell the cattle so the debt is manageable, we think we can survive. We’ll be struggling for five years, but it’s worth it.”

Go to Mainoru Station via Katherine Tel: (08) 8975 4702

 **Tourism Websites**

- GLADA: <http://www.gulf-savannah.com.au/>
- Kimberley Development Commission
<http://www.kdc.wa.gov.au/visiting.html>
- Tourism Queensland <http://www.qttc.com.au/>
- Tourism WA <http://www.wa.gov.au/watc/>
- Tourism Northern Territory <http://www.nttc.com.au/>
- Tourism Council of Australia <http://www.tourism.org.au/>



Photo Chris Cooper

The Collins family developed the lodge by placing 27 restored railway carriages near the lava tubes as well as providing a campground, tent village for budget travellers, bar, restaurant and accommodation for school groups

on tours at Undara.” Collins developed the lodge by placing 27 restored railway carriages near the lava tubes as well as providing a campground, tent village for budget travellers, bar and restaurant and accommodation for school groups. The Savannah Guides provide professional tour interpretation.

The Internet provides Undara Lodge with its link to the world. “The better you market your website, the better return you’ll get,” says Collins. “You just can’t hope people will stumble across it. You have to encourage



Rangelands take up more than half the Earth's land area and their sustainability is essential to the future of rural communities. In July, Townsville will host the VI International Rangelands Congress where these issues will come under the spotlight. In the lead up to the congress, *Savanna Links* interviewed pasture scientist Prof Brian Roberts, chairman of the congress and one of the founders of Australia's landcare movement on **Rangelands and the rural decline**

SL: WHAT are the issues facing rangelands today?

BR: The issues are twofold. One concern is the change in the condition of rangelands; a widespread deterioration in some areas of the world. The parallel problem is the financial situation of those people who live in the rangelands.

SL: What's caused that deterioration?

BR: Largely an over-optimism on the carrying capacity of the arid zone. The deterioration is not the sole cause of reduced income for people in the rangelands. There are a number of externalities over which they have no control that concerns the price for their products.

SL: Is the financial situation of people in the rangelands worse than other people involved in agricultural pursuits?

BR: The problem is that people have very few alternatives in terms of the numbers of options available, those in the arid zone particularly. There are very few options compared to people in the higher rainfall areas who can change crops and methods to meet the demand.

SL: Would you characterise these two problems as being the same for Australia?

BR: Yes—plus we have additional challenges in our rangelands, and one is to meet the needs of Indigenous people for what one might call cultural uses. I'm not setting this as a problem, but as a new look at ways the rangelands may be used rather than accepting the prime use of rangelands must be for grazing commercial animals. Another one is the growing ecotourism market and the pressure from tourism in some very fragile places.

SL: What are the challenges particular to Australia?

BR: In diversification, the use of indigenous plants for either the basis

for a new bush tucker industry, and indigenous wildflowers for the overseas trade. There are a few others concerning our arid zone timbers such as sandalwood. Another big one is managing grazing pressure. We have in recent years been using the term total grazing pressure, which is just a new way of talking about what had been called good old-fashioned 'over-grazing'. But now it means, in our case, the pressure from both domestic stock and kangaroos.

It's become terribly important, notably in Australia, but also in other areas if there are no indigenous animals. It's probably at the heart of what is causing deterioration. This is nothing new—we had a Royal Commission about it in the western division of NSW in 1901.

SL: What about plant invasion?

BR: It has become very important what do we do about woody weeds, mimosa, prickly acacia, rubbervine—or just about everything that moves in the north. If the plants are not useful for grazing then we've got real trouble. If we look around the world, this is what nature does; if you keep domestic stock long enough, then the palatable plants disappear and sooner or later something blows in or is carried in, and if it's not palatable it will start taking over. And I see grave difficulties in us winning the battle against some of the plants we have in the north, I must say.

SL: Is it possible to balance ecology with economics?

BR: Is it possible to maintain the ecosystem and still give people a living? The answer is yes, provided there are not too many of them! One of the important things that is coming out now in Australia is that we'll probably never get back to the populations (in rural centres) we had in the '50s and '60s. The stations that had a dozen or so men working on them, and now it's just left to a

Continued on page 8

For details on the VI International Rangelands Congress see this issue, pages 2 and 10.

Rangelands Websites

- Australian Rangelands Facts Sheet
http://www.environment.gov.au/library/pubs/fs_rangelands.html
- Rangelands Links pages
<http://www.rangelands.sa.gov.au/related.htm>
<http://www.agric.wa.gov.au/agency/aglinks/rangeland.html>
- Draft National Rangelands Strategy

- <http://www.environment.gov.au/library/pubs/rangelands/rangelands.html>
- CSIRO Wildlife and Ecology National Rangelands Program
<http://www.dwe.csiro.au/research/rangeland/>
- National Land and Water Resources Audit—Rangelands Program
http://www.nlwra.gov.au/static/21_themes/4_rangelands/rangelands.html



Mick Everett from AGWEST fits a donkey with a tracking collar. The donkey can then be tracked to locate other animals.

Kimberley collars judas donkeys

THE adaptation of modern tracking technology, including solar-powered devices has proved a boon for a major program to eradicate feral donkeys in the southern Kimberley.

The Judas program, begun in 1994, achieved a major milestone recently when it reached Bow River station 150 kilometers from Kununurra. Over the last several years the program has expanded to include 38 pastoral leases, two major reserves and the Bungle Bungle National Park. This encompasses an area half the size of Victoria. AGWEST's Andrew Johnson said coordinated control of feral donkeys has been under way since 1978. The program has evolved from using broadscale shooting to utilising the latest wildlife tracking technology for feral animal control.

This has reduced the population of feral donkeys and horses in the Kimberley by over half a million animals since the 1970s.

What has become known as the Judas technique involves placing VHF radio-transmitting collars on donkeys, which are tracked via the radio signal once a month. "Other donkeys then found with the Judas

donkey are humanely culled, leaving the Judas donkey so that it can help locate and pinpoint other donkeys in the area," Mr Johnson said. "More than 270 radio collars have now been fitted across the southern Kimberley, which means we are over the halfway mark for the project, taking into account the total area occupied by feral donkeys."

A pastoral station is gradually cleared of donkeys over a two to three-year period. The station is then assessed for a non-breeding population of donkeys after strict criteria have been met.

"The reduced grazing pressure resulting from the removal of feral donkeys in the Kimberley has enabled pastoral business to use greater areas of country," said Johnson.

The project is 20 per cent funded by the pastoral industry and the majority of funding by the Agriculture Protection Board.

Contact Andrew Johnson Tel: (08) 9191 1555
 Biology of the Feral Donkey
http://www.agric.wa.gov.au/agency/pubns/infonote/infonotes/donkey_biology.html
 Feral Donkey eradication in the Kimberley
<http://www.agric.wa.gov.au/agency/offices/Dirby/donkey.htm>

Pill could put stop to rampaging pigs in outback

LAST issue of *Savanna Links* we profiled the enormous problems feral pigs posed to the northern savannas—as well as areas such as the north's tropical rainforests. But in a few years a novel solution may be at hand: controlling the animal through an anti-fertility vaccine.

At a recent workshop on feral pigs in Cairns, Dr Bob Seamark, director of Vertebrate Biocontrol CRC, revealed that such a vaccine could be spread through the feral population by a virus such as swinepox.

Dr Seamark painted a future scenario that would see the feral pig populations of the north substantially reduced, although not eliminated altogether. "It works by introducing a novel biocontrol agent into the pig population which would eventually make it infertile.

"Commercial piggeries would be protected by a vaccine against the anti-fertility agent."

Dr Holland said the anti-fertility agent could be delivered by using baits, or through using a naturally occurring pig-specific disease agent such as swinepox as a 'taxi'.

"This would need a lot more investigation, especially as it is difficult to use bait in very isolated or inaccessible sites," he explained.

"Swinepox is normally transmitted by the pig louse, and could provide a very useful tool for spreading the anti-fertility agent amongst the feral pigs."

Dr Holland added that the agent would include a sequence to immunise wild pigs against livestock diseases such as foot and mouth disease and human diseases such as Japanese encephalitis.

Proceedings of the feral pig workshop can be purchased from Rainforest CRC later this year.
 Contact Kerry Moore
 Tel: (07) 4042 1244 Fax: (07) 4042 1247
<http://www.crctrem.edu.au/>
 Dr Bob Seamark or Dr Mike Holland, Vertebrate Biocontrol CRC
 Tel: (02) 6242 1768 Fax: (02) 6242 1511
<http://www.dwe.csiro.au/vbc/>



Link fire management to rainfall patterns

From *Dr Peter O'Reagain*,
Principal Scientist QDPI

I SPENT 10 years researching South African native pastures before immigrating to Australia in 1995. The research taught me fire is one of the cheapest and most effective management tools available for pasture management.

However, the big challenge in our dry and variable environment is to link burning with rainfall. Forecasting tools like the Southern Oscillation Index (SOI) allow us to select years with a good chance of a reasonably good season. But even then, it is important never to burn too much in any one year. Also you need to spell a paddock for as long to ensure regrowth. A burn followed by a drought could mean a whole year with no pasture!

Out of Favour

Fire has unfortunately dropped out of favour. It is not applied nearly enough, and where it is, applied incorrectly. Sometimes people think burning is a waste of feed. In other cases, there is very little fuel to burn, because of heavy stocking rates.

As a result, woody weeds such as rubbervine, currant bush and chinee apple flourish. Many people have also noticed a thickening of our native trees, reducing grass production. Pasture condition has declined, and fire-tolerant species, such as black speargrass are dying out.

But before burning, we should ask: "Why am I burning?" Is it to control trees and woody weeds, or is it to remove dead grass and 'freshen up' the pasture?

Most Australian plants are not only very well adapted to fire, in some cases they depend upon it for survival. Eucalypt species are very fire resistant, and some even use the heat from the fire as their cue to drop seed or germinate. Our grasses are also well adapted to fire, and regrow rapidly if burnt at the right time. Species like black speargrass particularly so. Their seed burrows into cracks in the soil, protecting it from fire, while the seeds of competing grasses are burnt.

Hot Fires

This critical question determines how, and when, the fire will be applied. If the aim is to control woody weeds, then the fire must be very hot to ensure sufficient heat to kill the trees or saplings.

To achieve a 'hot' fire, there should be a lot of fuel present—at least 2000 kg per hectare. Also, the fire needs to be set when conditions are at their driest, preferably near the end of the dry season when things are very dry.

The time of the day the fire is applied is also critical to get a hot fire. Burning should be between 10am and 3pm when the relative humidity is low, and the fuel is at its driest.

It is also important for the fire burn with the wind, to get a 'head fire' so the heat is carried up into the trees to cause the most damage. Follow-up burns will almost always be required for woody weeds. If, however, the intention is to remove old grass, then the fire should be cool.

Cool Fires

Cool fires literally just singe the dead leaves off the plant, and should be lit early in the morning or late in the evening when the relative humidity is high. These fires should also be "head fires" and burn with the wind.

This ensures the flame front passes over the plants quickly, causing minimum damage to the tussocks. To avoid damaging grass, the grass must be dormant, usually in the dry season. But this could even be in the middle of the wet during a long dry spell, or just after the first rains before the grass has started to grow fully. Also, burnt areas should not be grazed until they have regrown sufficiently. If grazed too soon after regrowing from a fire, grass can be seriously weakened and die, leading to a decline in pasture condition and productivity. So the basic rules are:

- Decide why you want to burn.
- Apply the appropriate fire under the right conditions.
- Give the pasture a chance to recover before grazing.

Contact: Peter O'Reagain, Beef Institute
Charters Towers Tel: (07) 4787 2155
Email: OReagainP@dpi.qld.gov.au

Fire Management Websites:

- QDNR and QDPI 'Long Paddock' for SOI and ENSO information:
<http://www.dnr.qld.gov.au/longpdk/>
- Bureau of Meteorology's SILO site:
www.bom.gov.au/silo/
- TS-CRC Fire Projects:
<http://savanna.ntu.edu.au/research/projects/firsav.html>
<http://savanna.ntu.edu.au/research/projects/firubb.html>

Forum

Continued from page 6

husband and wife. The truth is we now have to look very seriously indeed at what the real future of rural Australia is. Other countries have the same type of problem, but for us it's important because we are so highly urbanised.

We have to look at the causes behind the causes. Events like the Rangelands Congress must start looking at the kinds of pressures that are causing land managers to overgraze and damage the country. It's no good simply saying that people should just reduce their stock. We've got to understand why it is, what's causing this grazing pressure to be pushed so high, and can something be

done about the causes or the secondary causes of degradation.

SL: What are perhaps some of the solutions to sustainable land use?

BR: We can assume that there are very few pieces of land that will be used fully and properly if they are only used for one thing. In other words, most land can be used jointly for commercial grazing purposes, sacred sites, special places, cultural and historic ties, for its aesthetic and scientific value and its habitat values for rare and threatened species.

Take a quick bite into our tropical savannas 'info sandwich'—for stories, information and contacts in the north!

Satellite Photo Service

THE Australian Surveying and Land Information Group (AUSLIG) and CSIRO Mathematical and Information Sciences are offering detailed satellite images of the entire Australian Continent from a website (<http://www.auslig.gov.au/spotlite>). The GEODATA SPOT-LITE online service uses black-and-white images from the French 'SPOT' satellites. Images are no older than five years, cover 25 square kilometers and can detect objects down to 10x10 metres. They would be useful for whole-farm plans, school course material, regional planning and emergency services. They cost around \$300 a pop.
Contact Mike Clarke, CSIRO MIS
 Tel: (02) 6216 7006 Fax: (02) 6216 7007
 Email: mike.clarke@cmis.csiro.au

Cattle take radio ID

A COOPERATIVE pilot study is looking at ways to help producers more easily identify their livestock. The National Livestock Identification Scheme (NLIS) pilot study, to be conducted at Australian Meat Holdings' Beef City meatworks west of Toowoomba, will assess how radio frequency identification devices could be used to provide accurate identification and information feed back to processors and cattle owners.

Contact: Hazel Marland, Beef Industry Development Advisory Council chairman
 Tel: (07)3371 7982

John Roberts, QDPI Tel: (07)3239 3590

John Keir, AMHL Tel: (07) 3810 2206

Climate competitiveness

Two upgraded computer support packages, Australian Rainman and DroughtPlan, have been launched so that users can develop climate forecasts for their own area. Developed by the Queensland Centre for Climate Applications,

within the Department of Primary Industries and Department of Natural Resources, Australian Rainman has daily rainfall records from 4000 locations in Australia and rainfall records from 1900. DroughtPlan covers the application of information from Rainman to grazing decisions, looking at the impact of El Nino and La Nina in terms of carrying capacities and economics.

Go to: <http://www.dpi.qld.gov.au/qcca/>

Mining giant beats the wet

AUSTRALIAN Rainman is also being used by the BHP coal mine in the Bowen Basin to make predictions about weather. BHP executives had attended the QCCA's 'Managing for Climate Workshops' and were now using the climate applications computer package.

Go to: <http://www.dpi.qld.gov.au/qcca/>

of specimens held in the WA Herbarium collections and, in many cases, colour photographic images.

Go to: <http://www.calm.wa.gov.au/science/florabase.html>

Mine project to benefit bats

AN innovative approach to managing abandoned mine shafts is to help protect threatened bat species in north Queensland. Three abandoned mines are being fitted with specially-designed gates to conserve the roosts and maternity sites of the threatened large-eared horseshoe-bat, Semon's leafnosed bat and several other species. The project, which involves the Qld Environmental Protection Agency, the Department of Mines and Energy and bat biologists will see gates constructed between April and July. The mines being used are the Hope of Atherton, the Mt Molloy, and

Lifestyles of the remote and rural

A NEW website is putting rural communities on the map, online. Rural Lifestyles Queensland showcases 19 rural towns with a wide range of information including regional overviews, local facilities and economy, history, cultural activities, population and environment. Just keep on scrolling to reach legal and financial, health and education services. Each location also includes an account of the experiences of a person who has made the move from "the big smoke" to one of the towns for work. These testimonials tie into one of the general aims of the site, which is to help people who might be considering a career in the bush. It's also a great way to find out more about rural Queensland.

Go to: <http://www.rlq.dcilgp.qld.gov.au/>

Year of the Outback

THE year 2002 may be declared 'Year of the Outback' if a Queensland proposal is taken up nationally. The year would focus on bridging the gap between city and country and highlight the needs and aspirations of rural and regional Australia.

Contact: Kirby Anderson,
 Dept Qld Primary Industries
 Tel (07) 3239 6530

Flowering FloraBase

BOTANY enthusiasts now have access to the latest information on 12,500 Western Australian flowering plant species, through the CALM Website. FloraBase brings together all the major botanical databases for Western Australian Herbarium. Each of the 12,500 species appear with a description, distribution map, details

of the Phoenician on the western edge of the Mulgrave Valley.

WA's plants and animals online

WESTERN Australia's distinctive native plants and animals are now within easy reach of anyone with access to the Internet. 'Getting to know WA's plants and animals' on the Department of Conservation and Land Management's (CALM) website, presents detailed information on 25 species of birds, wildflowers, mammals trees and oddities. Species covered included the white-tailed black cockatoo, common donkey orchid, red and green kangaroo paw, numbat, quokka, jarrah, karri, sheoak and WA Christmas tree as well as the bilby, echidna and crusader bug.

Go to: http://www.calm.wa.gov.au/plants_animals/five_by_five.html

Ecology & Environment

XIX Pacific Science Congress— Science for Pacific Posterity: Environments, Resources and Welfare of the Pacific Peoples 4 July 1999, Sydney

Venue: University of NSW, Sydney
Themes include: Public health, global environmental change, natural disasters, urbanisation and the environment, communication in the 21st century, alternative energy, biodiversity, coral reefs, science and community knowledge and peoples of the Pacific, Asia Pacific migration.
Enquiries: pacsci@icmsaust.com.au
Program Enquiries:
W.Osullivan@unsw.edu.au
Website:
<http://www.icmsaust.com.au/PacificScience/>

VI International Rangelands Congress People & Rangelands: Building the Future 17–23 July 1999, Townsville

Venue: ITT Sheraton Townsville Hotel Casino & Townsville Entertainment & Convention Centre.
Plenary speakers: Dr Tim Flannery and Dr Frank (Fee) Busby.
Six workshops will be held prior to the congress from 16–17 July. Sessions embrace issues of scale, multi-disciplinarity and multiple use.
Contact: Secretariat Townsville Bronwyn Dawson
Tel: (07) 4771 5755 **Fax:** (07) 4771 5455
Postal Address: VI International Rangeland Congress Registrations PO Box 764, Aitkenvale Townsville Qld 4814
Email: secretariat-irc@unsw.edu.au
Website: <http://irc.web.unsw.edu.au>

Ecological Economics Conference 5–7 July 1999, Brisbane

Venue: Griffith University, Brisbane
Conference Theme: Grounding the Paradigm. Specific research areas addressed at the conference will include conflicts between ecological, social and economic priorities, ecological limits to growth, measures of sustainability, valuation of natural capital, and ecotax reform.
Contact: Dr John Tisdell
School of Environmental Sciences

Griffith University,
Brisbane, Australia 4111
Email: ecolecon@ens.gu.edu.au
Website: <http://www.ens.gu.edu.au/ecolecon/Conf.html>

1999 International Symposium on Society & Resource Management Application of Social Science to Resource Management in the Asia-Pacific Region 7–10 July 1999, Brisbane

Venue: Queensland University, Brisbane
Topics include: Theoretical issues in environment and natural resource management; ecological and resource economics and policy; GIS and modelling; regional resource and environmental planning.
Contact: Sally Brown
Conference Connections
Postal Address: PO Box 108 Kenmore, Qld 4069
Tel: (07) 3201 2808 **Fax:** (07) 3201 2809
Email: Sally.Brown@uq.net.au
Website:
<http://www.geosp.uq.edu.au/issrm99>

MODSS '99 International Conference on Multiple Objective Decision Support Systems for Land, Water and Environmental Management 1–5 August 1999, Brisbane

Theme: The conference will address the broad spectrum of decision support through five themes and multiple sessions.
Contact: Dr Paul Lawrence
Postal Address: Department of Natural Resources, Resource Sciences Centre, 80 Meiers Rd, Indooroopilly Qld 4068
Tel: (07) 3896 9560 **Fax:** (07) 3896 9898
Email: modss99@dnr.qld.gov.au
Website: <http://www.dnr.qld.gov.au/events/modss99/index.htm>

International Landcare 2000 Changing Landscapes, Shaping Futures 2–5 March 2000, Melbourne

Venue: Melbourne Convention Centre.
This first International Landcare Conference and Exhibition will explore such issues as sustainable agriculture and communities, biodiversity and

greenhouse. It will also explore sustaining landcare into the future.
Contact: Waldron Smith Convention Network
Postal Address: 93 Victoria Avenue Albert Park, Victoria, Australia 3206
Tel: (03) 9690 6744 **Fax:** (03) 9690 7155
Email: wscn@bigpond.com
Website: <http://www.nre.vic.gov.au/conf/landcare2000/>

Tropical Grassland Society Conference—Pastures for Production and Protection 26–28 April 2000, Emerald

Venue: Emerald Agricultural College
The conference focuses on protecting soil, building fertility, controlling weeds. It also features field trips to inspect legumes and native grass pastures. Sessions include mine revegetation systems, pasture and cropping systems, native pastures and weed eradication.
Contact: Maurice Conway TGS
Tel: (07) 4982 8814 **Fax:** (07) 4982 3459
Email: conwaym@dpi.qld.gov.au
Website: <http://www.powerup.com.au/~tgsoast>
To submit posters contact:
Karen Healey, University of Queensland, Gatton College
Tel: (07) 5460 1307 **Fax:** (07) 5460 1112
Email: k.healey@mailbox.uq.edu.au

Fire Management

Joint Fire Science Conference and Workshop Crossing the Millennium: Integrating Spatial Technologies and Ecological Principles for a New Age in Fire Management 15–17 June 1999, Idaho, US

Venue: Grove Hotel, Boise, Idaho, US
The purpose of the conference and workshop is to collect, share, and synthesize information by bringing together all fire research and management activities in four topic areas. These areas are mapping, GIS and remote-sensing technologies, modelling fuel and fire behavior, and treatments.
Contact: Greg Gollberg
Email: goll9151@uidaho.edu
Websites: <http://fire.for.uidaho.edu/>
http://www.nifc.gov/joint_fire_sci/plan.html
http://www.nifc.gov/joint_fire_sci/index.html

Bushfire 99, National Bushfire Conference**6–9 July 1999, Albury****Venue:** The Albury Convention and Performing Arts Centre (ACPAC), Swift Street, Albury NSW.**Theme:** Flammable Australia: the fire regimes and biodiversity of a continent.**Contact:** Mr Brian Lord, CSU**Postal Address:** BUSHFIRE 99

Charles Sturt University

PO Box 789, Albury, NSW 2640

Tel: (02) 6051 9718 **Fax:** (02) 6051 9897**Email:** bushfire99@life.csu.edu.au**Website:** [http://life.csu.edu.au/bushfire99/Aboriginal Interests](http://life.csu.edu.au/bushfire99/Aboriginal%20Interests)**National Aboriginal and Torres Strait Islander (NAIDOC) Week 4–11 July 1999, National Events****Theme:** The theme for NAIDOC 1999 is respect. NAIDOC Week is the outcome of a long history of Aboriginal and Torres Strait Islander efforts to bring issues of concern to the attention of governments and the general public. This year Alice Springs will host national events. Entries in the NAIDOC art competition close on 17 May 1999.**Contact:** Aboriginal and Torres Strait Islander Commission**Postal Address:** PO Box 17

Woden, ACT 2606

Tel: (02) 6289 3020 **Fax:** (02) 6282 2854**Website:** <http://www.atsic.gov.au/>**Pastoral Interests****Central Queensland Extension Forum****18–20 May 1999, Yeppoon****Venue:** Outdoor Reception Centre, Yeppoon, Queensland.

The forum is intended for R&D and extension practitioners involved in either primary industries or natural resources including government, private and community organisations.

Contact: Mrs Jan Chopping

CQ Extension Forum Contact Officer

Tel: (07) 4936 0360 **Fax:** (07) 4936 0345**Email:** choppij@dpi.qld.gov.au**Country Matters Conference 20–21 May 1999, Canberra****Venue:** National Convention Centre, Canberra.

The Social Sciences Centre of the Bureau of Rural Sciences (within

Agriculture, Forestry, Fisheries—Australia) is conducting a national conference on the role of rural industries. The conference includes four workshops to which papers may be submitted. Themes for the workshops are: Social data and indicators; sustaining the social fabric; emerging concepts and tools; social sciences for sustainable land and water management.

Website: <http://www.brs.gov.au><http://www.brs.gov.au>**Email:** heather.aslin@brs.gov.au**Beef Expo 2000****9–16 April 2000, Central Qld****Venue:** To be announced.

The event will highlight contributions made by the national beef industry has made to the Australian society and will focus on those opportunities which will allow the beef industry to build a dynamic, secure future in the next millennium.

Website:<http://leaky.rock.tap.csiro.au/Beef2000/beef2000-structure.html>**Fauna****7th Australasian Conference on Grassland Invertebrate Ecology Sept–Oct 1999, Perth**

The conference has proven to be a major forum for interaction between Australian and New Zealand scientists researching the biology, ecology and management of both pest and beneficial invertebrates in grassland ecosystems. These systems include native grasslands, exotic pastures, pasture/crop rotational systems and managed turf.

Contact: John Matthiessen

Chair, Organising Committee

CSIRO Entomology

Postal Address: Private Bag, PO

Wembley, WA 6014

Tel: (08) 9333 6641 **Fax:** (08) 9333 6646**Email:** johnm@cmar.csiro.au**Tourism****Issues & Challenges for Ecotour Guiding and Interpretation in the 21st Century 5 July 1999, Cairns****Venue:** James Cook University, Cairns Campus.

This seminar, sponsored by CRC

Tourism, focuses on ways to improve and maintain high-quality standards for nature-based tourism guides. A panel including commercial tour guides, interpreters working in protected areas, ecotour owners and Aboriginal guides will provide a synopsis outlining the essence of being a good interpreter/guide.

Contact: Philip Pearce:**Tel:** (07) 4781 5134 **Fax:** (07) 4781 4019**Email:** philip.pearce@jcu.edu.au**Tourism Outlook Conference Practical Research for a Sustainable Tourism Industry 13–14 September 1999, Sydney****Venue:** Hotel Intercontinental, Sydney. The Outlook conference, presented by ATRi (Australian Tourism Research Institute), Southern Cross University, WTTC, Tourism Council Australia and CRC Tourism will communicate local and international research outcomes, and explore the role of research in the growth of sustainable tourism opportunities.**Contact:** Sue Clifford-Loomes at SCU:**Email:** scliffor@scu.edu.au**Ecotourism Association of Australia National Conference—The World's Natural Theme Park 14–17 October 1999, Fraser Island****Venue:** Kingfisher Bay Resort and Village, Fraser Island.

The EAA conference is an opportunity to explore how the industry can best build on and ensure the sustainability of Australia's unique assets.

Contact: Tony Charters

Conference Convenor, Tourism Queensland

GPO Box 328 Brisbane, Qld, 4001

Tel: (07) 3406 5493 **Fax:** (07) 3406 5483**Email:** charterst@qtcc.com.au**Website:** www.qtcc.com.au/ecotourism/conference99**General****The Drovers' Camp Festival 10–11 July 1999, Camooweal**

The festival includes a grand parade, bush poet competition, yarn spinning, art and photo competition, goat races, bronco branding competition, street

theatre, truck sports, yabbie races, dancing, talent quest, the great mail race and an outback sports carnival.

Contact: Drovers Camp Association
Postal Address: PO Box 4,
 Camooweal, Qld 4828
Tel: (07) 4748 2155 **Fax:** (07) 4748 2132

Desert Sands 2000

**The Great Camel Race
 17–18 July 1999, Boulia**

This annual event sees up to 80 camels showing their paces at the racetrack of central Queensland town Boulia. There is also a concert, fireworks and other celebrations.

Contact: Paddy McHugh
Tel/Fax: (07) 4721 6720

**RAPI National Planning Congress
 Planning in the Hot House**

19–23 September 1999, Darwin

Venue: Darwin Entertainment Centre
Topics include: Regional, remote and indigenous issues; links to South East Asia and the Pacific countries; multi-disciplinary approaches to planning practice, development and universal issues.

Contact: The Congress Secretariat
 Convention Catalysts International Pty Ltd
Postal Address: GPO Box 2541 Darwin,
 Northern Territory, 0801
Tel: (08)8981 1875 **Fax:** (08) 8941 1639
Email: convention.catalysts@norgate.com.au
Websites: <http://www.rapi.com.au/~rapi> Or:
www.lpe.nt.gov.au/new/whatson/rapi/default.htm

Weed Management

**11th European Weed Research
 Society Symposium
 28 June–1 July 1999, Switzerland**

Venue: Basel, Switzerland
Tel: ++41 1783 6111 **Fax:** ++41 1780 6341
Email: daniel.gut@wae.faw.admin.ch

Website: <http://www.res.bbsrc.ac.uk/ewrs>

**10th Biological Control of Weeds
 International Symposium
 5–9 July 1999, Bozeman, US**

Venue: Bozeman, MT, US
Contact: NR Spencer, USDA/ARS
 1500 N Central, Sidney, MT 59270
Tel: 406-482-9407 **Fax:** 406-482-9407
Email: nspencer@sidney.ars.usda.gov
Website: www.symposium.ars.usda.gov

**12th Australian Weeds Conference
 12–16 September 1999, Hobart**

Venue: Hobart, Tasmania
Contact: Conference Design,
Postal Address: PO Box 342, Sandy Bay
 Tasmania, 7006
Fax: (03) 6224 3774
Email: mail@cdesign.com.au
Website: http://www.css.orst.edu/weeds/iwss/Newsletter/0798/dates_events.htm

**17th Asian Pacific Weed Science
 Society Conference
 November 1999, Bangkok**

Venue: Bangkok, Thailand
Contact: Dr Sombat Chinawong
 APWSS Secretary, Department of Agronomy
 Faculty of Agriculture, Kasetsart University
 Chatuchak, Bangkok 10903, Thailand
Fax: 662 579 8580
Email: agrsbc@nontri.ku.ac.th
Website: http://www.css.orst.edu/weeds/iwss/Newsletter/0798/dates_events.htm

**Weed Science Society of America
 5–10 February 2000, Lawrence, US**

Venue: Westin Harbour Hotel, Toronto, Canada
Contact: J. Breithaupt
Postal Address: PO Box 1897
 Lawrence, KS 66044, US
Tel: 1 913 843 1235 **Fax:** 1 913 843 1274
Email: jbreith@allenpress.com

OUR STAKEHOLDERS



ABORIGINAL COMMUNITIES



PASTORALISM



TOURISM



MINING



CONSERVATION



DEFENCE

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