



# SAVANNA LINKS

Cooperative Research Centre for the Sustainable Development of Tropical Savannas

ISSUE 6

MAY-JUNE 1998

ISSN 1327-788X

## CONTENTS

### NEWS \_\_\_\_\_ 2-3

- Bush Internet Kiosk
- Desert Sands 2000
- Toads in Kakadu

### GRAZING \_\_\_\_\_ 3

- Past-it Pastures

### FIRE \_\_\_\_\_ 4-5

### FORUM \_\_\_\_\_ 6

### FLORA & FAUNA 7-8

- Rainforest Reserves
- Paradise Falters

### TOURISM \_\_\_\_\_ 9

- Wonders of Undara

### ROUND-UP \_\_\_\_\_ 10

### CALENDAR \_\_\_\_\_ 11-12

## Live cattle trade down, but not out

By Dennis Schulz

The live cattle trade between ports in northern Australia and markets in South East Asia has been one of continual, almost phenomenal, growth until the currency crisis struck various Asian economies



Asia's currency crisis and political instability are taking a heavy toll on north Australia's live cattle trade  
Photo: Dennis Schulz

late last year. The figures on movements out of Darwin, the busiest northern live cattle port, tell the story.

In the first four months of 1997, exporters shipped 122,114 head of cattle to ports in the Philippines, Indonesia, Brunei, Malaysia and East Malaysia. In the first four months of 1998, reflecting the regional economic crisis, numbers plummeted to 45,393 head. It is a downturn that has struck producers and exporters in different regions of northern Australia to varying degrees, sparking localised attempts to secure new markets in an effort to minimise their reliance on the volatile Asian economies.

Exporters in West Australia, the Northern Territory and Queensland are all suffering with many of the 30 existing ships involved in the trade today running at losses. What few ships that are moving cattle to ports in the Philippines and Malaysia are subsidised by exporters and shippers.

"If you have the choice of running the ship at cost or swinging it on an anchor, the better option would be to run it at cost," explained the WA chairman of the Australian Meat & Livestock Council, Graham Dawes. "The competition for so many ships to service a much smaller market adds to the industry's poor viability."

The Indonesian currency crisis, coupled with the country's political instability has sounded a death knell to any activity in live cattle sales. The problem is not just one of demand, but of soaring currency rates.

While no cattle are currently being shipped from any port in Australia to Indonesia, (except to the US-owned Freeport minesite in Irian Jaya) sales are continuing to the Philippines, albeit at lower, subsidised prices. The Philippine Government also dropped weight restrictions that once saw a duty levied on animals over 250 kg.

"But I don't know whether that's a blessing or a curse," said producer/exporter John Quintana, director of Darwin-based WALCO Exports. "What will happen is you'll see a lot of traders coming in, that will buy big bulls and fat cows at cheaper prices and just overload the market. That's what's happening right now. They can now buy cattle cheaper than they can feed them."

Last year live cattle were fetching \$1.53/kg in the Philippines while today prices rarely reach \$1/kg. A similar situation prevails in Malaysia, a market still serviced by WA exporters. "It's probably our best existing market but all they want is cheap meat," says Dawes. "They're not looking for quality. Prices range between .80 and .95 cents delivered."

It's a situation that has prompted exporters to look further afield, establishing new markets in the Middle East, Mexico and China. West Australian ex-

Continued on page 2



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

# Live cattle trade down, but not out

From page 1

porters have sent shipments of live cattle on 20-day excursions to Egypt and Libya, with Libya possibly continuing the trade into 1999.

Territory and Queensland producers have been buoyed by the recent deal opening live cattle exports to southern China. Health protocols have now been established and the deal was signed on April 24 after lengthy negotiations between industry associations, Federal, State and Territory governments and Chinese officials.

Industry insiders estimate trade to begin within three to six months. "We appear to be in business but there needs to be some feedlot construction and abattoir modifications done in China before we can actually begin exporting," reported Ainsworth.

Roger Kaus, Operations Leader, Live-stock Exports at Department of Primary Industries Queensland, believes the exports to China will go some way towards revitalising the live cattle trade, particularly in Queensland.

"I think they will take 20,000 head of cattle in the first year of trading — and we can see it putting a pathway

into the boxed beef trade in years to come," he said. "This deal is also helping in other markets . . . [and we] may become a possible exporter to Mexico in the future."

The downturn in the live cattle trade as had obvious disastrous effects on cattle exporters and shippers, but how it has affected the producer on the land is less obvious. It has possibly affected Queensland producers less than others because, for them, prices remain depressed.

It has however, generated major negative economic effects on WA and NT producers. Abattoir prices are depressed across Australia, offering no alternative to the live cattle downturn.

That means producers must either hold on to their stock, hoping to get a higher price later on, or accept the lower prices to generate some cash flow, which is the road most take.

"We're sending cows and bulls through the slaughterhouses up here just to keep those operations alive," said Quintana. "They're paying under a dollar a kilo — that's dressed, not live — so you're nearly giving them away."

Most believe that producers are selling their cattle below their cost of production.

"You still have to brand your calves, muster your cattle and cut your fire breaks, so most of your costs are not avoidable," said Ainsworth. "Your income however is dramatically reduced. But most big properties are able to cope with that roller coaster — at least in the medium term."

The Australian Meat Trading Floor has a comprehensive Web site on trading livestock, including live cattle exports. Go to: <http://www.aginfo.aust.com/amtf/amtf.html>

The Tropical Beef Research Centre has research fact sheets, information on breeding and links to related sites. Go to: <http://leaky.rock.tap.csiro.au/tbc.html>

The Cattlemen's Union of Australia has Cattlecall, a weekly information sheet and contacts for all its offices. Go to: <http://www.farmwide.com.au/Nff/cattlemen/cmu.htm>

## Desert Sands 2000

**A racetrack meeting with a difference is being held on the weekend of July 18-19 in the Queensland town of Boulia. Instead of betting on a horse, you can figure the odds on some of Australia's finest outback camels as up to 80 beasts show their paces in the second Desert Sands 2000.**

**Boulia's population of 300 swelled to more than 3000 for the race last year and locals are expecting the same this year. However it's more than just a race: heats for the camels on Saturday are followed by a concert and fireworks that night, with the finals on Sunday. Contact: Paddy McHugh, Tel: (077) 463 333.**

## Step into your bush Internet Kiosk

For those living in rural and remote areas of Australia access to the Internet is not always a simple proposition; even with the latest equipment limited infrastructure can mean long download times, or simply no access at all.

In an effort to allow rural communities greater access to information and services on the Internet, DPIQ has opened public access kiosks in a number of its offices throughout north-west Queensland.

The kiosks have been installed in DPIQ offices at Biloela, Bundaberg, Charleville, Charters Towers, Emerald,

Gympie, Longreach, Mareeba, Roma and Warwick. Staff will be on hand to help with any problems.

The kiosks are available on a free, 12-month trial. Queensland Primary Industries Minister Mark Rowell said the initiative would provide Queensland rural communities with far greater access to information available on the Internet.

Mr Rowell said that the Internet kiosks would provide timely and relevant information using new and emerging technology. DPIQ will examine data generated by the kiosks to gauge the viability of the service.



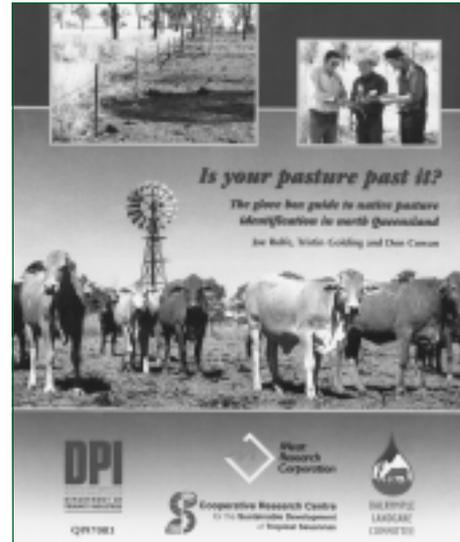
## Take a look: are your pastures getting past it?

A glove box guide has been produced by the Department of Primary Industries for native pasture identification and grazing management in North Queensland. *Is Your Pasture Past It?* is a loose-leaf ringbinder of plasticised colour pages compiled by Charters Towers extension officer Joe Rolfe, field assistant Tristin Golding and Bowen Futureprofit extension officer Don Cowan as a durable field manual to help producers maintain productive, perennial pastures.

'It's designed to help beef producers in North Queensland to identify pasture species on their property in order to make better grazing management decisions,' Joe Rolfe said. 'As a guide it covers 62 native grass types and seven forb, legume and other common species, which are the vital to sustainable beef production in north Queensland.'

Each plant is described under a 3P concept, which rates its perennial, productive and palatable characteristics.

'3P plants are the most desirable grasses for beef production. Regular wet season spelling and maintaining moderate stocking pressures and will help retain these grasses in the pasture,' Joe explained. 'Most grasses are also defined as being pasture increasers or decreasers. Decreaser grasses are the ones most eagerly sought after by grazing animals — they tend to decrease as grazing



Producers can use the manual to look at the composition of their native grasses and adjust grazing management to favour those that are desirable.

pressure increases. 'Increaser grasses, on the other hand, become better established because they are less palatable — they tend to increase as more favoured species are grazed out.'

Sponsored by DPI's Doing More With Our Services program, the Dalrymple Landcare Committee, Meat Research Corporation and Tropical Savannas CRC, the guide is already being used for grazing management workshops around the region. — *Anna Cahill*

The book is \$30 from DPI offices in Charters Towers, Bowen, Mareeba and Brisbane. Contact: Joe Rolfe, Extension Officer DPI Charters Towers. Tel: (07) 4787 2155. Don Cowan, Futureprofit Extension Officer, Bowen DPI. Tel: (07) 4785 2255



## Cane toads hop ever closer to Kakadu

**K**akadu National Park is preparing for the arrival of the ubiquitous (and probably unstoppable) cane toad with a series of research projects aimed at monitoring the impact of the pest. The toads are now almost 100 km east of Mataranka. As Piers Barrow (Project Officer, Natural Resource Management) points out, no one has ever been able to halt the spread of the toad or eradicate it.

They are poisonous to predators and their eggs and tadpoles are also toxic. Native predators at risk include fish, reptiles, birds and mammals. There is also the impact of

greater competition for resources to take into account as well as the toads' own predatory habits.

Dr Barrow writes that Kakadu's indigenous frogs are one group of animals likely to suffer heavily from the impact of the toads. A research program devised and run by Professor Gordon Grigg of the University of Queensland will monitor the population levels of all frog species at several points in the park. Listening posts have been set up which can record, by their calls, the abundance of frogs. The toads' calls, when they arrive, will stand out.

The Green Corps are also carrying out a fauna survey at about 70 sites throughout the park. The survey will provide baseline information which can be built on as the toads get nearer. The research will also be incorporated into the Park's fire research program, to help understand the effects of different fire regimes on small animals.

*(From Kakadu Gun-Wok, the newsletter for the Kakadu National Park Tourism Industry newsletter)*

CSIRO has a Web page on the cane toad with links to other sites with information on the toad: [www.ah.csiro.au/Topics/toad.htm](http://www.ah.csiro.au/Topics/toad.htm)

# Fire on the Savannas

By Dennis Schulz

Photo: Bob Karfs

While land managers throughout Australia continue to debate whether to burn or not to burn, those at a recent CRC fire workshop arrived at an early consensus: burning is an important and necessary tool to effectively manage the northern savannas. Further, disregarding fire management may prove fatal to individual operations and the health of the land.

The North Australian Fire Management Workshop, held by the Tropical Savannas CRC in Darwin from March 24 to 25, drew more than 100 participants from as far afield as the Kimberleys to the north Queensland coast.

Those at the forum quickly realised that regardless of which region they came from or what sector of land use they represented, all had a great deal in common when it came to fire management. And their backgrounds were diverse: pastoralists, Aborigines, conservationists, scientists, tour operators and representatives from the military, tourism and mining sectors. All had gathered together to discuss the use of fire as a land management tool in the north Australian landscape.

One issue that was raised was common to all stakeholders: wildfires represent a constant and growing problem. Today there is less planned burning because fewer people are moving

**'There has also been a decline in the technology of fire management especially among pastoralists and Aborigines.**

**"We've lost the library," was a concern commonly voiced.'**



*Pictured above is traditional owner Dean Yibarbuk and, below pastoralist and teacher, Jeff Baker — just two of the workshop's participants. Photos: Dennis Schulz*



across the land than they did even 20 years ago. That means a fuel load of unburnt grasslands accumulates, raising the prospect of a wall of fire sweeping across the landscape when ignited. There has also been a decline in the technology of fire management especially among pastoralists and Aborigines. "We've lost the library," was a concern commonly voiced.

Discussions at the workshop identified a gap in communication between neighbouring landholders, where neighbours often omitted to notify each other of pending wildfires or planned fire regimes.

Speakers from various sectors drew insights from each other's experiences: pastoralists like Jeff Baker from Mataranka station in the Top End spoke at length about his meticulous burning strategies.

Others found that their philosophies on burning did not differ much from traditional burning by Aboriginal landholders. All were fascinated by Dean Yibarbuk's talk on traditional burning regimes still practised in the region of his Maningrida homeland.



Photo: Dennis Schulz

Scientist Jeremy Russell-Smith

Scientists such as the CSIRO's Alan Andersen and the NT Bushfires Council's Jeremy Russell-Smith spoke about how science and land managers can work together for mutual benefits, discovering more about the actual effects fire has on the savannas.

There is still much to learn. As zoologist John

Woinarski, from the Parks and Wildlife of the NT pointed out, many of the long-term effects of wildfire on the region's biodiversity are still unknown. Science will play an ever-increasing role in future north Australian fire management. All attending were encouraged to use the latest advances in technology to their advantage when dealing with fire on the savanna.

Regularly updated remote sensing information can now be accessed on the Internet. Home computers can play a practical role in modelling wildfires or managed burns, and workshops like the CRC event provide wide-ranging benefits to all stakeholders. They offer a forum for an interchange of ideas that will hopefully lead to a better understanding of the important relationship fire has to the sprawling north Australian savanna.

**Related Information:** The Department of Land Administration has data from the NOAA-AVHRR satellite sensor on fuel load build-up, hot spots and fire history on the Internet. Go to: <http://www.rss.dola.wa.gov.au/apps/firewatch.html>

Woinarski, from the Parks and Wildlife of the NT pointed out, many of the long-term effects of wildfire on the region's biodiversity are still unknown. Science will play an

**'To go forward we need to encourage our children in the way of the past. Fire must be managed and people must be on the country to manage that and that's a job for the future.'**

*Dean Yibarbuk, Bawinanga Corporation at the CRC Fire Workshop*

*A booklet on the CRC Fire Workshop is currently under production. Called Burning Issues: In Our Own Words, it captures some of the diverse fire management practices and perspectives across northern Australia.*

*Edited by Dennis Schulz, the booklet will be available soon from the Tropical Savannas CRC.*

**'... when we're talking about fire management in northern Australia, we're talking about management of the effects of fire not fire itself. So fire management should really be viewed as a way of managing land, not managing fire.'**

*Alan Andersen, CSIRO TERC, at the CRC Fire Workshop*

## Rural fire forum brings together services

One of the outcomes of the CRC Fire Workshop was the creation of a new body to tackle fire management issues across the whole of north Australia: the North Australian Rural Fire Management Forum.

It involves the heads of the rural bushfire services from Queensland, Northern Territory and Western Australia together with scientific and communication support from the Tropical Savannas CRC.

The idea stemmed from the fact that the rural fire services operating across north Australia face the same distinctive fire management problems: late, dry-season wildfires spreading over vast areas; working with pastoralist and Aboriginal land managers; dealing with scant resources, harsh climates and remote communities.

There was much to be gained from working with each other — from sharing knowledge to making more efficient use of shared resources to developing common strategies. After all, many of the fire management prob-

lems and the fires themselves cross state and territory boundaries in the north.

The first initiative of the forum, which met in Brisbane in mid-May, was to develop a fire management program that took into account the whole of northern Australia. The program has three parts:

- Coordinating the various fire management studies that have started or will soon start across northern Australia;
  - Coordinating remote-sensing and ground-truthing research;
  - Setting up a communication strategy that brings traditional and experiential knowledge of fire management together with fire research findings.
- Funding for this initiative will be sought from the new "targeted investment" Bushcare program recently set up by the Federal Government.

More information contact:  
Jeremy Russell-Smith: Tel: (08) 8984 4000  
Peter Jacklyn: Tel: (08) 8946 6285



## Hot Air on Greenhouse Effect

*Extract from an opinion piece by Michael Duffy in The Weekend Australian 30/5/98*

One of the most influential pieces of factual fairy floss of recent times was the statement, repeated often at dinner parties and in the media last year, that the 2000 scientists on the United Nations Intergovernmental Panel on Climate Change were climate experts concerned about global warming. It was a load of baloney.

In fact, only a minority of the 2000 were climate scientists, and in most cases their opinion was not sought — or was sought and ignored — by those who wrote the relevant report. Some of them have become so annoyed by the repetition of the “2000” figure that they have now joined 15,000 other scientists in signing a mammoth petition debunking the greenhouse hysteria.

(Which still exists: plans are afoot to block off 10 per cent of Sydney’s Centennial Park from the public, to turn it into a “carbon sink”.) It’s worth quoting some of the petition: “There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth’s atmosphere and disruption of the Earth’s climate.

“Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth.” This petition’s covering letter was written by Dr. Frederick Seitz, a past president of the US National Academy of Sciences. It was organised by volunteers and supported by private donations, with no contributions from industry.

One of the scientists involved, Dr. S. Fred Singer, explained his motivation in signing the petition: “Scientists are understandably upset when they see \$US 2 billion per year devoted to research on climate change, much of it irrelevant and concerned only with imaginary consequences of a hypothetical warming — while other areas of science are starved.”

The full list of signatories can be seen on the Internet at [www.sepp.org](http://www.sepp.org). Let’s hope that those in the media who helped pump up the greenhouse balloon will feel obliged to refer to these 15,000 scientists if they report on the subject again.

*Michael Duffy is a columnist with The Australian*

## Can science resolve policy disputes?

*This piece deals with the role that science plays in debates like those on global warming. It is from Daniel Sarewitz, p.93 of his book Frontiers of Illusion, Temple University Press, 1996*

More scientific advice, and more data delivered to the government, will not soon resolve most of these disputes. In fact, closer links between researchers and policy makers could exacerbate some problems by adding new layers of controversy and complexity to public debate, obfuscating the political or cultural roots of social problems, and alienating non-expert participants in the political process. Nor will a more scientifically literate populace necessarily contribute to faster or more satisfactory dispute resolution — more literate members of the public will presumably give more credence to scientific information that supports their preexisting political inclinations.

Overall, a dependence on the ability of authoritative science to rationally adjudicate major political conflict probably heightens the level of both political and scientific controversy. Politics, after all, is mostly about resolving disputes. Science on the other hand, is process of inquiry, of asking questions. When a field of inquiry stops yielding new questions, it is no longer science.

Definitive answers are uncommon indeed, and elegant predictive descriptions of entire systems are the rare stuff of

scientific revolutions. Research in the natural sciences is therefore an effective tool for alerting society to potential problems, but is intrinsically ill-suited for prescribing solutions to those problems.

*Daniel Sarewitz directs the Institute for Environmental Education at the Geological Society of America. He worked for four years on science policy issues for the US Congress.*

**Forum aims to provide a space where topics of concern to those living and working across the tropical savannas can be debated.**

**If you want to respond to any of the issues raised in this section, or make your own contribution on an area that concerns you, please Email us at [savanna@ntu.edu.au](mailto:savanna@ntu.edu.au)**

**Or Tel NT: (08) 8946 6285; Fax: (08) 8946 7107  
Qld: (07) 4781 5967; Fax: (07) 4781 5515.**



## Rainforest patches provide the link

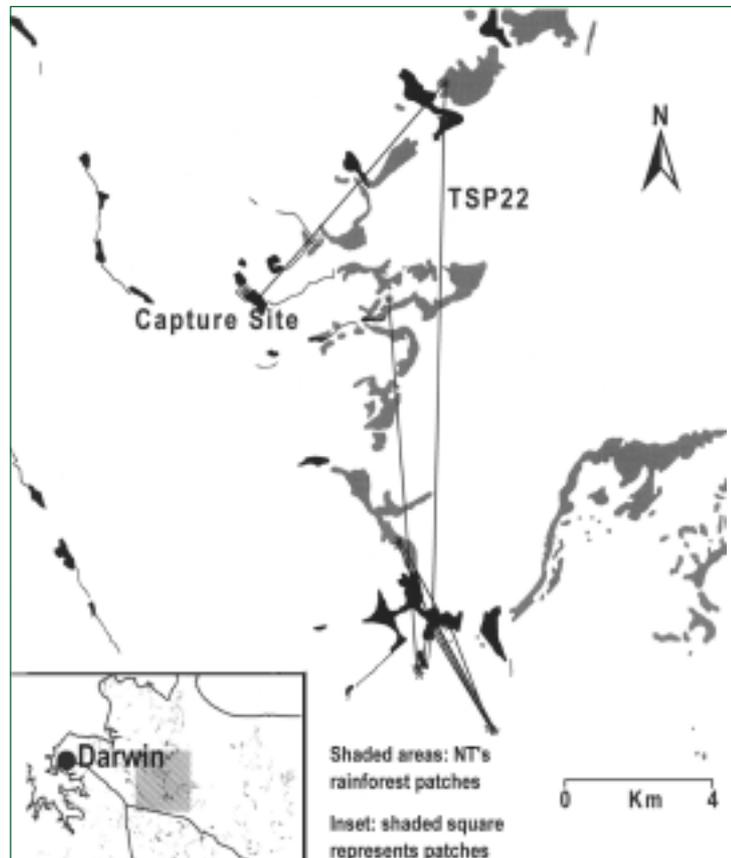
A three-year study by the Parks & Wildlife Commission of the NT, in collaboration with Northern Territory University, has recommended a new network of land reserves to preserve the plants and animals of the Top End's rainforest patches. Through integrating a series of projects, scientists Owen Price, Christine Bach, Alison Shapcott and Carol Palmer uncovered a delicate natural balance in which the rainforest patches and their animals, particularly those that move between patches, are reliant on one another for survival.

Rainforest patches occupy 2700 square km of the NT — only 0.2 per cent of the land area — and are made up of 15,000 small patches with an average size of 3.6 hectares. "Despite their scattered and small nature, these patches include 13 per cent of the NT's known plant species, many of them rare," said Mr Price. "Our research has found that protecting these rainforest patches must take into consideration the needs of the animals that use them because without the animals the patches themselves will decline and vice versa."

This is because each rainforest patch does not provide all the resources some of these animals require, fruit-eating birds and flying foxes in particular. These animals must move between patches, while also seeking food from other surrounding habitats, during times when few rainforest plants are fruiting. "In moving between these patches and across the surrounding landscape, these animals are dispersing seeds, providing new plants to maintain the diversity of species existing in rainforests," said Mr Price.

The project's research focused on several species of fruit-eating birds including Pied Imperial-pigeons (Torres Strait Pigeon), Rose-crowned Fruit-doves, Figbirds, Yellow Orioles, Common Koel and Great Bowerbirds, along with the Black Flying Fox. "As an example of the integral part these animals play in the survival of rainforest patches, our research found that flying foxes deposit about 350 seeds each night into an average sized rainforest patch at Gunn Point and birds about 190 seeds a day," explained Mr Price.

The research suggests that in dense areas of rainforest — such as between Darwin and Kakadu National Park — the loss of about half to two-thirds of rainforest patches would likely result in the extinction of frugivore (fruit-eating) species from remaining patches. The gradual extinction of plant species would then be an inevitable consequence.



**Interdependence of plants and animals:** This figure shows NT's rainforest patches and the movement of one Torres Strait Pigeon, TSP22, captured on October 1, 1996. The lines show its pattern of movement between rainforest patches: over 78 days it flew 65.5 km dropping about 10-20 seeds in each rainforest patch.

In recognising this inter-dependence and studying the threshold at which the ecological equilibrium is maintained, the study recommends a number of guidelines for the design of reserves aimed at protecting rainforest and the animals that use them. This includes a suggestion that clusters of rainforest patches be reserved. Each cluster should be made up of all of the rainforest patches (with a minimum area of 32 square km) and a variety of other habitats in a circle of up to 50 km radius. The report says about seven clusters would be needed across NT to protect all flora and fauna species associated with rainforest patches.

Mr Price said these suggestions had been made for inclusion in PWCNT strategies, in particular a Parks Master Plan for the Darwin region currently under development. However, he said that all landholders could assist in protecting the delicate balance of nature across the Top End. "Remember, when you cut down that tree or clear that patch, however small, the loss from the landscape could trigger a cascading decline among plants and animals in nearby rainforest patches that previously relied on your piece of bush remaining in the network," he said.

For more information contact: Owen Price,  
PCWNT, Tel: (08) 8944 8467



# Paradise falters for seed-eating birds

By Don Franklin

The tropical savanna boundary is home to many of Australia's seed-eating birds, with 55 of Australia's 90 species found there<sup>1</sup>. An alarming number of these birds are in trouble with problems proportionally more severe than for any other faunal group in the tropical savannas — and more severe than for seed-eating birds in other parts of Australia.

For example, in Queensland, the range of the Gouldian Finch has retreated 200 km northward on a front that is nearly 1000 km long. The Gouldian Finch has also disappeared from substantial areas in Cape York. During a survey at Pine Creek in the 1960s about 1000 Gouldian Finches were caught and banded in one week. In 1996, a similar survey was hard pressed to find half a dozen birds in a three-month survey.

In the face of a short period of European settlement in the savannas, serious problems for these birds have emerged. In contrast, the widespread species that dominate most seed-eating bird communities in Australia south of the tropics have mostly thrived despite what would appear to be much greater habitat degradation.

Is there a key to this pattern of change in the bird community? Using bird records collected throughout Australia for the *Atlas of Australian Birds* and a large historical database of records compiled from the literature and museum records there are some basic biogeographic questions about the birds that can be answered.

What we do know is that northern Australia is especially rich in seed-eating birds that feed exclusively on the ground, and outstandingly rich in finch species, with 14 of Australia's 18 species at home in the savannas. Thirteen species and 10 additional subspecies of seed-eating bird are found nowhere else in the world (see

## Found only in Australia's tropical savannas

■ Chestnut-backed Button-Quail ■ Buff-breasted Button-Quail ■ Partridge Pigeon (both subspecies) ■ White-quilled Rock-Pigeon (both subspecies)  
 ■ Chestnut-quilled Rock-Pigeon ■ Northern Rosella ■ Golden-shouldered Parrot ■ Hooded Parrot ■ Long-tailed Finch ■ Masked Finch (both subspecies) ■ Yellow-rumped Mannikin ■ Pictorella Mannikin  
 ■ Gouldian Finches

### Plus sub-species of:

■ Squatter Pigeon ■ Little Corella ■ Sulphur-crested Cockatoo ■ Australian Ringneck ■ Double-barred Finch ■ Black-throated Finch ■ Crimson Finch  
 ■ Star Finch ■ Red-browed Finch ■ Chestnut-breasted Mannikin

box). Yet, and perhaps surprisingly, not one of these species can be said to be characteristic of the tropical savannas: they do not necessarily occupy all of the savannas, and many of them have restricted distributions.

Two, the Buff-breasted Button-Quail and the Kimberley subspecies of the Partridge Pigeon have such small distributions and are so rare, difficult to identify or occupy such inaccessible terrain that you can count the number of documented records on your fingers and toes! Twelve of the taxa listed in the box occur only in the Kimberley and Top End, and five in north Queensland only.

Classifications of seed-eating bird communities throughout Australia reveal a well-defined and sharp transition from the tropical savannas to the arid zone. But if you thought the Mitchell grasslands of the Barkly Tableland were tropical savannas, you obviously didn't ask the birds.

Birds found in this region have more in common with birds found in more arid parts of Australia rather than in the classic tropic woodlands. On the other hand, birds found in the tropical savanna communities are much closer to those of the eastern Australian woodlands, and the boundaries are less clear.

How so many species co-exist, and why so many have such restricted distributions, remains unknown. But

that diversity may have been their undoing, for the more specialised a species, the more vulnerable it is to changes in its environment. Even a small shift in the nature of the ecosystem can mean certain species get pushed out of the system. The fact that so many seed-eating bird species appear to have evolved in the tropical savannas argues both for the considerable age of the savannas and for the diversity and reliability of the resources it provided. It is thought that the climate and eucalypt savannas became established about 15 million years ago.<sup>2</sup>

In the near future, I hope to be able to define the nature and extent of the problems of seed-eating birds in the tropical savannas with much greater clarity. In the process perhaps we'll find some clues to the real questions — why so many problems, and what can we do about them?

*Don Franklin is a CRC researcher with the Parks and Wildlife Commission of the NT and has studied seed-eating birds of the savannas for the past two years.*

1. These numbers vary a little depending on where you define the tropical savannas, and how you define a seed-eating bird.

2. Dunlop, C.R. & Webb, L.J. (1991). Flora and vegetation. pp 41-60 in *Monsoonal Australia: Landscape, Ecology and Man*. (Eds M.G. Ridpath, C. Haynes & M.A.J. Williams). A.A. Balkema, Rotterdam, 231 pp.

Pole, M.S. & Bowman, D.M.J.S. (1996) Tertiary plant fossils from Australia's Top End. *Australian Systematic Botany* 9: 113-126.



## Undara: volcanic hidden wonder

**B**eneath the open savanna woodlands of western Queensland exists one of the world's geological wonders: a system of caves and tubes formed from the flowing lava of a long-ago volcanic eruption.

That eruption was from the Undara volcano — which occurred about 190,000 years ago — and it produced what is believed to be the longest lava tube system known in the world: the Undara Lava Tubes. These tubes were formed as the lava followed the channels of watercourses (see box). As lava becomes exposed to air it hardens, but in the watercourses this happened only on the surface and the sides, thereby creating a conduit for the enormous volume of Undara's lava.

One branch of Undara's flow, to the north-west, continues for more than 160 km — the longest recorded flow from a single volcano in the world. When the lava finally halted and drained, the tubes were left much as we see them today. More than 60 caves and arches have been discovered so far, including a section of lava tube more than 1.3 km long. Collapsed roof sections in the tubes provide the entrances to the caves.

Today the area of the Undara Lava Tubes is a national park, with tours to the caves run by the Collins family who formerly ran cattle in the area, and their band of guides: the Savannah Guides. The guides run interpretive tours of the tubes, filling visitors in on Undara's unique flora and fauna, features of the caves and the area's history — volcanic and cultural. Visitors can stay at the Undara Lava Lodge, built in 1990 by the Collins' family; it is also where the tours to the tubes are run.

Remarkably, the tubes were largely unknown to the general public until the last few years. Scientific investigation of the tubes and their origin owes much to the dedication

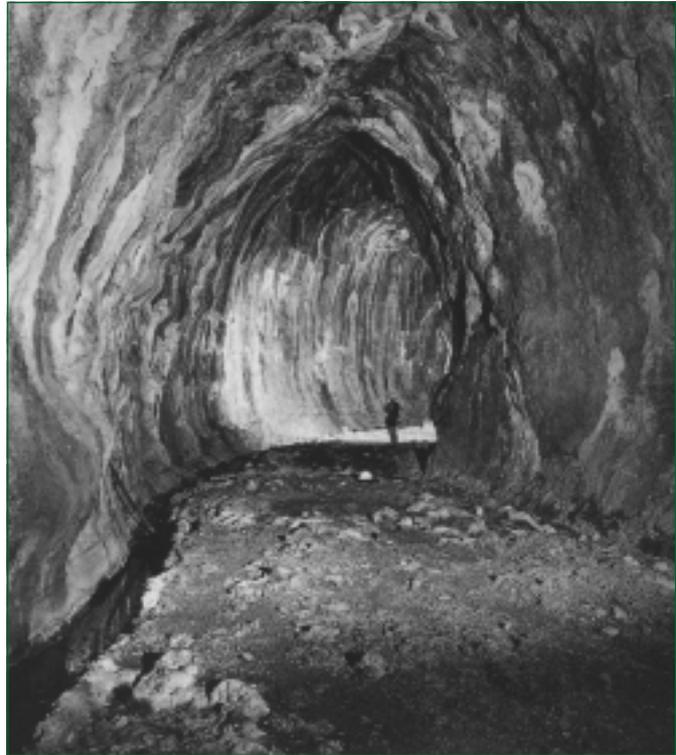


Photo: H.J.L. Lamont, JCU

One of Undara's remarkable caves, Barkers Cave, 50 m from its entrance. At this point, the tube is more than 13.5 m high — one of the greatest heights yet measured in the Undara Lava Tube System.

### Undara's remarkable lava tubes

- Lava flowed more than 90 km to the north and over 160 km to the north west — becoming the world's longest lava flow from a single volcano
- An estimated 23<sup>3</sup>km of lava flowed from the volcano at about 1200°C
- Lava covered more than 1550 km<sup>2</sup> of the land
- Main branch of lava tube system extends for more than 110 km
- The Wall, a ridge created by lava flowing for more than 40 km along a major watercourse, stands 20 m above the surrounding countryside and is most like the smaller basaltic ridges on the moon.

From *Undara Volcano and its Lava Tubes*, Anne and Vernon Atkinson, 1995.

of Anne and Vernon Atkinson who, with their family, undertook geological research on the tube systems in the early '70s. Since then a number of researchers have investigated the tubes so that today we have a better understanding of this type of volcanic flow. In fact, NASA has identified structures similar to the Undara tubes on the moon and Venus. According to the Atkinsons' book, *Undara Volcano and its Lava Tubes*, analysis of radar data from NASA's Magellan Space Probe to Venus has proposed that aligned depressions in volcanic areas on Venus may be connected through lava tubes.

Undara is an Aboriginal word for "long way", and while it may be off the beaten track for many, it's well worth the visit. It is about six hours drive west from Townsville, four hours' drive from Cairns, and two hours from Georgetown. The nearest town is Mount Surprise 55 km away. Undara Lava Lodge also has its own air strip.

— Kate O'Donnell (who visited Undara at Easter)

For more information: *Undara Volcano and its Lava Tubes*, by Anne and Vernon Atkinson, can be purchased at Undara Lava Experience, or by writing to the Atkinsons at PO Box 505, Ravenshoe, Qld 4872.

For tours of the tubes, contact Undara Lava Experience  
Tel: (07) 4031 7933; Fax: (07) 4031 7939.

Email: undara@internetnorth.com.au

## Project looks at production and biodiversity

The CSIRO Division of Tropical Agriculture has established a research project to help beef producers adopt land management practices that result in sustainable management of grazing lands. The four-year project 'Incorporation of Practical Measures to Assist Conservation of biodiversity within Sustainable Beef Production', is already under way and the research team (Sue McIntyre, Neil MacLeod and John McIvor) is working closely with beef producers from four case study properties in the Burnett and Brisbane Valley regions.

A whole property approach is being used to enable producers and other stakeholders to consider the trade-offs in both production and conservation of biodiversity. Information based on ecological research will be used to refine management principles and indicators of ecological health and biodiversity status. A communication program will ensure these concepts will reach a large number of properties managers by the completion of the program in 2001. To help achieve this, the project team will develop teaching materials for extension activities, as well as a technical manual for producers wanting to implement sustainable management on their properties. The project is funded

jointly by the Meat Research Corporation (North Australia Program), Environment Australia, and the Land and Water Resources Research and Development Corporation. Contact Dr Sue McIntyre, CSIRO Tropical Agriculture Tel: (07) 3214 2700.

(From NAP, Newsletter of the North Australia Program, Summer 1998)

## Fabulous science festival

Success for Science: the recent Australian Science Festival may be succeeding in its aims of bringing science to the general public. A survey carried out at the festival's Amazing World of Science Exhibition found that 88.2 per cent of people who attended said they would attend the event next year. A whopping 98.2 per cent said they were very satisfied with the festival. There were many interstate and international visitors included people from China, Korea, New Zealand and Japan. The survey also found that 52 per cent of people had changed their attitude towards science for the better after attending the festival.

## Mouse in from the wild

Remember our marsupial mouse, the Sandstone Antechinus, from last issue? Or rather (in more descriptive terms) the Fat-tailed Antechinus?

Here is one pictured left, after a thorough feeding-up at the Queensland Museum in Brisbane, where it arrived in January. Note the swollen carrot-shaped tail: this species stores food in its tail, allowing it to gorge in good conditions (obviously conditions are good at the Queensland Museum) in preparation for when supplies aren't so forthcoming.

CSIRO researcher Tony Griffiths found three of the marsupial mice in north-west Queensland during a



Photo: Bruce Cowell, Qld Museum

The Sandstone Antechinus: a new addition to Queensland's known fauna

fauna survey for MIM late last year. The mouse has only ever been sighted before in central and western Australia.

## Forecast facility opens to help with variable climate

A \$15 million climate and applications forecasting facility has been opened in Queensland to help farmers, industry and government make better decisions in response to Queensland's highly variable rainfall and climate. Located in Towoomba, the Queensland Centre for Climate Applications (QCCA) is a joint initiative of DPIQ and DNRQ.

The QCCA seeks to improve both the long-term economic viability of

Queensland's rural industries and the sustainability of the State's natural resources. It aims to help keep landholders at the forefront of advances in climatology, seasonal forecasting, and knowledge of climate change.

The QCCA will also assist with Landcare objectives for the management of water, land and vegetation resources and property management planning. The Centre will build on ex-

isting products and services such as the RAINMAN, WHEATMAN and GRAZEON software, the Longpaddock Internet site, phone and fax SOI hotlines, the book Will It Rain?, and the Managing for Climate PMP workshops.

Contact: Greg Jones, Executive Officer, QCCA, Tel: (07) 3239 6953

Web site: <http://www.dpi.qld.gov.au/qcca/Welcome.html>

**General****CSIRO Seminars  
Response to defoliation of C4  
grasses exposed to ambient and  
elevated CO<sub>2</sub>  
Friday, June 26 11am**

Dr Lynn Walker, CSIRO Tropical Agriculture, Davies Lab Townsville.  
Tel: (07) 4753 8500

**Indigenous Issues****NAIDOC Week (National  
Aboriginal and Islander Day  
Observance Committee)  
Theme: "Bringing Them Home"  
July 5-12.**

NAIDOC Week is the highlight of the year for many Aboriginal and Torres Strait Islander people and their supporters. NAIDOC week is a time to exhibit the rich cultural heritage of the Aboriginal people and their positive contribution to the nation's identity. Contact: ATSIC PO Box 17, Woden ACT, 2606 Tel: (02) 289 1222 Email: [atsicopa@atsic.gov.au](mailto:atsicopa@atsic.gov.au) URL: <http://www.atsic.gov.au/>

**Our Health Our Dreaming  
1st Congress of indigenous  
health.  
August 19-21, Cairns**

Contact: Conference Secretariat:  
Indigenous Conferencing Services  
Australia  
8 Fuscina Court, CAIRNS QLD 4870  
Tel: +61 (07) 40 336480 |  
Fax: +61 (07) 40 336485  
Email: [ics@iig.com.au](mailto:ics@iig.com.au)

**Workshop on Indigenous Use of  
Wetlands  
September 29-30, Batchelor.**

Venue: Batchelor College. Held by Centre for Tropical Wetlands and NTU Centre for Indigenous Natural and Cultural Resource Management (CINCRM).

The workshop aims to:

- Document the range of uses made of wetlands by indigenous people in north Aust.

- Record the significance of those uses for maintaining traditional lifestyles and culture,
- Record the land management practices adopted to maintain important values,
- Identify threats to important values and the maintenance of local management practice
- Consider options for expanding the use of wetlands owned or managed by indigenous people for subsistence or commercial purposes
- Analyse interactions between new and traditional uses and practice and ways of minimising conflicts among these
- Consider ways to develop equitable partnerships between indigenous wetland owners and managers and non-indigenous researchers and managers.

Maryanne McKaige CTWM Coordinator  
Tel: (08) 8946 6726 Email: [ctwm@ntu.edu.au](mailto:ctwm@ntu.edu.au)  
Ecological Management

**Attack of the Acid Sulphate Soils  
June 25, 3.45pm**

by Errol Best, Australian Institute of Agricultural Science & Technology Seminar Series. Mareeba DPI, Peters Street, 3.45pm Conference Room. Contact: John Clarkson, DPI Mareeba  
Tel: (07) 4092 8555

**Queensland Landcare &  
Catchment Management  
Conference  
June 29-July 1, Cairns**

Theme: Forging the Links  
Venue: Cairns Convention Centre  
Contact: Conference organiser Warren Maher, Babinda Tel: (07) 4067 1313

**Society for Conservation  
Biology International Meeting  
1998  
July 13 -16, Sydney**

The 12th annual meeting and the third international meeting of the Society for Conservation Biology will be held at

Macquarie University, Sydney, Australia from July 13-16 1998.

**ISEM '98. Meeting of the  
International Society for  
Ecological Modelling.  
August 2-4, Maryland, US.**

Venue: Baltimore, Maryland.  
Held in association with the 49th Annual Meeting of the American Institute of Biological Sciences. Contact: Anthony King, Bldg. 1000, MS 6335, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, Tennessee 37831-6335. Tel: 423-576-3436; [awk@ornl.gov](mailto:awk@ornl.gov)

**National Dry Lands Salinity  
Program Conference  
August 11-13, Charters Towers**

Contact: Roger Landsberg, *Trafalgar Station* Tel: (07) 4787 6677

**Management for Ecological  
Sustainability  
September 22-25 1998, Brisbane**

Venue: University of Queensland, Brisbane.

A conference to consider the maintenance of ecological processes, ecosystems and primary production consistent with the objectives of Ecologically Sustainable Development.

Conference Website: <http://www.ccb.uq.edu.au/website/Conf98.htm>

**NZES<sup>2</sup>A — 1998 Joint Annual  
Meetings of the Australian and  
New Zealand Ecological  
Societies  
November 24-November 27,  
New Zealand**

Preceded by a postgraduate colloquium on November 23  
University of Otago, Dunedin, New Zealand.  
Ecological Society of Australia Inc.  
PO Box 1564  
Canberra ACT 2601  
<http://life.csu.edu.au/esa/esaesa98.html>

**Third Biological Sciences Congress  
November 27, Singapore**

Venue: National University of Singapore  
Themes: Biochemistry, Ecology, Biodiversity, Systematics, Cell and molecular biology, Applied Biology. Contact: Postgraduate Congress Committee, National University of Singapore, 10, Kent Ridge Crescent, Singapore 119260

**Tourism**

The Tourism Student Research Conference  
September 19-20, Townsville

School of Business, James Cook University,  
Townsville, Qld.

A major aim of the conference is to showcase the research and projects of final year tourism students at the University. Information and registration details for the 'Tourism Unplugged' Student Research Conference is available from the following sources: Tel: (07) 4781 6282. Fax: (07) 4725 1116 Website:

http://www.jcu.edu.au/dept/Tourism/conf  
E-mail: Julie.Zabala@jcu.edu.au

**Fauna**

**22nd International Ornithological Congress  
August 16-22, Durban, South Africa**

Registration costs: includes congress fees, proceedings, opening and closing ceremonies and access to the Festival of Ornithology. Reduced rates include everything except congress proceedings. Accompanying persons may attend ceremonies, poster sessions and social functions.

Early registration: 425 US\$ Standard Registration: 495 US\$ Late registration: 525 US\$  
Accompanying persons: 190 US\$ Reduced registration: 200 US\$ Children under 14: free

Contact: Dr. Aldo Berruti (aldo@birdlife.org.za)  
Postal Address: P.O. Box 1935, Durban, 4000, South Africa. Tel: +27-11-8884147  
Fax: +27-11-7827013

**Sixth Australasian Applied Entomological Research Conference  
"Pest Management — Future Challenges"  
September 29-October 2, Brisbane**

In conjunction with the 1998 Australian Entomological Society 29th AGM and Scientific Conference.

Venue: The University of Queensland, Brisbane

Contact: Sally Brown, ICTE Conferences,  
University of Queensland, Brisbane QLD 4072  
Tel: (+61 7) 3365 6360  
Email: sally.brown@mailbox.uq.edu.au

**Mining**

**Underground Operators' Conference  
June/July 30-3, Townsville**

Contact: Sheara Maidment  
Tel: (077) 225 885; Fax: (077) 214896

**Mining and the Environment II.  
September 12-16, Ontario, Canada**

Venue: Sudbury, Ontario, Canada.  
Themes: Ground and surface water remediation, environmental data management systems, ecosystems, new technology-old problems, mining and society.

Contact: Sudbury '99 Centre in Mining and Mineral Exploration Research, Laurentian University, Sudbury, Ontario, P3E 2C6, Canada. Tel: +705-673-6572; Fax: +705-673-6508; Email: cmosher@nickel.laurentian.ca or bevans@nickel.laurentian.ca

**Education**

**PhD Symposium Australian Rural Education Association  
June 30-July 2, Townsville**

University Hall, James Cook University.  
Contact: Nola.Judd@jcu.edu.au

**OUR STAKEHOLDERS**



**ABORIGINAL COMMUNITIES**



**PASTORALISM**



**TOURISM**



**MINING**



**CONSERVATION**



**DEFENCE**

*Savanna Links is edited and produced by the  
Tropical Savannas CRC.*

*Articles can be used provided acknowledgements are made. Views expressed in this newsletter are not necessarily those of the CRC.*

*Contact Peter Jacklyn: Email: peter.jacklyn@ntu.edu.au.*

*Tel: (08) 8946 6285. Fax: (08) 8946 7107*

*Or Kate O'Donnell Email: kate.odonnell@jcu.edu.au*

*Tel: (07) 4781 5967. Fax: (07) 4781 5515*

*Front and back cover design, WWd.*

*Printed by Prestige Litho.*