Land values of grazing properties are rising in northern Australia as development pressure increases. Pastoral scientists Neil Macdonald and Robyn Cowley examine the implications for the pastoral industry—as well as the shift in focus of Australian agriculture towards the tropical north.—pg. 6

Fire program turns down heat on Kimberley EcoFire, the Kimberley’s fire management program, deploys a regional burn plan that is successfully decreasing the region’s damaging wildfires.—pg. 8.

Future of northern Australia
Directions in fire management—pg. 2.
Centre holds its farewell forum but is a new north Australian CRC on the cards?—pg. 3
Northern perspectives at the 2020 Summit—pg. 4
Development pressure on northern grazing and agriculture—pg. 6

Online northern knowledge
EnviroNorth, an interactive educational website, tackles some long-standing issues in sustainability and science education in northern Australia.—pg. 10

Sea country news
Representatives from the Torres Straits and Arnhem Land attended the 28th Symposium on Sea Turtle Biology and Conservation in Mexico.
They are pictured here exchanging gifts with their hosts, the Seri Indians.—pg. 19

Photos this page, clockwise from top: DPIFM, Roxanne Guesnon, Kenny Bedford and Australian Wildlife Conservancy.
Declaration recognises pest grass

CONCERNS about the impact of the African gamba grass (*Andropogon gayanus* Kunth.)—first released in this country in the 1930s as a cattle pasture—have led to major action across northern Australia.

As detailed in Savanna Links, Issue 34 (*Evidence in on the impact of gamba grass*, pp. 12–13), research has shown the negative impacts gamba has on fire regimes, intact ecosystems, tree cover and soil composition.

In January, Western Australia declared gamba a weed: it can no longer be brought into or sold in the state, and all known plants must be eradicated.

In response to WA’s action, a group of 200 scientists led by the Weeds CRC, wrote an open letter to State, Territory and Federal governments calling for a total ban on gamba grass.

Queensland has now followed WA and declared gamba a Class 2 weed. Landowners will not be forced to immediately eradicate gamba already planted, but will be required to control any potential spread.

Councils and Park authorities are required to include gamba in pest management plans.

The Australasian Fire Authorities Council then released an Official Position Paper on gamba grass “to establish an informed national approach to the use, management and control of gamba grass in relation to fire risks.”

Gamba grass was also nominated as a Key Threatening Process under the Federal EPBC Act and is currently being assessed.

In the Northern Territory, where so much research on the grass has taken place, its evaluation continues.

However, gamba and other introduced pasture grass species were identified as priority species needing action in the recent inquiry into invasive species and management programs in the NT.

Savanna Links, Issue 34: ‘Evidence in on the impact of gamba grass’:

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Savanna Links, Issue 34: ‘Evidence in on the impact of gamba grass’:

TS–CRC: Linking the North

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

It comprises three universities, government agencies from the Northern Territory, Queensland and Western Australia and the Commonwealth, CSIRO, and representatives from Aboriginal groups and the pastoral industry.

The Centre promotes sustainable use and conservation of Australia’s tropical savannas by acting as a bridge between agencies engaged in land and resource management research, and research users and decision makers. These include pastoralists, conservation managers, Aboriginal land managers, and the tourism and mining industries.

The Tropical Savannas CRC communicates outcomes of its research and other knowledge about the savannas to ensure this knowledge can be used effectively by people living and working in Australia's savannas.

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Fire management

A MAY forum on future directions in fire management in northern Australia discussed draft chapters of a forthcoming book: *Managing fire regimes in north Australian savannas: Ecology, culture, economy*, which focuses on the Western Arnhem Land fire project.

Forum presentations covered the social and ethnographic history of the region; fire and carbon sequestration; fire and biodiversity; fire, fuels and greenhouse gas emissions; and policy environment and ecological thresholds associated with fire impact.

The book will be published by CSIRO in late 2008. Powerpoints from the forum are available as PDFs from the TS–CRC website.
  <www.savanna.cdu.edu.au/news/fire_forum_may08.html>

Gamba Grass Declaration:
  <www.gamba.org.au/declaration>
AFAC Position Paper:
NT Invasive Species and Management Programs Report
EPBC Act
NT Dept NRESTA
  <www.nt.gov.au/nreta/natres/weeds/>
Qld Dept NRW
  <www.nrw.qld.gov.au/>
CRC Weeds
  <www.weedscrc.org.au/>

Gamba Grass Declaration:
  <www.gamba.org.au/declaration>
AFAC Position Paper:
NT Invasive Species and Management Programs Report
EPBC Act
NT Dept NRESTA
  <www.nt.gov.au/nreta/natres/weeds/>
Qld Dept NRW
  <www.nrw.qld.gov.au/>
CRC Weeds
  <www.weedscrc.org.au/>
Forum judges CRC impact, looks to future

THE Tropical Savanna Futures Forum was held on 28 February 2008, at Charles Darwin University, Darwin. This forum reviewed lessons learned over the past 13 years from both rounds of the Tropical Savannas CRC and assessed how this knowledge could be applied in the years ahead. The forum also saw the launch of the book *Future options for north Australia* (see page 21).

More than 180 people from across Australia attended, including researchers, land managers, policy-makers, students, those with a general interest in the savannas and two former CEOs: John Childs and Gordon Duff. Many interstate visitors took the opportunity to take satellite meetings on various areas of savanna research and many old ties were renewed from more than a decade of savanna research.

The clear overriding message, however, was that the TS–CRC has been very successful as a catalyst and incubator of important initiatives for north Australian Indigenous issues and for Natural Resource Management (NRM).

It has operated as both a point of contact and an honest broker between different sectoral interests and has delivered practical solutions to some of the problems faced by the north.

To quote just one end user in one area of land management, Steve Sutton, Director Bushfires NT and Chief Fire Control Officer, the CRC changed the way people think about and manage fire in the north.

“It has been remarkably successful in catalysing and nurturing important initiatives in NRM and fire management in particular,” he said.

“From policy development to operational management, fire in the north is in a much better position than it was a decade ago thanks to the CRC.”

There were 16 presentations organised around the main research themes of the CRC. Some of the key points made by speakers were:

- The opportunity for north Australian land managers to earn income through payment for environmental services, particularly for management and abatement of greenhouse gas emissions. This will be an increasingly important issue in NRM.
- The North Australian Indigenous Land and Sea Management Alliance is expanding its activities and influence and will be a strong player in the future. Indigenous land and sea managers in northern Australia will want to have a greater say in the NRM research agenda.
- Decision makers across Australia are increasingly looking to the north’s resources whether it’s water, or the opportunity to generate income from the greenhouse economy.
- We need to know more about social, economic and cultural systems in the savannas and how investments, particularly NRM related investments, will affect people’s well-being.

“With a future of climate change, population growth and major increases to our cost structure, we need a body similar to the CRC that is responsive to the needs of users,” said Steve Sutton.

“In part because we have a better understanding of the problem (thanks to the CRC) we have many more questions about the management of fire in the future,” he said.

“Frankly, the prospect of stumbling into a fiery future without the insight a CRC can provide is very scary.”

Centre succeeds in gaining bridging funds

THE Tropical Savannas CRC has secured bridging funds until the end of 2009.

The Centre was due to close shop on June 30 this year, but the Federal Government has encouraged the Centre to explore involvement in a new bid for a north Australian CRC in the next selection round.

Consequently we now have funding covering the core operations of the Centre—including its websites, publication distribution and Savanna Links—until the end of 2009.

It is not clear when the next round will be completed as the CRC Program is currently under review, but it is likely to be a year to 18 months away.

The bridging application also covered some pilot projects in areas of research likely to be pursued in a bid for the next selection round. The final make-up of these projects will be determined through review and discussion.

While the new bid for a Cooperative Research Centre in northern Australia should be shaped by the broad range of stakeholders, the Centre can help facilitate and develop the bid given its experience in CRCs and its networks across the north.

To this end, the Tropical Savannas CRC will hold a workshop to bring together a broad cross-section of stakeholders to plan the bid.

If you’d like to be involved, contact Dr David Garnett, CEO, TS–CRC.

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Tropical savannas at the 2020 Summit

SEVERAL people from northern Australia attended the April 2020 summit, among them was Dr Stephen Garnett, Professor of Tropical Knowledge at Charles Darwin University. Here are some of his thoughts on the Rural Futures and Sustainability groups at the summit.

T he symbolism of the 2020 summit, held in Canberra was inescapable. A thousand thinkers from across the nation were invited into the people’s house of power. A multi-cultural assembly of impeccable sex ratio covered all major sectors of Australian life and economy.

Given the demographic balance it was therefore a little surprising, perhaps, that northern Australia became such a focus. The suggestion that development in the north needed close examination was present from the Governor-General’s opening speech, where he spoke of agriculture moving to the wetter north, to the Prime Minister’s summing up where he referred to the need for soil studies in the north. Can we continue to grow crops/agriculture in traditional areas, or must we look more creatively elsewhere?

In between, Tim Fischer, representing the Rural Futures section, put forward the idea of comprehensive soil and hydrological surveys of the north before (no ‘ifs’) farmers expand there. Roger Beale, speaking for the Sustainability group, then put forward the idea that Australia should become world leaders in tropical river management. And there was more vigorous discussion within the 10 different streams into which the 1000 participants were divided.

The investment bankers seemed particularly excited by the potential for northern profits. Usually, however, northern development was included in the same breath as climate change and the need to look for a replacement for the Murray Darling basin—a last resort in a desperate situation.

Surprisingly, however, these ideas were not connected with the Indigenous emphasis on controlling their own agenda, whether it be over land development or the economy generally. At least one whole theme was devoted to Indigenous thinkers, while others had representation across the other themes [see NAILSMA’s comments below]. And the ideas of Indigenous people, and of the many who contributed ideas to the forum, were not all for show. We saw the words we contributed in the forums gradually work their way through to the final communiqué, a communiqué which, we have been promised, will be answered in full by the end of the year. What will be fascinating, however, is to see how many of those ideas are carried through to 2020.

Indigenous water and climate policy

DELEGATES from the North Australian Indigenous Land and Sea Management Alliance (NAILSMA) at the 2020 Summit backed the outcomes of the water and climate change discussions.

The stream called for Indigenous people to be part of the dialogue in developing climate change strategies for Indigenous Australians. It also called for a national Indigenous Knowledge, or Research Centre to be established to carry out multi-disciplinary research to answer complex questions for Indigenous people.

Joe Ross, Chairman of the Indigenous Water Policy Group (IWPG), agreed, saying that the magnitude of the issues affecting Indigenous people and their environments, along with development pressures, will need new research and partnerships with Indigenous people to answer complex questions.

The IWPG is an initiative founded and supported by NAILSMA.

“It is particularly important to ensure that the complexity of issues affecting Indigenous communities attract world-class research,” said Joe Ross, “but any new research must be driven by Indigenous people, which is why a new engagement framework is justified.”

Joe Morrison, NAILSMA’s Executive Officer, said that the summit was a step in the right direction, given the increased attention being paid to the water resources on Indigenous lands in the north.

“With the vulnerability of Indigenous communities to any changes in climate, the summit was timely,” he said. “The need for Indigenous people to engage and then formulate strategies to develop the north must be seen as the primary objective, rather than an afterthought.”

NAILSMA 2020 discussion paper:
<www.nailsma.org.au>
No love for cat hybrid imports

ATTEMPTS to import the ‘Savannah cat’, a new breed achieved through crossing domestic cats with the African serval, have raised the ire of scientists and many in the general community, resulting in a federal enquiry into the impact the cat could have in Australia. Fourteen of the specially bred cats are currently in quarantine, after initially passing federal government requirements, and were awaiting a ruling by the Queensland State Government. Once animals pass quarantine, they can be sold by Australian breeders—without any assessment of their potential impact on native wildlife.

Federal Environment Minister Peter Garrett has now ordered an enquiry about the cat’s entry into Australia and a draft assessment is available from the department’s website.

“This report looks at the risk of Savannah cats becoming feral if not properly contained, and notes that there is potential for these cats to easily adapt to the Australian environment,” he said. “It suggests that the potential breeding-in of wildcat genes to existing feral cat populations could see them develop even better hunting skills.”

The cats have the spotted coat and large ears of the serval, can be more than double the size of domestic cats (though have the light body frame of the serval), are unafraid of water, can jump two metres from a standing start, and judging from YouTube videos, look to be impressive hunters (links below). And while the animals will be sold neutered with a price that will ensure a small market—starting at $5000 per cat—an online petition asking the Federal Government to ban the animals resulted in more than 1000 signatures on its first day, and more than 7000 by July.

The situation alarmed and outraged Professor Tony Peacock, Chief Executive of the Invasive Animals Cooperative Research Centre, who condemned the breeding of hybrids for exotic pets as a stupid trend.

“No one anticipated such animals when our quarantine laws were formulated,” said Prof. Peacock, “so we apply a definition that a fifth-generation wild domestic cross is legally a ‘domestic’ animal and so escapes proper scrutiny. The same loophole would allow a variety of hybrid cats and potentially wolf-dog hybrids if they pass disease regulations,” he said.

Draft Assessment Report: Dept. Environment

Online Petition:

Invasive Animals CRC, background on Savannah cats:
<www.invasiveanimals.com/media-centre/hot-topics/index23.html>

The pro side:

YouTube Savannah Cat videos
<www.youtube.com/watch?v=Oc9ymXQkM4&feature=related>
<www.youtube.com/watch?v=VDeq8cbO30&feature=related>

Climate vision front and centre

THE Garnaut Climate Change Review’s draft report on the effects of climate change in Australia, paints a worrying vision of the future and is sparking intense debate. Released on July 4, the draft report begins by laying out a framework for policy analysis and decision making, seeking to define and quantify the consequences of not addressing climate change, then of Australians playing their part in global mitigation efforts of varying ambition.

The Garnaut Review is in three stages, with the Supplementary Modelling Report due at the end of August. The final report is due in September, 2008, where the full assessment of our best options will be made.

CSIRO also launched its multi-million dollar Climate Adaptation National Research Flagship in July. The research program is designed to boost Australia’s ability to adapt to the impacts of climate change. It will also have a particular focus on better understanding and preparing for the impacts of climate change, which the draft Garnaut Report described as “locked-in” up to 2030.

“The quantity of greenhouse gases already in the atmosphere, together with natural time-lags built into the climate system, mean that some ongoing climate change is now unavoidable,” Flagship Director Dr Andrew Ash said.

It is predicted that Australia’s average temperature will rise by between 0.7 and 1.2 degrees C by 2030, while rainfall is likely to decrease by 2 per cent to 5 per cent over much of the continent.

“Many of the decisions that will shape Australia in 2030 are being made today—such as new infrastructure and urban developments—so now is the time to incorporate climate adaptation into our thinking,” Dr Ash said.

“Thankfully, as Professor Garnaut says, Australia’s adaptation potential is high and we therefore have the capacity to plan for and respond to the impacts of climate change.”

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Background information:
<www.csiro.au/org/ClimateAdaptationFlagshipOverview.html>

Garnaut Review: <www.garnautreview.org.au>
There is little doubt that the ‘shift to the north’ is more than just talk, and will happen—irrespective of any push by federal politicians. Extended droughts in the south and projections for worse to come under climate change will further add to the pressure to develop northern Australia.

Land values increase

The practical implications are already being seen. In late 2007, a report by the valuers Herron Todd White showed two interesting sets of data. The first was that the value of Northern Territory grazing properties had increased by an average of 27% per annum since 1999, the fastest rate of any region and well above the national average of 12%.

That means a property that changed hands in 1999 for $1 million is likely to be worth $8.5 million now. In that time, NT agricultural properties increased by an average of 14% per annum. However, this was from a low base.

The second set of data showed that NT land on a price-productivity basis is still cheaper than any of the highly developed areas in Queensland or northern NSW, and therefore we should expect further price rises. We have updated some of the Herron Todd White figures on price-productivity and on the whole their conclusion seems realistic.

In recent months prices seem to have steadied, but a large number of properties have been put on the market. We feel that this increase in land values is fundamentally important. At current prices, interest rates and levels of production, more than 20% of the annual return from cattle production would be required to cover the value of the land alone, plus another 10% to cover the value of the breeding stock. This may already be unsustainable and will certainly become so if prices continue to rise in line with Herron Todd White’s second set of data.

The obvious implication is that purchasers feel that the full potential of Northern Territory grazing lands is not being realised and they will be able to increase stocking rates.

Connection with stocking rates

This question has been the focus of the TS–CRC project—Developing Grazing Management Tools to Improve Savanna Condition—which set out to extend our capability to objectively estimate safe carrying capacity, and also of the Pigeonhole Project which looked at alternative models of intensification.

As part of these two projects, Dr Robyn Cowley and Charles Blomfield conducted a study of pasture utilisation on 12 properties in the Victoria River District in late 2007 (Cowley et al 2008). This study is more comprehensive than previous stocking rate surveys conducted in the Northern Territory.

Pasture utilisation is the percentage of the year’s pasture growth that is eaten by cattle. In this study, pasture growth was derived from the GRASP pasture model. Safe utilisation rates were calculated from grazing studies, such as those at Mt Sanford and Pigeonhole, and are currently taken to be 20% for black soil, 15% for good red soil, 10% for less resilient red soils and 5% for spinifex-dominated pastures.

Safe long-term use

The study’s general conclusion was that overall stocking rates are close to safe levels, but there is considerable variation. About half the properties had scope to increase stocking rates with additional infrastructure by an average of 30%. The other half were considered fully stocked or over-stocked.

The process of estimating safe long-term utilisation is very difficult, and it is such a critical factor for profitability and sustainability that NT Department of Primary Industry, Fisheries and Mines (DPIFM) will continue to refine these estimates.

In particular, we intend to investigate commercial paddocks for which we can source reliable stock numbers over a long period. We will then be able to model their pasture growth retrospectively, and compare their utilisation rates with the resulting pasture condition.
Pasture growth estimations

There is also a question of over what period should pasture growth be estimated. There has been a marked increase in rainfall over the last 50 years, particularly over north-western NT since the 1970s. Should we be basing pasture growth estimates on the full historical climate record, or should we be using more recent climate patterns?

This links to the question of climate change. Companies moving north and west often quote climate change as one of their main reasons for doing so. There is a common misconception that rainfall is projected to increase further in northern NT. Current climate models have little skill to accurately predict north Australian rainfall, and models project there is an equal likelihood of less rainfall as more in the future. If we base carrying capacity on recent rainfall patterns, then we may be overestimating future capacity if rainfall declines.

There is an urgent need for further investment to improve the rainfall prediction skill of global climate models for northern Australia, and for communication of actual climate change projections and uncertainty.

Agriculture takes the stage

In this article we have concentrated on the pastoral industry and the results of our TS–CRC project. However the major development in coming years may be in the field of agriculture.

We feel that future agricultural development is the most important issue in the north today, and should be addressed by a substantial research effort.

It should, for example, be the main focus of any future bid for another cooperative research centre based on natural resource management in northern Australia.

The role of a future CRC would be to provide sound scientific data, so the community can make an informed choice about suitable models of development across the North Australian savannas.

Should we call it the CRC for Sustainable Northern Development?

Reference


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Katherine Research Station <www.nt.gov.au/dpifm/Primary_Industry/index.cfm?Header=Katherine%20Research%20Station%20(KRS)>

‘Green’ agricultural system

CSIRO research under way in central Queensland’s cattle country is investigating whether integrating trees, pasture and livestock into a single agricultural system will produce greater net returns for producers and the environment.

The ‘silvopastoralism’ system is gaining attention as a potentially profitable land-use practice, particularly following new market opportunities such as carbon trading.

The project will use earlier research by the Queensland Department of Natural Resources and Water into some of the competitive and stimulatory effects of wide rows of trees on pasture production.

The designs being evaluated include planting well-spaced rows of high-yield eucalypt trees—and 20 to 100 m wide rows of native woodland regrowth trees—on pasture lands.

Research partners include CSIRO Livestock Industries, Queensland Department of Primary Industries and Fisheries, Central Queensland University and the Central Queensland Forest Association. The project is part of the Agricultural Sustainability Initiative of the CSIRO.

Contact Project leader: Mick Stephens, CSIRO Livestock Industries Tel: (07) 4923 8177 Email: <Mick.Stephens@csiro.au>
Kimberley coordinates fire management

The Kimberley’s new fire management program, EcoFire, has now completed its early dry-season prescribed burn program for 2008—throughout 14 central and northern Kimberley properties, covering almost 5 million hectares.

In recent decades the Kimberley has been subject to frequent, extensive mid-to-late dry season fires (i.e. July–December). These fires have high economic costs for the Kimberley’s pastoral industry and negative cultural impacts for Indigenous communities. They also have devastating ecological consequences and have been blamed for declines in threatened bird species, small mammal populations and sensitive vegetation communities.

The EcoFire project, contracted by Rangelands NRM Coordinating Group to the Australian Wildlife Conservancy (AWC), aims to change the Kimberley’s prevailing fire patterns through a coordinated regional approach to fire management.

Regional burn plan

EcoFire addresses fire issues primarily through a Regional Burn Plan, which emphasises strategic early dry-season prescribed fires.

The project unites neighbouring properties including pastoral, Indigenous pastoral lease, conservation lands and unallocated Crown land (see map, top opposite page). There are varied land management objectives: some participants are concerned with economic or cultural impacts, and others with ecological impacts of current fire patterns.

Each year fire histories are prepared via the FireNorth website (NAFI), using archived satellite imagery for property owners/managers to design prescribed burn plans. A regional plan is then developed, linking firebreaks between property boundaries. Aerial incendiaries are dropped in the early dry season (April and May) to establish firebreaks. Property managers also carry out on-ground follow-up work.

Dramatic change in 2007 regional fire patterns

Stage 1 of EcoFire involved nine Kimberley properties. At the end of 2007 it was evident that fire patterns were strikingly different to previous years (see firescar maps, bottom opposite page). Mid to late season unplanned fires were largely contained and comprised a significantly lower proportion of all fires. The fires were smaller and patches of burnt and unburnt vegetation were scattered more evenly throughout the project area providing refuges for wildlife and grazing stock.

Prescribed burns in 2008

Based on the success of its first year, the Rangelands NRM Coordinating Group (RCG) renewed EcoFire’s funding in 2008 (see box, opposite).

Strong community interest saw the project area expand to include five additional properties, taking the project area to almost five million hectares.

The Regional Burn Plan was implemented during April and May: AWC staff and property owners flew around 24,000 km, dropping 30,000 incendiaries. At the same time EcoFire’s project partners, the WA Department of Environment and Conservation (DEC) and the Fire Emergency Services Authority (FESA), carried out aerial burning on neighbouring national parks and pastoral stations.

Project manager, Dr Sarah Legge, said that already it was clear that the regional effort invested in fire management in 2008 far exceeded previous years.

“The Kimberley region is now better prepared than ever before for the mid-to-late dry fire season,” she said.

“This year has seen an unprecedented level of prescribed burning activity in the Kimberley—both in terms of the practical effort put in by many people, and also in terms of the level of cooperation between individuals and organisations in the region,” Dr Legge said.
The area covered by the EcoFire project has increased since 2007 (* ulc: unallocated Crown land)

“We’re all starting to feel that the seemingly insurmountable problem of huge, destructive fires may be manageable after all,” said Dr Legge.

The effectiveness of this year’s prescribed burning will be assessed at the end of 2008. Stage 2 of EcoFire now includes additional monitoring, development and communication programs. The WA Department of Agriculture and Food (DAFWA) are monitoring the relationship between different sorts of fires, grazing pressure and pasture condition. The Kimberley Land Council is facilitating participatory fire planning with Indigenous communities, and FESA is providing training in prescribed fire management. Finally, AWC is implementing a communication strategy targeting the broader community.

The RCG anticipates EcoFire will gain funding in 2009, and will be continued into the future.

EcoFire project
THE Rangelands NRM Coordinating Group (RCG) invested in the Kimberley’s EcoFire project in 2006. RCG then contracted the Australian Wildlife Conservancy (AWC) to manage the project—AWC is a non-profit organisation dedicated to conserving Australia’s wildlife and ecosystems.

EcoFire is guided by a steering committee of stakeholder representatives including local government, WA’s Department of Environment and Conservation, the Kimberley Land Council, WA Fire and Emergency Services Authority, the Department of Agriculture and Food WA and the Pastoralists and Graziers Association as well as RCG and AWC.

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The firescar maps show the contrast of planned and unplanned fires over the project’s life: in 2004, damaging wildfires far exceeded planned burns. By 2007, late-season wildfire has decreased, with an increase in early season prescribed burns.
Online learning builds northern knowledge

Imagine you are 13 years old and have just joined Dr John Woinarski’s scientific research team in Kakadu National Park, to investigate what is happening to the northern quoll. Or you are learning how pastoralists, park rangers and Traditional Owners alleviate the risk of huge wildfires throughout many parts of northern Australia. It’s all possible through EnviroNorth, an interactive educational website.

EnviroNorth <environorth.org.au> tackles some long-standing issues in sustainability and science education in northern Australia. Although savanna ecosystems dominate the top third of Australia, educational resources focus mainly on rainforest and reef ecosystems. EnviroNorth helps redress the balance so students from the Kimberley to the Top End and northern Queensland can learn about the environments surrounding them.

Online learning also helps overcome the disadvantages these students face: the areas in which they live are geographically challenging, with huge distances, small populations and a large and growing proportion of Indigenous youth.

Developed by a partnership between the Tropical Savannas CRC and the NT Department of Employment, Education and Training (NT DEET)—with significant input from teachers—the site is now being used by a range of schools in the Northern Territory, Queensland (particularly through the Primary Connections science program), Western Australia (including the Kimberley Schools of the Air and the EcoFire project, pg. 8) and as far afield as Tasmania.

The site was launched in 2007 with three main sections: interactive modules for students, comprehensive teacher support materials, and the CRC’s Savanna Explorer (see box opposite page).

“The challenge was to provide a flexible, relevant and engaging approach for students,” explained Julie Crough (TS–CRC) who along with Louise Fogg (DEET), led the development of the website and learning materials.

“We needed to develop resources that helped build capacity for teachers about tropical savannas and related sustainability issues as most new recruits to northern Australia arrive from southern states,” she said.

Until EnviroNorth, there were no comprehensive online learner-centred resources for schools focusing on one of the few extensive natural areas remaining on earth—Australia’s tropical savannas. The website’s interactive modules, Savanna Walkabout and Burning Issues, aim to meet this need.

Designed for Years 7–9 students (middle years), the modules are based on current research and education in Natural Resource Management and Information Communication Technology. Each module has a series of learning activities and tasks that integrate videos, audio, animations, graphics and photos.
Free CD-ROMs of both modules have been distributed to all schools in the Northern Territory and many schools in Queensland, Western Australia and other jurisdictions. “It was important that the resources were online to provide access for all schools because nearly half the schools in the NT (and in northern Australia) are in remote or very remote areas,” said Julie. Teachers in remote schools requested the extra option of CDs to overcome unreliable internet access.

**Savanna Walkabout**

*Savanna Walkabout* focuses on the diversity of tropical savanna environments. It also provides knowledge and ideas for ways that students can get involved in conserving biodiversity.

Case studies, the work of researchers and Indigenous perspectives are all integral to the modules. For example, Dr Linda Ford tells the story of the impact of the weed mimosa on her homeland on the Wagait floodplains south-west of Darwin and how the Rak Mak Mak Marranunggu People (White Eagle People) managed to control the weed. Based on this case study, students have the opportunity to develop simple food webs based on mimosa’s impact on native species, including Mak Mak bush tucker.

In the *Meet the Researchers* section, students can learn about the ‘who, what, when, where, how and why’ of key issues concerning biodiversity in the north and also experience the passion and motivation of the researchers (Drs Sam Setterfield, John Woinarski, Ben Hoffmann and Michael Douglas). In *Join the Researchers*, Dr John Woinarski invites students to ‘join’ his research team and mentors them through solving the problem of the northern quoll’s decline. The learning experience enables students to use scientific research as a model, to think critically and apply the skills they have learned.

**Burning Issues**

*Burning Issues*, the latest module in EnviroNorth offers north Australian school students the opportunity, for the first time, to learn about the bushfires they see in a detailed, authoritative and stimulating format. Jointly funded by Bushfires NT and TS-CRC, in partnership with DEET, it challenges many myths and misunderstandings about fire and why it must be managed for sustainability of people’s lives, property and the environment.

The module begins in a fire manager’s most recognisable vehicle: the helicopter. The student can move between campground, visitor’s centre, an outback cinema and take a savanna walk, to discover what various fire managers in northern Australia do.

The module also highlights some CRC-supported research and management. One is the *Flames* computer simulation model, a tool developed by researchers to explore the effects of fire on savanna trees and grasses. Here, students can use a version of the model to experiment with the knowledge they have gained in fire management issues.
Online learning builds northern knowledge

By choosing different fire frequencies and time frames, they can simulate the effect of different fire regimes over various time periods on stands of Darwin woolybutt and stringybark. Periodically, researcher Dr Adam Liedloff appears and puts pertinent questions to guide students to develop key understandings.

Another is the West Arnhem Land Fire Abatement (WALFA) project, where students enter the module’s Outback Cinema to see how traditional Indigenous fire management is helping to contain greenhouse gas emissions.

They can see Indigenous fire managers at work and hear from Aboriginal Elders, all guided by Dean Yibarbuk of the Manwurrk Bushfire Rangers, who like Adam, guides and helps students to understand and appreciate the value of restoring traditional burning practices on country.

Burning Issues was developed in partnership with the TS–CRC (Julie Crough), the NT Department of Employment, Education and Training (Louise Fogg) and Bushfires NT (Leslee Hills), working together with fire managers, researchers and educators.

How teachers use EnviroNorth

Teachers Viki Kane and Jenni Webber have taught Savanna Science learning programs, based on Savanna Walkabout and EnviroNorth, for Years 6–7, at Humpty Doo Primary School. Their integrated programs culminated in tasks such as claymation films, where students used webcams and scripted short films on conserving savanna environments.

“Our students thoroughly enjoyed the ability to get out into the bush and investigate ecological and historical aspects of the savanna,” said Viki. More recently, the two embarked on a new integrated learning program, Living in Savannas at Taminmin High School.

EnviroNorth’s modules are fully supported by teaching materials with suggested learning plans, ideas on assessment and curriculum links. Overarching understandings or ‘big ideas’, understanding goals that identify what students should know and do—the concepts, processes, skills and key questions—all help to focus the teaching/learning program towards the intended outcomes.

Jenni explains that the website has proved to be well-designed for both teachers and students to use.

“It is unique in the fact that it teaches key understandings and skills that provide a springboard for them to be actively involved in conserving, maintaining and restoring biodiversity in their local environment,” she says. “Our students are aware that they are conducting real investigations and that their results are helping us better understand their local environment.”

As part of the school’s program, students also work with practising scientists to learn skills that include the Tropical Rapid Appraisal of Riparian Condition, see picture above.

Teacher training lecturers at Charles Darwin University have incorporated various aspects of Savanna Walkabout into their units as part of a pilot project, Mainstreaming Sustainability into Pre-Service Teacher Education Across Australia, which is being conducted by the Australian Research Institute in Education for Sustainability (ARIES). ²

Future modules

Julie and Louise are now working on the final two modules: Cattle Country and Indigenous Caring for Country. They continue to work with teachers and students to ensure the existing modules are used as widely as possible.

Footnotes

1. Primary Connections is a National program that promotes linking science teaching with literacy to enrich learning for students. <www.science.org.au/primaryconnections>

2. ARIES’s core business is to undertake research that informs policy and practice in Education for Sustainability across a range of sectors including business and industry, school education, community education, further and higher education. <www.aries.mq.edu.au>
**Burdekin water quality under scrutiny**

The results of a five-year program to monitor the water quality of northern Queensland’s Burdekin catchment are now being incorporated into a Water Quality Improvement Plan for the region. The Burdekin Dry Tropics NRM contracted the Australian Centre for Tropical Freshwater Research (ACTFR) in 2002 to establish the project for the Burdekin catchment. The catchment includes the Burdekin River and its tributaries from Greenvale in the north and south to Alpha, and coastal catchments between Giru and Bowen.

The aim was to investigate suspended sediment, nutrient and pesticide concentrations in waterways throughout the region during wet season rainfall events—which provide about 80% of the annual discharge from the Burdekin River into the Great Barrier Reef lagoon.

In large flood events sediments and nutrients are flushed into the lagoon, forming ‘plumes’. These plumes commonly travel north to Magnetic Island and, in very large events, can reach as far north as Cairns or Cooktown.

The data provide a valuable baseline to examine trends in sediment and nutrient delivery from the Burdekin river system over time. All of this information is now being used to develop the Burdekin’s Water Quality Improvement Plan, an initiative of the Federal Government.

Because of the irregular nature of wet-season flood sampling, ACTFR Project Officer Zoe Bainbridge developed a network of landholder volunteers to help with sampling.

By 2007, 34 volunteers—mainly graziers—and ACTFR staff collected samples from 54 sites during the wet.

Monitoring results show that the runoff from the Little Bowen, Clarke, Dry and Bogie River catchments contribute the highest suspended sediment concentrations to downstream aquatic environments. Dissolved inorganic nitrogen and herbicides associated with the sugar and horticultural industries were also found in the coastal catchments including Barratta and Euri Creeks, and the Haughton and Don Rivers.

The controversial herbicides diuron and atrazine, currently under review by the Australian Chemical and Veterinary Association, were detected in samples taken from the Lower Burdekin district. The herbicide tebuthiuron, used to destroy woody weeds, was detected in waterways of four of the major Burdekin sub-catchments (Belyando, Suttor, Cape and Bowen Rivers), which is of particular concern due to its longevity.

Canegrowers, graziers and horticulturists are aware of the issues and are actively working to reduce runoff from their properties by working with the Burdekin Dry Tropics NRM and other agencies to implement Best Management Practices on their properties.

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**Online learning builds northern knowledge**

**Acknowledgements**

Louise Fogg is education officer for Environmental Education for Sustainability and the key collaborator for this joint project with the NT Department of Employment, Education and Training.

Other key people include: Jenni Webber, Viki Kane, Peter Gifford (Universal Head), Barbara White, Dr Peter Jacklyn, Leslie Hills, Dean Yilbarbuk, Dr Linda Ford, Dr Penny Wurm, Dr John Woinarski, Dr Sam Setterfield, Dr Michael Douglas, Ian Dixon, Dr Christine Bach and Dr Ben Hoffmann.

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**Website:** <www.environorth.org.au>

**Websites**

- Environorth <www.environorth.org.au>
- Savanna Walkabout and Burning Issues CDs are available on request from Julie Crough.
- Biodiversity prizes

**Biodiversity prizes**

CONGRATULATIONS to Dr John Woinarski, who won two of the Northern Territory’s Research and Innovation awards in June: the Tropical Knowledge Research Award for his contribution to biodiversity conservation in northern Australia and the Chief Minister’s Award for Research and Innovation 2008.

John is principal scientist at the NT Department of Natural Resources, Environment and The Arts, Adjunct Professorial Fellow with the School for Environmental Research at Charles Darwin University and has led several Tropical Savannas CRC research projects since the Centre’s inception in 1995.
The professional Doctorate in Tropical Environmental Management (DTEM) established at Charles Darwin University (CDU) in 2006, differs to the usual PhD in that it offers coursework as well as research, and a professional placement where candidates can conduct their research on the ground.

The coursework component gives candidates time to get back into the academic swing, and time to build skills and expertise in an area they plan to focus on during their research. The program is not restricted to Darwin however—CDU candidates can enrol externally and are required to take at least one unit at both the University of Queensland (UQ) and James Cook University (JCU).

The DTEM program was conceived by CDU’s Prof. Greg Hill and the former CEO of the Tropical Savannas CRC, Prof. Gordon Duff. The program was developed by Dr Penny Wurm, who leads the CRC’s Higher Education Program, with advice from Professor Helene Marsh at JCU and Dr Don Cameron at UQ.

An important element of the DTEM’s development was the input from industry through the CRC’s partner agencies, as well as from CRC partners James Cook University and the University of Queensland.

“The program has just hit the nail on the head for those students wanting to undertake advanced postgraduate study, but who are looking for an alternative to a conventional PhD,” explained Penny. “It’s structured so that it provides a way back in to the academic world, builds postgraduate skills and helps candidates focus their interest—preparing them for the two-year research component.”

The four foundation candidates in the program, Steve Gilmour, Julie Crough, Robert Sawyer and Peter Yates, are all established in their professions and share an interest in further study and research, yet they have very different professional backgrounds and research interests.

“The four candidates are heading in such different directions—it’s a very flexible program. It’s exciting to see how they are using the DTEM to move to where they want to position themselves professionally,” said Penny.

Steve Gilmour
Steve Gilmour has a degree in Engineering and a Masters in Business and Environmental Management and has managed his own consulting company, providing environmental and engineering advice for projects in northern Australia and East Timor. He was the first person to enrol in the DTEM in 2006. Steve has now completed the coursework component of the program, and as the first candidate, has done things a little differently to that first envisaged—he has also completed his professional placement with Darwin Waterfront Development but is still developing his research portfolio.

“My coursework focused on ecology and natural resources, during which I developed an interest in ecosystem services and wetlands,” he said. “It is from this that my research proposal will come.”

“I would recommend the course absolutely,” he said. “The DTEM is an opportunity for people like myself who have quite a bit of professional experience and want to do more research. The coursework is a major plus; it brings you up to speed. You keep up with a lot of science for your work, but the course lets you do a range of subjects, and get broader experience.”

Robert Sawyer
Robert, like Steve, had his own environmental consulting company, based in NSW, which focused on assessments in areas such as bushfire risk and management, flora and fauna...
surveys, and whose clients were a mix of government agencies, commercial, industrial, and private.

Keen for a switch in focus, Robert points to the likely change in development pressure on the way for northern Australia.

“It’s apparent that there are increasing development pressures in northern Australia and tropical environments worldwide,” he explained. “I want to be involved in guiding development down a more sustainable path in either the public or private sector, but hopefully the public.

His background is a Bachelor of Science with Honours, majoring in botany and ecology, with a focus on nutrient cycling, carbon cycling, and hydrological processes. “I want to take it to a more detailed level, and hopefully focus on the state of play with GIS and remote sensing,” he said.

He also wants to use the DTEM to become more familiar with practical applications of environmental chemistry.

He points to what he calls the uncritical acceptance of journal papers, without any questioning of the methodologies and approaches. “People didn’t seem to understand that a methodology that worked within one study did not necessarily scale up or translate to another,” he said.

He also agrees that the coursework is a useful way to re-enter the academic world as it updates and expands on past academic background. “It also gives an opportunity to make links with potential supervisors, rather than just start out with a research topic.

Julie Crough
Julie Crough has an Honours degree in Science and a Master of Science (Science Education) and has most recently been working in education and communication projects with the Tropical Savannas CRC. Julie has led the Tropical Knowledge in Schools project <savanna.cdu.edu.au/education/tropical_savannas_k.html>, in collaboration with colleagues in the NT Department of Employment, Education & Training, and the TS–CRC.

The project is developing online resources for teachers and students that draw upon the latest research in Information Communication Technology, education and sustainable NRM in northern Australia (see page 10).

“My DTEM research portfolio focuses on the implementation and uptake of these interactive online resources” she explained. “Also, I am exploring what other innovative ways are possible to build capacity for teachers and students in cross-cultural settings for our future generations of land and sea managers in northern Australia.

“The DTEM program is an excellent opportunity to explore these options as it offers a flexible balance of coursework and research,” she said.

Peter Yates
Peter Yates has an Honours degree in Anthropology and has collaborated with Aboriginal communities in bush tucker enterprises around Alice Springs for the past seven years.

“I am interested in livelihoods, food security and sustainable harvest of natural resources,” said Peter. “In the past, I have worked in projects in Africa; in Kenya through the International Livestock Research Institute, and in Niger where I worked to find international markets for the seed of Australian acacias grown in some very marginal areas there,” he said.

Peter also has strong interests in the ecological and food security implications of bio-diesel production in Africa, as well as in market-based mechanisms such as carbon trading.

“I want to find out how such instruments might be best designed to support small farmers,” he explained.

He began his DTEM in 2007, and through his coursework seeks to broaden his ecological knowledge, while building on his strengths in social sciences. He hopes to undertake a placement with an NGO in Africa in 2009.
Quolls make comeback on offshore islands

In 2003, 64 northern quolls (*Dasyurus hallucatus*), taken from sites across the Northern Territory were released on two islands in the English Company group off north-east Arnhem Land (see map above right). This translocation aimed to save these small carnivorous animals from the threat of cane toads which, through poisoning quolls that tried to eat them, were having a catastrophic impact on mainland quoll populations.

Recent monitoring of these island quolls has shown there are now between 5600 and 6200 adult females—a remarkable increase in numbers. This appears to be good news for the quolls and raises some questions: why are they doing so well? Are these populations sustainable?

The translocation and release of the quolls was carried out by the Gumurr Marthakal Rangers, the Traditional Owners of the islands, Traditional Owners from where the quolls were sourced, scientists from the NT Department of Natural Resources and the Arts, the Territory Wildlife Park and Parks Australia North.

Nineteen quolls were released on Pobassoo Island and 45 on Astell Island in February and March 2003.

These islands were selected because they had rocky sandstone habitats favoured by quolls, no human settlements and a low risk of invasion by toads. Also, there were no other animal species that the introduced quolls would likely have significant negative impacts on.

Astell and Pobassoo islands were also thought to be large enough for quoll populations to survive for at least 30 years—long enough, hopefully, to have worked out solutions to the threat posed by cane toads to quolls.

Working out how many quolls are now on the islands is not that easy; you can’t count each one, so a small sample needed to be trapped and then the total population estimated.

Depending on the likely ‘catchment area’ of each trap, the population estimates in December 2007 varied from around 4800 to 5300 quolls on the larger Astell Island and from around 820 to 900 quolls on the smaller Pobasso Island.

These numbers (from December, 2007) refer only to adult female quolls as after an exhausting mating in the dry season, virtually all the males die, while the young remain in the den for around 4–5 months, so total numbers of quolls would be more than these figures suggest.

It is thought the quolls are doing well for a couple of reasons, the first one being that there are no toads around to poison quolls that try to eat them.

But these populations are higher than those measured for mainland quolls even before the toad invasion, and a major reason for the success of the translocation is suspected to be the lack of predators such as feral cats.

Interestingly, shortly after the translocation, much of Astell Island was burnt by fire and in 2005 the vegetation of both islands took a pounding from Cyclone Ingrid.

These quoll population densities will presumably level out or drop as they are larger than any known natural population density, but there is no sign yet that the crowded conditions are having any ill-effects on the animals. The trapped quolls were in good condition, the populations had healthy genetics and breeding success continues to be good. — Peter Jacklyn.


Free manual offers guide for weedy grazing threat

A NEW manual explaining how to control weeds that cost the pastoral industry $60 million a year will be available free to all land managers. The Best Practice Manual for the management of weedy Sporobolus grasses (WSG)—with emphasis on giant rat’s tail and giant Parramatta grass—will provide extensive grazing land managers with up to date, well-planned control guidelines. The 38-page colour manual takes a strategic approach to weed management by taking a best-bet strategy based on the latest research and a focus on achieving cost-efficient, effective weed control. Meat and Livestock Australia funded the four-year project supported by Queensland Department of Primary Industries & Fisheries and the NSW Department of Primary Industry to publish the guidelines, which will be available free to all land managers.

QDPI&F grazing systems senior scientist Dr Steven Bray, who co-authored the revised WSG manual with NSW DPI research agronomist David Officer, said dense infestations can halve both stocking rates and annual beef production per hectare. Queensland’s WSG infestations cover 200,000 ha, range from scattered to dense outbreaks from the NSW border to Rockhampton, inland to Moura with significant outbreaks around Mackay, Townsville, Ingham and Mareeba.

“That puts 60 per cent or more than 108 million hectares of Queensland’s grazing country and some 30 per cent or 223 million hectares at risk nationally.”

Dr Bray said droughts, over-grazing and fire that produce prolonged period of exposed soil provided an ideal environment for these introduced weed seeds to germinate. WSGs are a declared Class 2 pest in Queensland; landholders have a legal obligation to take reasonable steps to keep their land free of it.

Giant rat’s tail grass, the most prolific WSG, commonly grows to 1.7 m tall with seed heads that can be 25–80 cm long producing a huge seed bank of 10,000 seeds per square metre that remains viable for many years.

“Herbicide treatments alone will not control WSG and the manual outlines a three-step process that enables landholders to accurately identify areas of infestation; prevent the spread of weed seed into clean country; and identify cost-effective long term management strategies,” Dr Bray said.

Contact DPI&F Business Information Centre: 13 25 23 for the guide.

Weeds CRC closes down

USERS of the CRC for Australian Weed Management’s (Weeds CRC) website will need to ‘drop a dot’ from the web address from June 30. The website is now <www.weedscrc.org.au> with the old address <www.weeds.crc.org.au> no longer supported.

All of the Weeds CRC’s many resources and publications aimed at farmers, agronomists, land managers, schools and researchers will remain available at the new web address,’ said the Weeds CRC’s Web Manager Mrs Kelly Nankivel.

“Almost all of these resources are freely available for download and while the website will no longer be updated after September 30, it will remain online until approximately June 2010 at which time it will cease to exist.”

The change is one of the final steps in the wind-up of the Weeds CRC, which closed its doors on June 30 and will eventually be replaced by a new $15 million National Weeds and Productivity Research Program announced by the Rudd Government during the May Budget.

At this stage, there has been no confirmation as to where the new Centre will be based.

A skeleton staff will remain at the Weeds CRC Head Office in Adelaide until November 30.

Weed guides

THE latest weed management guides, are now available from the Weeds CRC website. They include Spanish heath (Erica lusitanica) and other Erica species, buffel grass, feather and mission grasses.

These new guides emphasise the importance of managing weeds for biodiversity outcomes.

Download guides:
INDIGENOUS rangers working with marine turtles and dugongs are trialling a new way of recording and tracking information about the animals.

I-tracker, a package that includes an electronic hand-held-data device (pictured) with CyberTracker software, is being trialled by the North Australian Indigenous Land and Sea Management Alliance (NAILSMA) across 14 Indigenous ranger networks. It replaces pen and paper as a way of collecting information during on-country patrols.

The information is then collected and stored on a computer at the ranger headquarters—allowing easy access by other Indigenous rangers from the north.

The local data collected will—for the first time—provide a regional picture developed by Indigenous land and sea managers to support their own on-country work as well as providing information necessary for national and international assessments.

In fact, thanks to NAILSMA’s recent attendance (funded by The Christensen Fund, see page opposite) at the cultural exchange in Mexico in January, a Spanish version of the I-Tracker project is being trialled by the Comca’ac people of Mexico. The partnership between the Comca’ac and NAILSMA partners has continued to develop since the cultural exchange.

The I-Tracker project includes:

- hand-held waterproof personal computer with touchscreen
- CyberTracker software, and programming CyberTracker so that it matches the activities of Sea Rangers
- training and support program
- review of the trial after a three-month period.

Cyber Tracker is a free software program that can be downloaded online. It was originally developed for the patrols of African wildlife rangers and bushmen, and uses ‘sequences’ that can be programmed for specific uses.

Djelk Sea Rangers, who have used CyberTracker for the past five months, programmed the sea ranger sequence being used in the trial.

The sequencing, developed by Djelk ranger Shaun Ansell, includes the following sea ranger patrol types:

- AQIS (where rangers collect insect samples, such as mosquitoes, for AQIS to test for disease. They remove, take samples of, and destroy foreign materials—such as drift wood from foreign vessels—to reduce the risk of borers and other threats from being introduced to Australia.)
- Sick and stranded wildlife
- Dugong and turtles
- Turtle nesting
- Customs (where rangers report to Customs, photograph and assist Customs to monitor and—when instructed—trail foreign vessels in Australian waters.)
- Marine debris (this includes the removal of ghost nets and other rubbish that may harm marine environments.)
- Fish kills (mainly referring to large death events from algal bloom, pollution etc.)
- Commercial fishing
- Recreational and commercial boating activity

More areas will be developed over time, with potential sequences including crocodile egg collection, weed surveys and recording bird species for Birds Australia.

More information: Joshua Kitchens, NAILSMA, Tel: (08) 8946 6684 E: <Joshua.kitchens@cdu.edu.au>  Web: <www.nailsma.org.au/projects/dugong_turtle.html> Subscribe to the project’s newsletter to keep up to date: <www.nailsma.org.au/projects/newsletter.html>
Indigenous Sea Rangers in Mexico

A WEEK-long international celebration of Indigenous cultural practices and management of marine turtles was held at a symposium in Mexico in January, but the experience gained by four Indigenous land and sea managers from the Torres Strait and north-east Arnhem Land will last a lifetime.

The small seaside town of Loreto, on the Mexican Baja California Peninsula, hosted this year’s Symposium on Sea Turtle Biology and Conservation. More than 1000 scientists, conservationists and Indigenous land and sea managers from 60 nations converged on the town to explore the theme, ‘Native Oceans’.

The symposium linked Indigenous people from Australia’s northern coastal regions with the Seri Indians of Mexico and facilitated the exchange of both cultural and technical information of marine turtle species. The Torres Strait Regional Authority’s (TSRA) Chairperson Toshie Kris, said he was pleased that three representatives from the Torres Strait, including TSRA’s Dugong and Marine Turtle Project Liaison Officer and James Cook University Masters’ student Frank Loban, participated in the international event.

“Such opportunities are invaluable and with the marine turtle playing a critical role in the Torres Strait’s culture and way of life, it is important that our people learn how to sustainably manage this important species,” said Mr Kris.

Frank Loban said the opportunity to travel to Mexico for the symposium was an important learning experience and that the highlight was the coming together of Indigenous people from across the world, sharing ideas and knowledge about turtle conservation and its significance to Indigenous lifestyles and livelihoods.

Honours for ‘front-line’ sea managers

The North Australian Indigenous Land and Sea Management Alliance (NAILSMA) was awarded top prize in the Indigenous category at the Banksia Awards ceremony in Melbourne in July. The award was presented by the Environment Minister Peter Garrett to NAILSMA Executive Officer Joe Morrison for the Alliance’s Dugong and Marine Turtle Project.

Mr Garrett recognised the Indigenous people driving the project as the ‘front-line’ managers of the north Australian coast where dugong and turtle remain abundant.

Mr Morrison said it was an honour to receive an award that acknowledged the stewardship of Indigenous land and sea managers across northern Australia for nationally and internationally significant ecosystems.

“The project has taken a practical approach to dugong and marine turtle management by creating new Indigenous ranger programs and supporting existing ones,” said Mr Morrison.

The project brings together Aboriginal and Torres Strait Islanders with scientists from across northern Australia to help in the management and protection of the threatened marine species. The project is funded by the Australian Government’s Caring for our Country program.
Help build an Atlas of Living Australia

The Atlas of Living Australia (ALA), a five-year project funded under the National Collaborative Research Infrastructure Strategy, is looking for contacts in biodiversity for a user needs study. The study’s aim is to understand how the ALA can simplify, streamline and support biodiversity work.

Information is wanted from a broad range of people who work with biodiversity information to find out how biodiversity data is used, and where it is found. The ALA’s overall mission is to develop a biodiversity data management system which will link Australia’s biological knowledge with its scientific and agricultural reference collections and other custodians of biological information.

The biodiversity data user study will run until October 2008, and will initially involve brief email surveys, followed by more detailed interviews of selected user cases. A workshop is planned at the Fremantle Biodiversity Information Standards conference in October to explore two or more user cases in detail. Those attending will be invited to contribute ideas on what is known, and the services and user interfaces needed.

Contact John Tann <john.tann@austmus.gov.au> to send your contacts in the biodiversity world and details of any scientific meetings or conferences scheduled in Australia between now and October.

Atlas of Living Australia: <www.ala.org.au>
Climate impacts & producers
Two recent reports look at the likely impact of climate change on primary producers.

An overview of climate change adaptation in Australian primary industries—impacts, options and priorities, was released earlier this year by CSIRO and profiles the options for adapting to likely climate change across the main primary industry sectors in Australia.

The chapter on broad-acre grazing (pp. 229-256) covers areas including managing pasture productivity, grazing pressure, forage quality, pests, diseases and weeds, animals husbandry and health and should be of interest to northern pastoralists.

An assessment of the impact of climate change on the nature and frequency of exceptional climatic events by the Bureau of Meteorology and CSIRO came out in early July and examines the likely impact of exceptionally hot weather and droughts in the future.

Although parts of this report were described by Federal Agriculture Minister Tony Burke as reading “more like a disaster novel than a scientific report” the rainfall predictions for the north of Australia are not so grim—it is likely to get hotter but not much drier.

The 31-page report includes appendices with forecasts for hot years and droughts for seven regions including the north-west of Australia and Queensland.


Open the gate on info
EVER wondered what training courses are available in grazing management, where to get information on succession planning, or how to get hold of a map where to get information on succession planning, or how to get hold of a map? To get hold of a map, just visit the FrontGate website. FrontGate is designed and managed by the Department of Primary Industry, Fisheries and Mines.

The People section has information and resources in areas such as succession planning, recruiting and retaining staff, and health and safety. The NRM section’s information and resources includes weed management, water, fire management and mapping. Information in the profitability section aims to assist in the long-term success of a business. Its resources include management software, off-farm investment and herd management. Users can search by key word or browse the tools listed by subject area to identify those relevant to their needs. FrontGate is designed and managed by the Department of Primary Industry, Fisheries and Mines.

Future options for northern Australia
This book offers perspectives on the direction northern Australia might take over the next 20 to 50 years.

Drawing on their expertise and long experience in northern Australia, the authors begin with a description of factors most likely to influence the region (population, social factors, land and natural resource ownership, government policy, global economics and trade, resource availability and use, climate change, weeds and pests, technological change).

They then consider how these drivers might interact to determine what our portion of the planet might look like in coming decades, identifying bottlenecks and decision points that will influence which scenarios are the most likely.

Finally, Future Options for North Australia seeks to identify what residents and decision makers of the north might do to maximise benefits and minimise the damage (social and environmental) associated with the drivers and their interactions.

Charles Darwin University Bookshop, $22 <www.cdu.edu.au/bookshop>

Green paper on carbon trading
The Federal Government’s Carbon Pollution Reduction Scheme Green Paper canvasses options and preferred approaches on issues, such as which industry sectors will be covered and how emission caps will be set. It also includes ways to address the impacts on Australian households, emissions-intensive trade-exposed industries and other strongly affected sectors.

Public comment is sought until September 10, 2008, with the release of draft legislation planned for December 2008. Comment will then be sought on the legislation until February 2009, with the bill introduced to Parliament in March.

The scheme is due to begin in 2010.

Principles of the emissions trading scheme:
- The scheme will be a ‘cap and trade’ scheme, i.e. it will set an overall environmental cap by issuing a set number of permits, and allow entities to trade permits, thereby putting a price on carbon.
- The caps will be designed to place Australia on a low emissions path in a way that best manages the economic impacts of transition, while assuring our ongoing economic prosperity.
- The scheme will have maximal coverage of greenhouse gases and sectors, to the extent that this is practical. The broader the scheme’s coverage, the more cost-effectively it will reduce greenhouse gas emissions, and more fairly spread the burden of such reductions across the community.
- The scheme will be designed to enable international linkages, while ensuring it suits Australia’s economic conditions.
- The scheme design will address the competitive challenges facing emissions-intensive trade-exposed industries in Australia.
- The scheme will also address the impact on strongly-affected industries.
- Measures will be developed to assist households—particularly low income households—to adjust to the impact of carbon prices.

Send submissions to: Email: emissionstrading@climatechange.gov.au Carbon Pollution Reduction Scheme Green Paper Submission Department of Climate Change, GPO Box 854, Canberra ACT 2601 Web: <www.climatechange.gov.au/greenpaper/index.html>

Wave Forward
WWF has a new web page dedicated to conservation and projects that protect and enhance marine systems. It features articles and activities, free materials to download, and advice on making a difference from smart shopping to speaking out.

<www.worldwildlife.org/waveforward/>
Online guide to discovering nature
JAMES Cook University has launched an online guide to the animals and plants of northern Queensland’s wet and dry tropics as found on the Cairns and Townsville campuses.

From native species to introduced weeds and pest animals, Discover Nature offers a brief introduction to the plant or animal, scientific classification and in most cases, photographs. Pages are organised according to scientific names or common names, plant species are listed also by flower colour and weed status.

Go to: <www.jcu.edu.au/discovernature>

AFAC knowledge web
THE fire and emergency service industry now has a new central resource for sharing information. The Australasian Fire Authorities Council Knowledge Web is a web-based information portal for the fire and emergency service industry.

Key areas of information exchange are research, case studies, operations, community safety, business and people management, interoperability and professional development.

As well as sharing knowledge from agencies in Australasia, AFAC and the Bushfire CRC are working to forge agreements and partnerships with international agencies to make the site a global resource.

Web: <www.afac.com.au>
More information: Jay Gleeson <jay.gleeson@afac.com.au>

Funds for reserve system
IN response to the CSIRO report, Implications of Climate Change for the National Reserve System, Australia’s National Reserves will receive a major funding boost. As part of the Caring for our Country initiative, funding has been earmarked for climate change refuges for native plants and animals.

The need to identify refuges for species threatened by a changing climate is one of the key recommendations. The network of around 9000 protected areas is conserving examples of native plants and animals for future generations.

It includes national parks, reserves run by conservation groups and Indigenous communities, through to habitat protected by farmers on private properties.


Quoll Seeker Network
TOWNSVILLE City Council and Burdekin Dry Tropics NRM have joined forces to gain an understanding of endangered northern quoll populations in the region. The project aims to collect and present information on quoll populations, as well as develop community awareness and appreciation of the animals. Over the next three years Dr Scott Burnett will develop a local Quoll Seekers Network under the Wildlife Preservation Society of Queensland.

Contact: Russell Warner, Townsville City Council, Tel: (07) 4727 9003 E: <Russell.Warner@townsville.qld.gov.au>

Guide to producer software
AN audit into Queensland’s farm software, the first since 1999, has revealed there are now more than 1500 titles available—a huge increase from the 179 titles at the last audit and a confusing array for producers. The Australian Farm Software Directory, a free publication from the Queensland Department of Primary Industries and Fisheries, is a guide to this software. The directory covers a range of topics from animal health to insecticides to plant equipment. The directory also allows software developers to research what is already available on the market and where gaps exist.

Go to: <www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/16_9303_ENA_HTML.htm>

Cape York web
THE Cape York Weeds and Feral Animals Program (CYWAFAP) has changed its website address, see below. CYWAFAP operates throughout the peninsula, and undertakes natural resource management involving weeds and feral animals.

Latest news on the website includes the removal of more than 14,000 feral pigs from the Cape’s west coast in a bid to ensure the survival of three marine turtle species and the Pormpuraaw Parkinsonia program to train and equip Traditional Owners in removing Parkinsonia and preventing its spread to other areas of the Gulf.

Go to: <www.cywafap.org.au>

Social atlas of regions


Impact on native species
THE new report, Australian species and climate change, has found that even a small rise in temperatures could have a dramatic effect on Australia’s native species.

The report was commissioned by the Threatened Species Network and undertaken by the Climate Change Ecology Group at Macquarie University. It concludes that global warming could produce sweeping changes in bushfire intensity and frequency, vegetation cover, and feral animal numbers.

It finds that the threat posed by invasive species could increase with climate change, with repercussions for species like bilbies, rock wallabies, Gouldian finches, black cockatoos and quolls.

Go to: <wwf.org.au/ourwork/species/tns/publications/>
August

Beef Up Forum: More Beef, more money
6 August, Kidman Springs
8 August, Adelaide River, NT
The NT Department of Primary Industry, Fisheries & Mines, in association with Meat and Livestock Australia, will run two forums providing practical tools and information to ‘beef up your business’
Contact: Simone White, Victoria River Research Station
Tel: (08) 8973 9764
Phil Hausler, Adelaide River Tel: (08) 8999 2301

4th Australia-New Zealand Climate Change Business Conference
18–20 August, Auckland, New Zealand
Venue: SKYCITY Convention Centre
The program will focus on risks and opportunities posed to business by climate change. This includes emissions trading, both regulated and voluntary, and complementary measures to drive emissions reductions.
Contact: Fiona Driver, Conference Organiser
PO Box 95-152 Swanson
Waitakere City 0653 Auckland New Zealand
Tel: +64 9 480 2565 Fax: +64 9 480 2564
Email: <f.driver@climateandbusiness.com>
Web: <www.climateandbusiness.com/index.html>

Coast to Coast Conference 2008: Coast to Coast Collaboration: Crossing Boundaries
18–22 August, Darwin, NT
Venue: Darwin Convention Centre
Australia’s biennial national coastal conference will focus debate, discussion and learning across the full range of coastal and marine issues at international, national, state, regional and local levels.
Contact: Prof. Karen Edyvane, Conference Convenor
Email: <Karen.Edyvane@nt.gov.au>
Web: <www.coast2coast.org.au/>

September

Australasian Fire Authorities Council (AFAC)/International Bushfire Research Conference (IBRC) 2008: Fire Environment & Society—from research into practice
1–3 September, 2008, Adelaide, SA
Venue: Adelaide Convention Centre, Adelaide
Topics include suppression, fuels management, ecology and biodiversity, community preparedness, protection of people, and the wildland urban interface.
Web: <www.fire2008.org/>

Forest Fires 2008: International Conference on Modelling, Monitoring and Management of Forest Fires
17–19 September, Toledo, Spain
Venue: Toledo Campus of The University of Castilla-La Mancha. Toledo, Spain
The conference aims to address all aspects of forest fires, from fire propagation in different scenarios to the optimum strategies for fire-fighting.
Contact: Rachel Swinburn, Conference Manager
Postal: Wessex Institute of Technology, Ashurst Lodge, Ashurst Southampton, SO40 7AA
Tel: 44 0 238 029 3223 Fax: 44 0 238 029 2853
Email: <rsburnrn@wessex.ac.uk>

Queensland Landcare Conference: Infinity—Sustainability by Design
21–24 September. Monto, Qld
The program will include keynote speakers, interactive workshops, lively plenary sessions, regional field trips and a trade exhibition with more than 20 exhibitors.
Web: <www.landcare.org.au/Conference.htm>

14th Australian Remote Sensing and Photogrammetry Conference (ARSPC)
29 September—3 October, Darwin, NT
Venue: Darwin Convention Centre
The conference showcases Australasia’s technical and application-driven remote sensing and photogrammetry research. It will bring together people from disciplines using spatial technologies for many applications across northern Australia and other tropical regions around the world.
Postal: PO Box 955, Palmerston, NT, 0831
Mob: 0407 271 357 Email: <info@14arspc.com>
Web: <www.14arspc.com/>

October

Pest Animal Symposium—Pests on the move, pest animals in paradise
19–22 October, Cairns, Qld
Venue: Hilton Hotel, Cairns
The symposium consists of presentations on community initiatives, policy matters, new innovations, the latest research and harvesting techniques.
Contact: Queensland Pest Animal Symposium
Postal: PO Box 2873, South Brisbane, BC, Qld 4101
Tel: (07) 3334 4460

Biodiversity Information Standards (TDWG) Annual Conference 2008
19–25 October, Perth, WA
Venue: WA Maritime Museum Victoria Quay, Fremantle
The Taxonomic Database Working Group (TDWG) was formed to establish international collaboration among biological database projects, promoting more effective dissemination of information about biological organisms. Biodiversity Information Standards (still TDWG) now focuses on developing standards for exchanging biological/biodiversity data.
Tel: (03) 6265 9990
Web: <www.tdwg.org/conference2008/>

Veg Futures 08
20–23 October, Toowoomba
Venue: Empire Theatre, Neil St, Toowoomba.
Greening Australia and Land & Water Australia will host Australia’s national vegetation conference, tackling questions
around vegetation management with a focus on biodiversity, water quality and landscape resilience in the face of climate change.

Contact: Lyndal Page, Greening Australia
Tel: (02) 6202 1627
Email: <lpage@greeningaustralia.org.au>  
<www.greeningaustralia.org.au/vegfutures/>

Horizons in Livestock Sciences: The future of agriculture—value or volume? 28–30 October Christchurch, NZ

Venue: Convention Centre, Christchurch, NZ
Jointly hosted by AgResearch New Zealand and CSIRO Livestock Industries, the conference will provide a forum for international speakers, Australian and New Zealand research and industry leaders to explore this year’s theme.

Contact: The Conference Secretariat
The Professional Development Group
PO Box 84 Lincoln University
Canterbury, 7647 New Zealand
Tel: 64 0 3 3253 661  Fax: 64 0 3 3253 685
Email: <lathamj@lincoln.ac.nz>
Web: <www.livestockhorizons.com/>

November

2008 Inaugural National Conference: Green Travel, Climate Change and Ecotourism
17–21 November, Adelaide, SA
Australia’s first global conference dedicated to Green Travel, Climate Change, and Ecotourism will bring together leading authorities on climate change, a broad range of solutions and best practice examples on the topic of greenhouse mitigation, creating green destinations and associated sustainable travel.

Contact: Ecotourism Australia
Postal: PO Box 881Fortitude Valley Qld 4006
Tel: (07) 3252 1530  Fax: (07) 3257 0331
Email: <ceo@ecotourism>

December

World Indigenous Peoples Conference: Education 2008
7–11 December, Melbourne, Vic
This international conference provides a forum for Indigenous people around the world to come together to share and learn from their experiences and promote best practice in Indigenous education policies, programs and practice and also to honour and celebrate their cultures and traditions.

Email: <enquiries@wipce2008.com.au>
Web: <www.wipce2008.com>

APGC Symposium: Plant Functioning in a Changing Global Environment
7–11 December, Melbourne

Venue: School of Forest and Ecosystem Science, University of Melbourne
The symposium will bring together scientists actively involved in research on responses of plant metabolism and functioning to air pollution and global climate change.

Contact: Michael Tausz, School of Forest and Ecosystem Science, University of Melbourne, Water Street, Creswick, Vic 3363
Tel: (03) 5321 4310
Email: <michael.tausz@unimelb.edu.au>
Web: <www.apgc.eu/Home>

2009

February

29th Symposium on Sea Turtle Biology & Conservation: Creating—Community—Collaboration
17–19 February, 2009, Brisbane, Qld

Venue: Convention & Exhibition Centre
This annual symposium brings people together to exchange information that advances global knowledge of sea turtle biology and conservation.

Email: <info@turtlesbrisbane2009.org>
Web: <www.turtlesbrisbane2009.org/>