

ENVIRONMENT

The Newsletter of the Environment Centre NT
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November 2000

NT Government confirms Dam plans

In the October session of NT Parliament, Lands Planning and Environment Minister Tim Baldwin made a ministerial statement on the future of Darwin Harbour and Environs. In this statement the Minister announced the Government's current preferred option for development of the future township of Weddell. The plan involves building what the Minister insists is a tidal weir (not a dam) across the Elizabeth River, just upstream of the Elizabeth River bridge. The damming of the river would result in almost 800 hectares of mangroves being flooded and removed, with untold impacts on upstream and downstream ecosystems.

The justification being presented by the Government for this destruction is that there is no other alternative location for the future growth of Darwin and that flooding the mangroves will eliminate the presence of sandflies thus making the area suitable for human habitation. This begs the question: How sustainable is a city in which the only available option for growth is to destroy unique ecosystems and build high maintenance canal estates on a coastline prone to cyclones? This is a trick question of course because the above is not the only option and in fact should not be considered an option at all. The dangers associated with damming and clearing tropical estuaries are only too well known in other tropical areas. A few of the lessons we can learn from are as follows:
Acid sulphate soils present a very

real danger if mangroves are cleared, as has been found in northern Queensland. Damage from cyclones and storm surge increases on coastlines where mangroves have been cleared, as experienced in southern India. Dams close to the coast around Australia have changed estuarine water flow patterns and increased sedimentation. The clearing of mangroves, among the most productive ecosystems on the planet, leads to a reduction in productivity downstream, ie: less fish, birds and other coastal and marine species.

Proposals for the township of Weddell have been around since 1984, and over that time the suggested location has shifted around considerably. The Government is promising to consult with the community on this dam proposal, but in doing so misses the crucial point: consultation at this stage of planning comes too late. Consultation on the siting of future developments, with a range of options presented, is what the community expects. This is the process we would see the Government implementing if they were serious about community involvement in decision making. There has been a range of alternative suggestions put forward by the community for where Darwin could expand; yet we are now expected to accept that this option is the only one available. We encourage members to participate in whichever public processes eventuate with regard to this proposal. In the meantime look out for the Darwin Harbour Alliance petitions,

stickers and postcards, coming soon to a public space near you.

HELP NEEDED: You can help save Darwin Harbour from the NT Government's dam plans. Ask your local shopkeepers if they will have the DHA petition boards on their counter. Let us know at ECNT which shops are willing and help us to distribute the petitions.

There will be a working bee to construct the petition boards on Wednesday the 8th of November, 7-9 pm. Please contact ECNT if you can come and help.

Revamped ECNT Website now online

After weeks of work, the ECNT website has been updated and revamped. It's still under reconstruction in some places but check it out at: www1.octa4.net.au/ecnt

Inside your November Update:

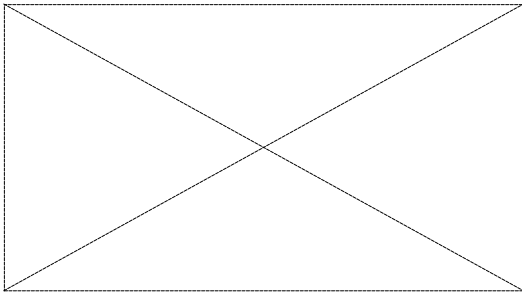
pages 2-5. A series of articles about fire regimes in the NT.
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Burning for biodiversity

results from a decade of fire research

*Alan Andersen
CSIRO Tropical
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Centre*

Fire is such an important part of the northern Australian landscape, as it is in savanna environments throughout the world. Most of the fires are deliberately lit by people, including conservation managers. The most common management practice is to burn extensively in



the early dry season (May/June), when the country is still relatively moist, and fires tend to be low in intensity, patchy, and small in extent. This reduces the extent of higher intensity wildfires that inevitably occur later in the dry season.

Land managers and scientists all agree that fire needs to be actively managed in the Top End. The question is not 'Should the country be burnt?', but 'How (when, where and how often) should it be burnt?'. The ecological effects of different fire regimes are inadequately understood, so there is uncertainty over precisely what fire regimes are best for nature conservation. With this in mind, in the late 1980s CSIRO established a landscape-scale fire experiment at Kapalga in Kakadu National Park, to test the effects of a range of fire regimes on the savanna woodlands that dominate the region. The study involved researchers from a variety of universities and other organisa-

tions, as well as from CSIRO, and received valuable support from Parks Australia North, the managers of Kakadu. It covered a wide range of topics, including fire behaviour, atmospheric chemistry, nutrient cycling, hydrology and stream dynamics, vegetation, arthropods, and all vertebrate groups.

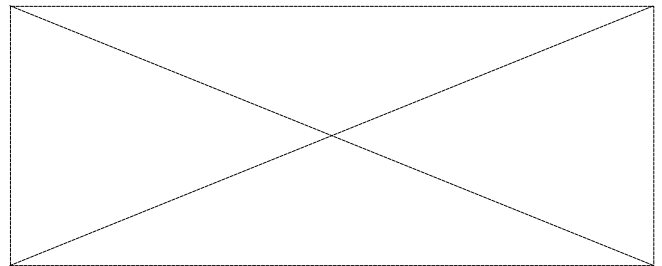
The Kapalga experiment yielded a lot of detailed information, but two recurring themes emerged. First, although our experimental treatments ranged from no fire whatsoever to fires lit annually late in the dry season, many plants and animals showed little or no response at all. This indicates that much of the savanna biota is highly resilient to fire. Notable exceptions to this are riparian vegetation and associated stream biota. Despite this general resilience, fire still has many important effects. Somewhat surprisingly, however, in many cases the contrast was not between Early (low intensity) and Late (high intensity) burning, but between burnt (whether Early or Late) and unburnt. This indicates that fire frequency is a particularly important factor, more so than previously recognised.

Fire frequency is an especially relevant issue in the Top End, given that much of the country is burnt every one or two years. Our Kapalga results indicate that plant recruitment and biodiversity can only be optimised if substantial areas of savanna are maintained with a fire frequency of at most once every 3-5 years. This could be achieved by reducing the amount of country burnt each year. However, given the high

incidence of unauthorised burning, it is not clear how fire managers can do this. Another option is to deliberately 'spell' parts of the country. CSIRO is currently exploring these options.

Kapalga has provided important information for conservation managers, but many questions still remain. Indeed, there will always be much more to learn about the ecological effects of fire in northern Australia. This means that conservation managers can never be totally confident that they have got it absolutely right. It is therefore important that effective monitoring strategies are implemented, such that management is continually refined by new information in an adaptive management framework.

Finally, management can only ever really be effective if there are clear management goals that have been agreed on. With fire we have an opportunity to shape the Top End environment in a number of ways, but different people can have different perceptions of what is 'good' and 'bad'. Aboriginal and European perceptions of



environmental values can be quite different, and views can vary substantially among conservationists. We need to be able to agree on exactly what we want before we can move forward.



Threats to the Native Plants of the Top End

By David Cheal
Parks & Wildlife Commission NT

There is a persistent myth that the habitats of the Top End of the Northern Territory (that part north of about 18°South) are largely undisturbed – little changed from their condition before European settlement and in some sort of benign, relaxed balance overseen by 'Mother Nature'. Even those of us who should know much better, such as biologists and land planners, repeat this silliness. In spite of the low (human) population density, there have been major impacts and changes and many of these changes have had dramatic effects on native plants and animals. Introduced species now dominate in many sites, the wildlife is facing novel predation and grazing pressures and land clearance is increasing.

However, the most dramatic change has undoubtedly come from a dramatically changed fire regime. Very few parts of the Top End now experience a fire regime that resembles the fire landscape pattern of 200 years ago. A small settler population, smaller than Geelong, has brought about all-of-landscape change – no part is unaffected.

Recent work by Russell-Smith, Edwards and others have shown that nearly all of the open-forests and woodlands, two thirds of the sandstone heathlands, and even 40% of the monsoon forests, have been burnt at least once by two fires only 3 years apart. At least once, these areas have had a second fire within 3 years of a previous fire. Many Top End plants tolerate such frequent fires by resprouting from protected buds insulated beneath bark, wood or soil. To the casual observer, it can appear that the current fire regime is having little impact. After all, most trees resprout, as do many of the understorey shrubs, and the field layer is a vigorous green sward of native grasses soon after the onset of the rains of the next Wet Season. There is a number of problems with such a glib assessment – 'Most woody plants resprout'

1. true, but some don't, and with fires at such frequent intervals there is no opportunity for the next generation, the seedlings, to establish and grow large enough so that they too can tolerate frequent fires. Seedlings are too small to survive even a single fire, when most adults of the same species seem able to tolerate repeated fires. Thus even plant species famous for their ability to tolerate frequent fires (such as the various cycads, *Cycas* and quinine bushes, *Petalostigma*) decrease and become less common with repeat fires. The vegetation is opened out and simplified. The flammable annual grasses do very well, as they are already dead when the Dry season fires are lit. The resultant nutrient-enriched ash bed encourages the next Wet season's annual grasses and thus **increases** the likelihood of the next fire which further improves the habitat for the next generation of flammable grasses, and so on ...

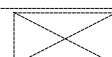
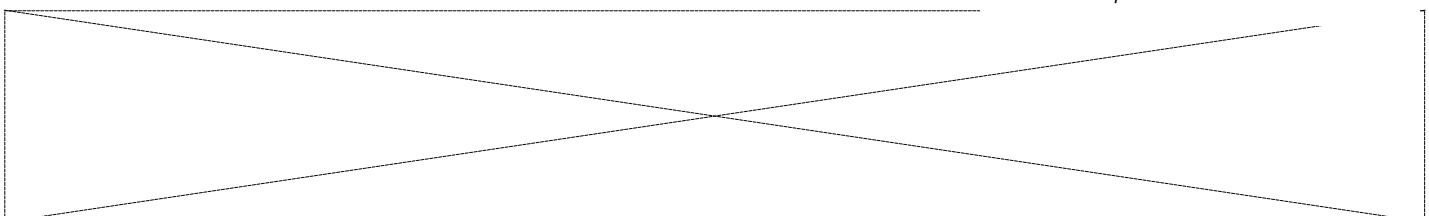
2. Particularly in the sandstone heathlands, many of the shrubs do not resprout after fires but rely solely on seed regeneration. It takes at least 3 years for many of these shrubs to flower and set any seed, and many species take a lot longer. A single fire, if within 3 years or less of a previous fire, is enough to send many of these shrubs to local extinction. As a result, huge areas of heathland (the dominant vegetation community of the sandstone ranges, such as in the large National Parks – Gregory, Kakadu, Litchfield, Nitmiluk) are being rapidly converted to grasslands of annual grasses or spinifex under an open canopy of fire-hammered senescent trees.

The Parks & Wildlife Commission (incorporating the Bushfires Council) has a very small staff to cover an area larger than a couple of Victorias and Tasmanias added together. The most damaging fires are late Dry season fires – these reach high intensity and often burn tree crowns. Early Dry season fires are more patchy, lower intensity and more controllable. Fire management is currently focussed

on shifting the fire season from late Dry season to early Dry season and there has been some moderate success here. Fires still burn (too) frequently, but the intensity is lower and there is some patchiness. Small areas may escape a burn, but it's a very tenuous vegetation management strategy that relies on these small, occasional and unpredictable unburnt islands to preserve species or whole vegetation strata.

But even this moderate achievement and small hope is threatened. Fuel levels of dried grasses in native forests are low, varying from 3 to 8 tonnes per hectare. But open forests around Darwin and other settled areas may have fuel levels around 15 to 20 tonnes per hectare, producing high intensity fires that annihilate whole communities and species. The increased fuel loads derive from invasive, tall-growing introduced pasture grasses. The two worst species are Gamba Grass (*Andropogon gayanus*) and Mission Grass (*Pennisetum polystachion*), but there are others that were also introduced and spread as useful pasture grasses. They are still being spread. Invaded forest looks like a sugar crop with a scattering of eucalypts poking through, and this is now the usual condition for much 'native' forest around Darwin. High fuel levels can build up in a single growing season (Darwin is the wettest of Australia's capitals), supporting fires **every year**, and sometimes twice a year. As these tropical grasses are considered useful pasture grasses, there is no prospect of approval for biological control. Around Darwin, the situation is beyond feasible control and getting worse. These grasses are spreading rapidly into other parts of the Territory. Plant and animal species, and whole habitats and communities, are directly threatened. We are heading towards depauperate African savannas, but without even the compensation of large herds of grazing wildebeest.

This article was sourced from the May 1999 edition of "The Web", newsletter of the Threatened Species Network.



STREAM DYNAMICS

By Dr. Michael Douglas
(NTU) and Simon Townsend
(DLPE)

The seasonal pattern of rainfall in the Top End means that most of the streams do not flow all year round. Instead, these "seasonal streams" flow for just a few months during the wet season and remain dry for much of the year. During this dry period, fires frequently burn large parts of the stream catchment, but no one knows what effect this has on the streams themselves. As part of the Kapalga Fire and Water Project, we studied the effect of catchment burning on the water quality and on the aquatic plants and animals in seasonal streams. Initially we focused on the Unburnt and Late burnt treatments.

Riparian (stream side) vegetation

Riparian vegetation was very sensitive to late dry season fires. Compared with the Late catchments, Unburnt riparian zones had twice as many species and about three times the density of woody plants. Vines and climbers were also much more abundant and diverse in the Unburnt riparian zones. The most common Eucalypts along these streams, *Eucalyptus alba*, set seed in the Unburnt catchments but didn't even flower once they had been burnt late in the dry. In short, late dry season burning seemed to either kill the woody plants and vines or reduced reproduction; clearly a detrimental effect. Within the stream itself, however, it was a very different story.

Water quality

There were very few differences in any of the water quality features that were measured. Twice as much sediment was exported from Late burnt catchment than the Unburnt catchment. Unlike the Unburnt streams, Late burnt streams had several episodic runoff events, of

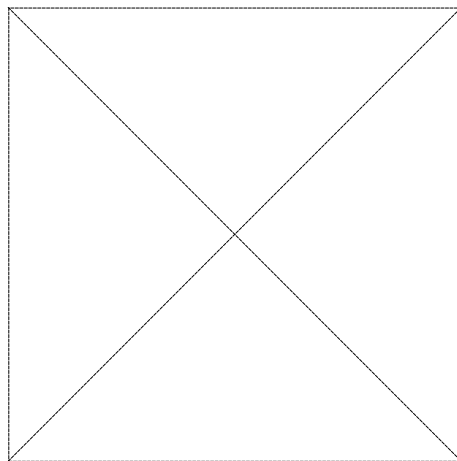
"poor" water quality, before continuous wet season flow.

Aquatic vegetation

Probably the most obvious life in these streams was the lilies, wild rice and other aquatic plants that were common in pools at the end of the wet season. There was, however, a dramatic difference between aquatic plants in Late burnt and Unburnt catchments. Streams in Late burnt catchments contained six times as many different species and over ten times the biomass of aquatic plants. In fact, it was difficult to *any* aquatic plants in most of the Unburnt catchments.

Aquatic invertebrates

Less obvious than the water plants, are the multitudes of aquatic invertebrates that inhabit these streams. Like the aquatic plants, these tiny animals also seemed to benefit from catchment burning. Throughout the wet season, streams in burnt catchments had 50-100% more species of aquatic inverte-



brates than streams from Unburnt catchments. At some times of year there was also a greater abundance of aquatic invertebrates.

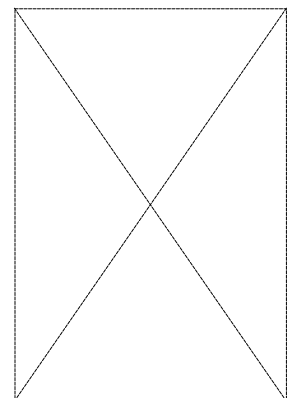
Which fire regime?

Given the very different outcomes for riparian vegetation and aquatic biota, is late dry season burning or total fire exclusion the best approach to fire management for these streams? The answer now appears to be: none of the above! Instead, research at Kapalga over the last three years indicates that burning

This issue of **ENVIRONMENT** features several articles by a variety of contributors addressing the complex issue of **FIRE**. We hope you find these articles interesting and informative

early in the dry season seems to provide a mixture of desirable management outcomes. Catchments burnt Early in the dry season had similar water quality and similarly high richness of riparian vegetation to that found in Unburnt catchments. Riparian tree density, riparian canopy cover and the total amount of aquatic plants in the early burnt catchments were all somewhere between the results for Unburnt and Late burnt catchments. The richness of aquatic plants, however, was as low as it was in Unburnt catchments. So burning early in the dry season seems to be a reasonable trade-off between maximising the benefits for riparian vegetation and stream plants and animals.

Regardless of the fire management regime used, our research has shown that there is a strong link between tropical savannas streams and their catchments. Consequently, fire management, which has been traditionally considered a "land" management issue, has clear implications for the management of riparian and aquatic resources.



Germination and Fire

By Dr. Sam Setterfield

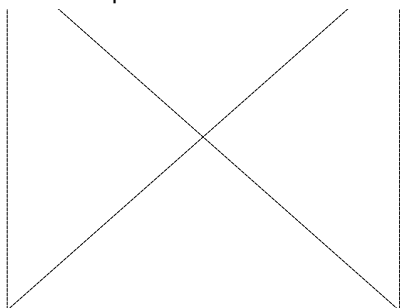
Savannas are affected by frequent fires, which can have a major impact on the regeneration of plant species. I undertook a study at the CSIRO Kapalga Research station in Kakadu National Park that investigated the effect of three experimental fire regimes - unburnt, annual fire early in the dry season and annual fire late in the dry season - on seed production and seedling establishment. I studied the effects on the Darwin Woollybutt (*Eucalyptus miniata*, a dominant overstorey species), and an Acacia (*Acacia oenocarpa*, a common midstorey species). Both of these species produce seed during the dry season, which coincides with the fire season.

For the Woollybutt, annual burning late in the dry season substantially reduced both the number of trees that flower, and the number of flowers per tree. By contrast, burning early in the dry season and the absence of burning led to a much higher number of trees flowering, with a high density of flowers in the canopy. Although burning early in the dry season did not reduce the amount of flowering, it did kill flowers before they developed seeds. As a result, the number of seed produced by Woollybutt trees was 5 times higher in the unburnt regime than in the burnt areas.

A similar pattern was found for the Acacia, with 4 to 8 times the amount of seed produced by each plant in the unburnt area compared to the early burnt area.

Therefore, fire reduced the amount of seed available for regeneration in both the Eucalypt and the Acacia. So what was the effect of fire on seed germination and seedling establishment? This question was answered by sowing Eucalypt and Acacia seeds in the unburnt area, and the areas burnt early and late in the dry season, and counting the number of seedlings that established. The experiment showed that burning either early or late in the dry season reduced seedling emergence compared to unburnt sites. The differences in establishment are probably due to higher tree canopy cover and lower grass cover in the unburnt area, and the higher abundance of seed harvester ants in the burnt regimes.

This study shows that annual burning either early or late in the dry season greatly reduce the recruitment of *Eucalyptus miniata* and *Acacia oenocarpa*. Frequent fire reduces the amount of seed produced, and reduces the chances of seedling establishment. Therefore, a fire-free period of at least a few years is essential for seedling regeneration of these common tropical savanna species.



Underground Recycling Out of Sight- Out of Mind

By Strider—a personal view

In 1961 (when I was 18 years old) I read Sir Frank Fraser-Darling's book "Wildlife in an African Territory". The territory in question was Rhodesia (now Zimbabwe). In that book, Sir Frank drew attention to the damage done to invertebrate life in the soil (and the ability of the living soil community to recycle plant nutrients) when its food supply is burned by fire.

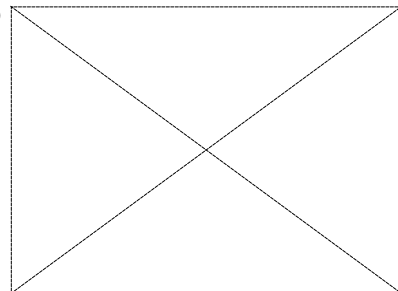
From that time on I have observed our landscapes with that firmly in mind. Since 1976 I have been involved in close study of fire and its ecological consequences. Since 1980 I have been directly involved in the fire exclusion experiment at the Solar Village.

With fire excluded, the soil rapidly (ie in less than 3 years) regained part of its ability to decompose fallen litter and dead grass so that "dry season fuel loads" decreased compared with annually burned sites. By the 3rd or 4th year decomposition ran on dewfall after the rain ended - effectively extending the growing season by a month or so.

After 6 or 7 years without fire the soil had changed beyond recognition. Seedlings began to germinate in new places in considerable numbers, with "aquatic" species breaking out of the gallery forest along the creek to colonise high and drier sites.

In most situations after 7 years without fire the number of tree and shrub species had doubled (and the total number of established individuals had tripled) compared with the starting (ie annually burned) condition.

Under annual burning many individuals of many species fail to flower or the fruit to ripen seed. After about 7 years without fire some species begin to fruit heavily and to fully ripen their fruit. After 14 to 18 years without fire some other species begin to flower and fruit.



Infertility due to trace element deficiency (or general malnutrition) is common in both burned and unburned country. The loss of these trace elements in modern fires may be the critical factor here.

In most, but not all species, fertility is recovered, in most places, when fire is excluded. Ironwood trees are an exception. When fire is excluded ironwood s are in serious trouble.

The increase in shade in unburned areas is very noticeable, as is the associated reduction in soil surface temperature. Even so, most seedlings still need some tree trunk shade if they are to become established.

Land Clearing in the Litchfield Shire

By Sally Jacka

When it comes to the issue of land clearing, of late, people think - Queensland - that's where it's all happening. But don't be fooled. It is happening at an alarming rate here in the Top End also and action to slow it down before it is too late is essential.

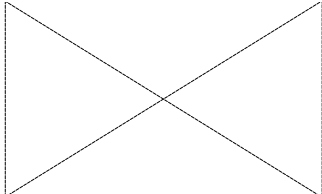
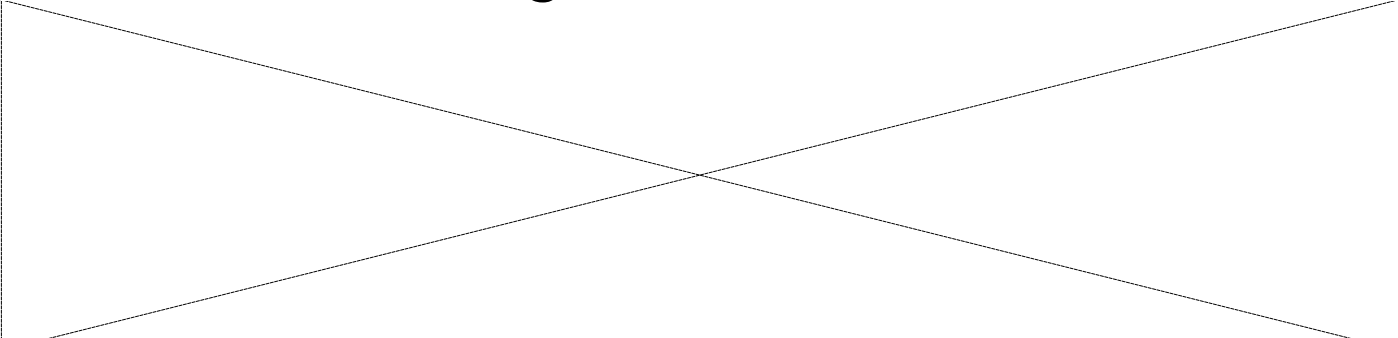
The Litchfield Shire has a '50% clearance rule' for blocks zoned as 'Rural Living'. This means that you can clear 50% of your block, whether it be 2ha or 130ha, regardless of the landform, be it a wetland, a drainage line or steep slope, with no assessment made on potential environmental impact or sustainable land use. If you wish to clear more than 50% of the vegetation on your block (which, by the way, might already be partially cleared by a previous owner), then you must apply to the Development

Consent Authority for a permit. Generally the permit is granted, however often with conditions such as maintaining vegetated boundary and drainage line buffers. It should be noted that properties zoned for horticulture have no landclearing restrictions.

While the standard 10 to 50m buffer most properties in the Litchfield Shire are required to maintain provides visual amenity and some spray drift protection, it is doubtful that they provide for viable wildlife corridors, and biodiversity is not necessarily maintained by providing vegetation corridors which follow straight fence lines. Other factors come into play, such as the lay of the land, soil types, presence of water and connectivity to other patches of vegetation.

It is a sad fact that the deep well drained soils sought after by horticulturalists, which occur in isolated patches in the Top End, are the only places you will find tall specimens of the local *Eucalytus miniata* and *tetradonta*, which provide homes for numerous birds, reptiles and mammals. These soils also contribute to the preferred habitat of *Cycas armstrongii*.

There are some who believe that the NT is different - that we still have plenty of bush left. Yes, we do have more than most, but, it's a fact - plant communities are disappearing and there is evidence of serious bird and mammal species decline in the Top End, of which land clearing is a major contributing factor. Land clearing in the Northern Territory is a major issue **now** and must be tackled **now**.



New Australian climate change website

ECNT is an active member of the Climate Action Network Australia (CANA). CANA is the network within which 30 Australian environment groups work together on climate change issues. CANA is the Australian connection to a global network of CAN's on every continent.

CANA's new website is up and running. Visit via the ECNT site or go directly to <http://www.climateaustralia.org>

The website is a great one-stop shop for useful information.

The "Climate Change in Australia" library gives an update on the latest science of climate change in a simple and visual way. It answers questions like:

- * Is the planet warming and why does it matter?
- * Is Australia warming?
- * What will the climate be like in the future?
- * The impacts of climate change on eco-systems

Click on the Northern Territory map in this section and get an information sheet about the impacts of climate change where you live. All this information is drawn from published scientific literature, written in clear and accessible language for use by the broader community.

The "Cutting your own pollution" section puts you in touch with greenhouse friendly energy and transport advice services in your area.

Click on "Take Action", and you can sign up to receive information updates about climate change issues in Australia. The CANA members page will link you to all the environment groups around the country and the world that are joined to this network.

Climate change caused by a rapid warming of the atmosphere is the biggest challenge facing the global community today. Get both a local and global perspective by being a regular visitor to the CANA website.

Bits and Pieces

AGM

The Annual General Meeting for the Environment Centre will take place on Thursday, 16 November at 5.30pm at the Environment Centre office, 3/98 Woods St. We are at the Daly St end (with a telephone box out the front) We invite all our members to come along to check out our new office and to join us for some refreshments after the meeting. We will also have on sale a selection of cards we still have from the shop days for a very low cost – suitable for sending at Christmas and a new supply of our cloth shopping bags with the swimming turtles logo. They make great presents as well.

Wild Spaces Festival Volunteers needed

NT members will have received an insert detailing the “Wild Spaces” Environmental Film Festival, organised by the Deckchair Cinema. The Environment Centre will be making and selling food on both nights, as well as having an information table about some of our campaigns. **If anyone wants to volunteer to help in any way (to cook or serve food, clean up or sit at the stall before sessions) please give us a ring.**

ERA Profits fall

Energy Resources of Australia (ERA) held its Annual General Meeting this month, the first since Rio Tinto gained ownership of North Ltd, the majority shareholder in ERA. The meeting was attended by representatives from Friends of the Earth, the Australian Conservation Foundation and the Mineral Policy Institute who reminded the new board of the opportunity they have to get out of Kakadu. Rio Tinto are undertaking a review and are yet to clarify what the future will hold for ERA's hopes to develop the Jabiluka uranium mine. ERA's managing director, Bob Cleary suggested that ERA's profits for the next year are likely to drop with the low uranium spot price internationally. Average uranium prices have dropped by more than \$US2 in the past year, bringing the economic feasibility of the Jabiluka proposal into question.

Weeds Book Reprint

We received great news last week that our application for a grant to update and republish this publication has been approved. We will make this one of our first projects for the new year and hopefully will have it available in a few months

Australian GE Free Canola wins with EU

Late October saw further evidence of the global trend away from genetically modified organisms. The European Union, having lower canola crop yields than expected this season was forced to look elsewhere to meet demand. Australia and Canada, being the top two producers were considered. The EU is buying Australian canola because of its GE Free status. It's still not too late for Australia to cease all GMO trials and crops and capitalise on the competitive advantage of organic and GE free produce.

You can help : Write to the Prime Minister and tell him what you think about Genetically Modified Organisms being grown in Australia.

The latest Gene Ethics NT Newsletter is included with this edition of EnvironmnNT

Waste Matters - Recycling

This month I visited the Wastemaster Recycling centre at Palmerston to try to form a clearer picture of the local recycling scene. According to the Wastemaster representative, Darwin households are improving in their recycling, but still have quite a way to go, with the need to improve sorting of articles before depositing into bins.

The variety of separation methods incorporated into the conveyor belt loop is quite amazing, including; magnets which attract the tin cans, sieving which removes contaminating materials including broken glass and stones, blasts of air which lift plastic and aluminium objects and finally, manual sorting at the beginning and end.

I was told that all materials are being sold at present. Newsprint goes to Indonesia and Malaysia, Cardboard, glass and plastics go to Brisbane and coke bottles to China(!)

Compost

I also had a meeting with two employees of Darwin City Council to discuss what can be done to encourage people to make better use of composting, rather than putting kitchen and garden waste into rubbish bins. Council will be talking with us about ways to improve their existing leaflet on composting, as well as some kind of publicity program to remind people how easy and quick composting can be in the Tropics. People who have never tried it before would not believe how easy it is and what a difference it make to the soil. I'm sure most of our readers would know this already, but if you don't, talk to me!

Another matter we discussed was commercial waste management and it was encouraging to learn that one hotel, the Centra Darwin, has a policy of separating their waste into recyclables and non recyclables. This kind of initiative needs to be recognised and encouraged. Di Koser

Art Paper available

The Bureau of Meteorology in Casuarina has been keeping us supplied with one-sided A4 paper which we use in our photocopier and in our printers. However, they also have regular suppliers of beautiful paper of other sizes, up to A1 which they are happy to give to anyone with contacts in schools, childcare groups etc. Ring Tim Buckley on 89203800 and tell him we sent you.



Dates to remember in November

Sat 4th and Sun 5th—Wild Spaces Environmental Film Festival at The Deckchair Cinema. ECNT catering, come early for dinner.

Wed 15th—Gamba Grass Workshop at Berry Springs

Thurs 16th—ECNT AGM at 3/98 Woods Street

Friday 24th—International Buy Nothing Day

The views expressed in *EnvironmeNT* are not necessarily those of the Environment Centre NT management committee
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