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~ JUNE 2005 NEWSLETTER ~ **MEETINGS AND FIELD TRIPS**

We meet on the third Thursday of the month at 7:30 pm. General meetings conclude by 8:15 pm and are followed by a guest speaker beginning at 8:30 pm. There is time for a cuppa between the meeting and the guest speaker. The venue for the meeting is Marrara Christian School, on the corner of Amy Johnson and McMillan Drives. All welcome. Bring plants to swap, sell or have identified.

~ SUBSCRIPTION REMINDER ~ **MEMBERSHIP FEES ARE DUE 1 JULY 2005**

See the back page of this newsletter for details

~ NEXT MEETING THURSDAY 16TH JUNE ~ **~ GUEST SPEAKER ~**

**“FUTURE DIRECTIONS FOR LANDSCAPE ECOLOGY IN
NORTHERN AUSTRALIA; BUILDING ON THE LESSONS FROM
PALMS AND TERMITES.”**Professor David Bowman

School for Environmental Research Charles Darwin University

Professor Bowman is an internationally renowned ecologist who has published on a wide range of topics, from fire to the extinction of the megafauna. A long-term resident of the Top End and holding a long-term interest in landscape ecology, David has espoused many original and at times controversial ideas. An entertaining and thought-provoking speaker, this will be a talk not to be missed.

~ JUNE FIELD TRIP ~

Sunday 19th June – Award of Life Membership to Joyce

The June Field Trip will be a celebration of the contribution made to the Society by our long-standing member Joyce Stobo. A walk in the rainforest at Lamaroo Beach is to be followed by a grand afternoon tea and a presentation of Life Membership to Joyce. We will be meeting at the Cenotaph on the Esplanade at 1.30 pm with the presentation planned for 3.30 pm. Please bring some afternoon tea, a deck chair and cup.

~ OTHER UPCOMING EVENTS ~

Thursday 21st July

General Meeting: Plant Identification techniques Dale Dixon, NT Herbarium.

Saturday 30 July to Monday 1 August

Field Trip: Plant Identification Workshop

We have arranged a plant identification workshop for over the Picnic Day long weekend in Litchfield National Park. Dale Dixon will follow his talk to assist with instruction at this workshop. The workshop is aimed at the needs of participants with no expectation of pre-existing plant identification skills. A keenness to learn is the only prerequisite. The venue is the Environmental Education Campground in Litchfield National Park, near Buley Rockhole. The campground

comprises a large shelter shed, a kitchen and store room at one end; a gas cooker, stainless steel bench and sinks; sturdy trestle tables and plastic chairs; an ablution block; grassed area for tents; fireplace; solar lighting and generator if required. The camp is set in the bush with a small creek nearby and small plunge pool. The cost will be \$3.30 per adult per night (16 years and over), \$1.65 per child per night (5-15 years) or \$7.70 per family per night (2 Adults / 4 Children).

Meeting the third Thursday of the month at 7:30 pm at Marrara Christian School Library 1

~ Carbon Flux (flow) in the Savanna – a fascinating talk by Dr
Lindsay Hutley 19th May ~

Prelude: (Increases in green house gasses due to the actions of humans has lead us into uncharted territory. The environmental response, be it climatic patterns, sea level changes or the growth of plants is full of unknowns. Against this background of great unknowns, there is a network of researchers around the globe focussing on many aspects of increased “greenhouse gasses” and the associated global warming – DL).

Dr. Lindsay Hutley and a team of researchers from a range of institutions have been looking into carbon cycling in tropical savannas. While savannas hold a relatively small quantity of carbon per ha, their extensive nature means their total carbon store is significant. However, as for the global situation, little is known about the response of savannas, even basic questions such as: are savannas acting as a carbon sink?

Globally it is considered that vegetation is absorbing around 50% of emissions per year i.e. terrestrial vegetation is a net carbon sink. However, some tropical areas are releasing carbon due to losses through deforestation such as in the Amazon and Asia. Even where vegetation is acting as a sink, there is probably a limit as to how long this store can continue to increase. Limits in nutrients such as phosphorus and nitrogen in the soil, or available water will eventually affect the ability of plants to grow. Humankind is running on borrowed time. When the rate of absorbance slows down the rate of increase in the atmosphere will become greater. In addition, respiration is exponentially related to temperature so with an increase in temperature there will be more respiration from the soil. Thus there is a feedback loop with increases in temperature promoting the release of carbon. Just on this respiration business, Lindsay mentioned that night time measurements of carbon gasses reached 600-700 parts per million on a still wet season night near the ground. This compares with a “normal” atmospheric figure of around 350

parts per million (I presume this reflects the high level of respiration in the soil -DL).

The Ozflux Network* operates in this country while nationally Fluxnet** links a series of researchers and sites around the globe. Not surprisingly there are few tropical sites, with a prominence of sites in economically strong areas such as North America, Europe and Japan. Savanna carbon flux field studies have been carried out in the Howard River Catchment in *Eucalyptus tetradonta* and *Eucalyptus miniata* country and at Virginia Park in Queensland. The Queensland site is located inland from Charters Towers in country with a similar vegetation structure to the Top End study site.

In **mesic savannas** such as near Darwin the **ecosystem** holds around **192 tonnes** of carbon per ha. The **above ground component is 35 tonnes**, comprised of trees holding 32, the understorey 2 and litter 1 tonne per ha. The 32 tonnes of tree carbon is comprised of leaves 1, branches 8, stems 22 and dead stems 1 tonne per ha. The **below ground plant** component contributes around a further **17 tonne**, comprised of coarse roots 16.4 and fine roots 0.4 tonnes. The remaining **151 tonnes** comes from **humus and micro-organisms in the soil**, measured to a depth of 1m. Thus the soil holds a major component of carbon in our Top End landscape.

However, the interest is not limited to what is there, but how it changes. Gas exchange can be measured above canopy with instruments allowing the pattern of carbon flux to be followed over time. Preliminary data indicate that with fire around 50% of the annual production of carbon goes up in smoke. With fire the Top End site became a carbon source. However, in 3 months the canopy rebuilt and then the system reverted back to being a sink. Overall the burned site in the NT was a net sink throughout the study. In contrast, the Queensland site was grazed and was a net source of carbon over a two-year study period.

Of course the above is a simple summary of a complex story with seasonal changes that can vary between components of the system. Interestingly, the leaf area index for the canopy was relatively stable (I presume in the absence of hot fire scorching to the highest twigs! -DL) while not surprisingly the understorey was highly seasonal. There are also differing patterns with tree increment, season fine root turnover and release of CO₂

from the soil. Lindsay provided us with plenty of food for thought, numerous facts and figures and some intriguing insights as to how our Top End savannas contribute to the cycling of carbon. Without doubt we will hear much more about carbon flux as we humans face the legacy of our ongoing consumption of fossil fuels.

- Dave Liddle

* OzFlux is a network of micrometeorological flux stations located at various sites within Australia and New Zealand. OzFlux is part of a global network of over 150 sites where exchanges of carbon dioxide, water vapour, and energy between terrestrial ecosystem and atmosphere are measured continuously over long periods. Its purposes is to

- understand mechanisms controlling exchanges of carbon, water vapour and energy between terrestrial ecosystems and the atmosphere over a range of time and space scales.
- provide data on carbon, water and nutrient balances of key ecosystems for model testing.
- provide information to validate estimates of net primary productivity, evaporation, and energy absorption using remotely sensed radiance data.
- provide data to validate new developments in micrometeorological theory for fluxes and air flows in complex terrain.
- provide high precision CO₂ concentrations measurements for use in regional, continental and global atmospheric inverse studies of the carbon cycle.

<http://www.dar.csiro.au/lai/ozflux/index.html>

** FLUXNET is a global network of micrometeorological flux measurement sites, which measure the exchanges of carbon dioxide, water vapour and energy between the biosphere and atmosphere. At present over 140 sites are operating on a long-term and continuous basis. Vegetation under study includes temperate conifer and broadleaved (deciduous and evergreen) forests, tropical and boreal forests, crops, grasslands, chaparral, wetlands and tundra. Sites exist on five continents and their latitudinal distribution ranges from 70 degrees north to 30 degrees south.

http://www.fluxnet.ornl.gov/fluxnet/FLUX_Plan.cfm

~ Plant Sales ~

The Top End Native Plant Society will be participating in the **Tropical Garden Spectacular** at the George Brown Darwin Botanic Gardens again this year. The event is being held on the weekend of the **6th and 7th of August**. Members who are keen on propagating natives are encouraged to get their plants ready for the Spectacular. If the plants are not ready for this sale then they will well and truly be ready for Willy's Open Garden, which is taking place in early April 2006.

Guidelines for labelling potted plants have been prepared by Pat, and are at present being discussed by committee members.

These events are an important part of the TENPS calendar in terms of publicity for the club, educating members of the public about natives, promotion of native plants and also as a source of funds.

~ Open Garden ~

This is a list of plants Willy would like to be able to try to get established in his garden prior to the open garden day next year. If you can assist please bring contact Willy at 7A McArthur Court Leanyer.

Abutilon spp

Acanthus ilicifolius L.

Allophylus cobbe (L.) Raeusch.

Borreria sp

Calandrina quadrialuis

Dioscorea transversa R.Br.

Ervatamia orientalis R.Br.

Hibbertia spp

Ipomea aquatica

Lindernia plantaginea (F.Muell.)

F.Muell.

Melastoma polyanthum

Monochoria australasica Ridl.

Osbeckia australiana Naudin

Pemphis acidula J.R.Forst.

Pimelea punicea

Protasparagus racemosus

(Willd.) Oberm.

Psychotria nesophila F.Muell.

Gomphrena spp

Wrightia pubescens R.Br.

Ziziphus oenopolia Mill.

~ MEGAPODIUS REINWARDT ~ A Bane or a Blessing?

I enjoy observing the birdlife on my block at McMinn's Lagoon and it is always with pleasure that I see a species I have not seen there before. I first set eyes on *Megapodius reinwardt* in my garden in 1991 and my attention was caught by the quaint appearance of the bird, with its small crested head set on a longish neck, rounded chook-like body and long scaly orange legs atop huge clawed talons. Thrilled by this new addition to avian visitors to my garden, I dashed for my bird books and quickly and easily identified it as *Megapodius reinwardt*, known commonly as the 'orange-footed scrubfowl'.

For those who are unfamiliar with this species, the scrubfowl is an industrious builder of mounds that are scraped and turned and rebuilt over long periods of time by pairs of birds, said to be bonded for life. I have read that, when the fermenting heap heats to 33 degrees centigrade, a tunnel some 2 metres in length is excavated into it into which the intrepid female descends to lay her eggs. Several pairs may use the same mounds at various times, and the clutches hatch out over a period, the young being highly mobile in a very short time and able to fly short distances when only 2 days old. This information I read and digested eagerly and began to watch out for this new and interesting visitor. To my disappointment, it stayed with me only a short time and then went elsewhere. I was quite sad – how naïve I was!

Some years ago, a neighbour shocked the rest of us by taking a shotgun to these interesting birds. He reduced three or four to nothing more than a small heap of feathers. When questioned about this he said he became annoyed with them because they threw his mulch all over the place. At the time, I was horrified by his attitude. Now, however, I am locked daily in a war of attrition with these birds! I am to be seen pursuing them with a leaf rake or hurling sticks and stones at them as they perch in trees just out of reach and the resident hound has been advised that the prohibition on hunting fowl is lifted in this instance! At the present time, as many as four of them at a time are to be found foraging industriously through my house garden and on the bush block outside. I had decided that I needed to fill in the spaces under trees that had matured and I began to create raised beds into which I planted soft herbaceous species and shrubs. Alas for me, the orange-footed "wonder" bird has taken to these beds with a vengeance, raking out the mulch with its massive clawed feet, digging into the moist soil below and excavating it from the roots of small tender plants. Patiently, I restore soil and mulch each morning – and on occasion several times a day – but as the mulch is broken down by this activity and the soil blended with it, somehow it never settles well again. Remaining very loose and open, it quickly loses moisture.

Ah ha, wait for the wet season, I thought last year, these birds then go bush and I will have a chance to establish my plants well enough to survive their ravaging come the dry. This time I set out to plant up a bare area outside the garden with native trees. In went a very

hard to encourage beneficial organisms and industrious worms to work my soil, these pesky birds are seeking out those same glorious things to feed upon! Even as I water and mulch, rewater and remulch I know, deep in my heart, that these activities serve only to



Photo from: <http://www.worldwildlife.org/wildworld/profiles/photos/aa/aa0706aS.html>

small *Pararchidendron pruinosum*, some *Acacia torulosa*, *shirleyi* and *mountfordiae*, *Guettarda speciosa*, *Glycosmis trifoliata*, *Micromelum minutum* and *Cananga odoratum*, each with a moat around it for water and all carefully mulched. They settled well and I was pleased – until the wet ended abruptly and all too soon the dreaded birds returned and resumed their deadly activities with vigour. The *Pararchidendron pruinosum* is no more, killed not by excavation but rather smothered by mulch scraped from a nearby acacia! Those little moats, built carefully to contain water delivered by hand during the long dry, exist no longer. In the darkness of the night, a horrendous gurgling cackling sound, halfway between terrified screech and maniacal laughter, resounds through the bush as bird communicates with bird and the persistent sound of scrunching and scratching is heard outside my bedroom window as those great claws rake their way through mulch and leaf litter, concentrating particularly in those areas carefully watered to encourage new, young plants to grow. Whilst I am working

encourage these monsters. I have observed that other young trees I planted out on the block during the brief wet, and which are being left to survive as best they may through the dry, are ignored by the marauders. Perhaps this shows the way to go – perhaps I should cease my endeavours and let nature take its course!

It is, of course, frustration and impotence that drives me to dislike this bird. In fairness, it has its own side to the story. It is doing no more than we are doing ourselves - to wit, it is scratching its living from the soil, and does that naturally where it is easiest and most rewarding - and I am helping it! I have tried placing logs and cut branches etc around plants to protect them, even bricks and concrete blocks although this makes watering difficult – and it avails me nothing. Those feathered excavators have ways to use those long claws that get under through and round these obstacles – they give them short shrift, hurling debris and litter aside with great vigour. As excavators and tillers of the soil

they are exceptional. Areas they have worked call out to be planted, but commonsense says no, wait till the wet when they go away again! And that gives me an idea! I think I will work on a dry hard area that needs planting up. I will lay copious mulch and litter there and water it now and through the dry and hope these tillers and excavators will work it for me to plant in the wet. I wonder if that will

work? On the other hand, in *Birds of Australia's Top End* at page 27, Denise Goodfellow writes that her sister Ester told her that scrubfowl are 'good to eat'. Perhaps there is an opportunity for a little entrepreneurial exploitation here!

- Felicity Middleton, 2 June 2005

~ **What's in Flower this month?** ~

Grevillea aurea or golden grevillea grows in limited areas in the NT including Kakadu National Park, on sandstone ridges or escarpments.

This grevillea is a tall, open shrub, 1 to 4 metres in height. Leaves are 3 to 15 cm long, green in colour, oblong-dentate with 4 to 12 toothed lobes per side. The holly-like leaves are prickly.

Flowers appear periodically but plants in cultivation may have some flowers for most of the year. Flower vary from cream, yellow-green to a bright yellow-orange as seen in this photograph. Bees and other nectar lovers will often be seen visiting the flowers. A woody fruit forms that contain two seeds



Photo by Keith Townsend

Because of its open habit, a plant in full flower is very attractive and deserves a place in any garden in tropical and sub-tropical areas. It prefers well-drained soils in full sun but is frost tender and not suited to cold climates. Plants are quite quick growing but sometimes have only a short lifespan of 2-3 years.

Propagation may be carried out from seed and germination is improved if the seed is carefully "nicked" with a sharp knife to expose the embryo. Cuttings are also successful and the species has been successfully grafted using *Grevillea robusta* as rootstock. It is a plant suitable for gardens and rockeries. Marj has several specimens in flower in her garden at the moment.

Information from: <http://farrer.riv.csu.edu.au/ASGAP/g-aur.html> and Brock J Native Plants of Northern Australia

Eucalyptus miniata Cunn. ex Schauer Darwin woollybutt

Apparently, according to some Aboriginal lore when the woollybutt flowers it brings the cold weather. Given we have been switching off the fans at night and have been using a doona, some flowers would not be at all surprising. Native bees often nest in branches which have been hollowed out by termites, providing 'sugarbag' - a traditional source of honey. The hollowed stems have also been a source of didgeridoos



These trees are in flower in Marrara woodland across from the Northlakes golf course. It is on Commonwealth land behind a barbed wire fence so I was unable to get a closer shot. The “flame” of orange flowers are impressive against the green leaves. In fact *miniatus* is the Latin word for “flame”.

This tree is characterised by having bark persistent on the lower trunk. It is shortly fibrous ("peppermint") or stringy, red-brown or grey-brown, grey or grey-brown or red-brown, shedding in short ribbons or shedding in small polygonal flakes. Leaves are vary from elliptic, straight, dull grey green to narrow lanceolate or lanceolate or broad lanceolate. Lateral veins are prominent. Flowers as seen in this photograph are orange, or orange-red followed by ovoid fruit.



Photo from:
http://savanna.ntu.edu.au/information/ar/the_big_tree_euc.html

~ What's the TENPS Committee Meeting Up to? ~

A major item for discussion at the most recent committee meeting was a set of guidelines to assist with propagation. These guidelines aim to ensure that plants sold through TENPS should survive to bring enjoyment to their new owner.

A guideline for use of TENPS equipment has also been prepared for discussion.

Other matters discussed included

- Membership fees have been set for 2005-2006 at \$20 per member/family and \$15 unwaged. A sliding fee scale has been adopted for new members joining late in the financial year: with half fees due in the third quarter; and full fees due for those joining in the last quarter in return for membership that includes subscription for the following year.

- New TENPS promotional brochures have been produced and are available for circulation.
- Formal acceptance of the EnvironmeNT grant for fencing of a *Ptychosperma* rainforest has been completed.
- The Society has purchased a CD on Australian Tropical Rainforest Plants and a copy of the 2nd edition of Volume 3 of the Eucalypt book by Brooker and Kleinig.
- Raylene Chandler has kindly donated a colour printer to the Society.
- Given the ongoing challenge of keeping to the tight time schedule of the general meetings, it has been decided to schedule the general meeting session from 7.30 to 8.15, to be followed by a 15 minute break for a cupper and for the speaker to start at 8.30pm.
-

~ Newsletter Contributions ~

Send any contributions for the newsletter to Mark Raines at rain0021@optusnet.com.au

Examples include what's growing in your garden, write about a propagation hint, how to collect seeds, even just send me photos of plants that you might like to share with other members.

**NEXT MEETING THURSDAY 16TH JUNE
GUEST SPEAKER:
“FUTURE DIRECTIONS FOR LANDSCAPE ECOLOGY IN
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PALMS AND TERMITES.”
Professor David Bowman**

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