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~ MAY 2005 NEWSLETTER ~

MEETINGS AND FIELD TRIPS

We meet on the third Thursday of the month at 7:30 pm. General meetings conclude by 8 pm and are followed by a guest speaker beginning at 8:15 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.

~ NEXT MEETING THURSDAY 19TH MAY ~

~ GUEST SPEAKER ~

"CARBON BALANCE"

Lindsay Hutley, Senior Lecturer
Charles Darwin University

Lindsay will present his findings on the affect of grazing and fire on soil carbon stores and water flux in tropical savannas, and the implications of land clearing and climate change.
Plaxy Purich will also give a short introduction about the Holtze Landcare Group, which cares for a area of Crown Land, typical of Top End sandsheet country close to Darwin

~ MAY FIELD TRIP ~

Wetland Wildflowers at Wallaby Holtze
Sunday 22nd May

Meet at 9am on the corner of Wallaby Holtze and Tulagi Roads, off Stuart Hwy, just behind Tom Finlays rocks, opposite the Yarrawonga Industrial zone of Palmerston. At this time of the year we are sure to add many names of native herbs to their plant list.

~ OTHER UPCOMING EVENTS ~

General Meeting: June 16 2005
"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.

Field Trip: 19th June

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. Details forthcoming.

Thursday 21st July
General Meeting: Plant Identification techniques Dale Dixon, NT Herbarium.

Saturday 30 July to Monday 1 August
Plant Identification Workshop

We are arranging a plant identification workshop for this dry season 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 with a keenness to learn the only prerequisite. The venue is the Environmental Education Campground in Litchfield National Park, near Buley Rockhole. The campground comprises a large shelter shed, open on 3 sides and 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; large grassed area for tents; fireplace; solar lighting and generator if required. The camp is set in the bush behind a locked gate 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).

~ Two Talks for the Price of One by Sean Bellairs ~
How to Study Seed Germination and The Millennium Seed Bank

Sean shocked our collective brain cells into action by starting his talk with statistics and frequency distributions, proving to us that studying seed germination requires more than a single saucer, a few seeds and damp cotton wool. He explained how we can get quite a misleading picture of germination rates if we don't use enough seeds (at least 10 in each batch), and preferably at least 3 batches for each treatment we wish to assess. If we are interested in small differences between treatments, we will need more batches to be confident that the differences we see are real differences and very unlikely to be due to chance. We also need to make sure that we use proper controls to test our treatments against. For example, if we want to test the effect of smoke water, we also need to have control seeds that are treated identically except for exposure to the smoke chemicals (we would use ordinary water rather than smoke water during the treatment stage).

He then went on to describe the Millennium Seed Bank (MSB) project, an international collaborative plant conservation scheme conceived and managed by the Seed Conservation Department of the Royal Botanic Gardens at Kew, UK. (See the excellent web site at http://www.kew.org/msbp/ for more details on this project).

The aims of the Project are to:

- Collect and conserve 10% (over 24,000 species!) of the world's seed-bearing flora, principally from the drylands, by 2010.
- Collect and conserve seeds of the entire UK native seed-bearing flora by 2000.
- Carry out research to improve all aspects of seed conservation.
- Make seeds available for research and species re-introduction into the wild.
- Encourage plant conservation throughout the world by facilitating access to and transfer of seed conservation technology.
- Maintain and promote the public interest in plant conservation.
- Provide a world-class facility as a focal resource for this activity.
- An important feature is that there are strict controls on the use of the collection to ensure that benefits flow through to the country of origin.

Countries participating in this project include Australia, Burkino Faso, Botswana, Chile, Egypt, Jordan, Kenya, Lebanon, Madagascar, Mali, Mexico, Namibia, Saudi Arabia, South Africa and USA. It's impressive that much of the funding (around 30 million pounds' worth) comes from lottery earnings in the UK!
You can get some idea of the size of this task when you look at the guidelines for collecting the seed – for each species, the preference is for a total of 10,000 to 20,000 seeds from at least 50 individual plants (all carefully recorded, of course).

Looking after all this seed once collected is obviously quite demanding. First the seed has to be cleaned, and samples sent to Kew. Seed from Australian species will also be retained in Australian seed banks. Viability must be assessed using either chemical or other tests, such as x-rays, to see whether seeds are hollow, and therefore not viable.

Seed must be dried under cool conditions before being stored at temperatures that may range from 20°C to minus 20°C to minus 197°C using liquid nitrogen. For many species, optimum storage conditions are not known, and must be established by the MSB project. Seed physiology is a major research area for the project.

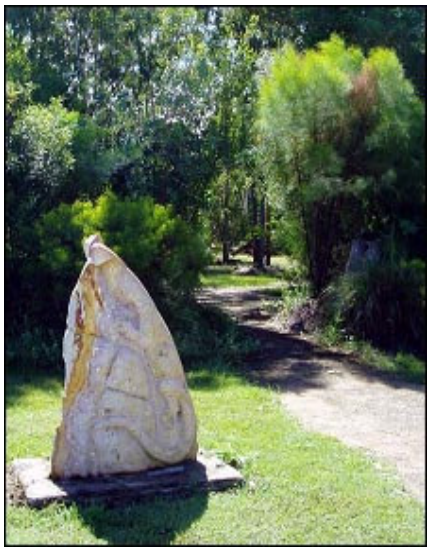
The MSB project has many benefits as well as providing a safety net for some of the world's endangered plant species. In addition to the seed collecting activities, all the MSB partnerships include research, training and other capacity-building elements. Several projects also include activities relating to the sustainable use of plants and links to *in situ* conservation. In this way the partnerships are working hard to implement many aspects of the Convention on Biological Diversity (CBD).

- Talk reported by Linda Prior

Native Garden and Revegetation Works at Darwin Airport

Dave Cash from Greening Australia led our April field trip around the Darwin Airport native garden. Although not a large garden, the winding circuit path that strategically leads you through different Top End habitats, required over an hour for us to fully appreciate it. Dave put a lot of thought into the design, and has created a beautiful setting for visitors to learn about Top End plants and environments, or just to relax and admire the colour the plants provide and the lizards and birds they attract.

- Contribution by Sally Jacka



A rock sculpture of a goanna marks the beginning of the circuit walk (left). After wandering through open woodland habitat, a rest at a picnic table allowed time to observe some sandstone escarpment species (above).

Back through the woodland, a path surrounded by Cycads (left) lead us to the wetland habitat (above).

Leaving the wetland, we entered a young rainforest garden (below), which then took us past a variety of Top End Eucalyptus trees, back to the beginning.

Nervilia peltata Revealed

Field trips throughout the wet season have been assessing the growth of the ground orchid *Nervilia peltata* in Charles Darwin National Park. Below is an unearthed *Nervilia.*

David Van den Hoek and I visited the annual fire treatment site and unburnt site last weekend to take some photographs and to establish if nearby leaves can arise from the same rootstock. We unearthed a few groups of leaves and collected some herbarium specimens. There is no doubt that multiple leaves can arise from the same rootstock. From three clumps of nearby leaves excavated, two pairs of leaves were joined. We found no proof of connection for another four leaves, however, given the ease with which connections could be broken during soil removal we can not be certain that all four were independent plants. On the evidence at hand, it is reasonable to conclude nearby leaves are a mixture of connected "clumps" and unconnected individuals.

- David Liddle

~ Morinda citrifolia (Fam: Rubiaceae) ~
"Noni or Rotten Cheese Plant"

Morinda is a genus of about 80 species, mostly of tropical origin. There are 7 species found in Australia including *Morinda citrifolia* also known as Indian mulberry. It is pantropical being found in India, Polynesia, northern Australia, China, Malaysia and South East Asia. It has a long history of ethnobotany use as a food, medicine and yellow dye.

Flower, Stipules and Fruit of *Morinda citrofolia*. Photo S. Mori from http://www.nybg.org/bsci/res/morinda.html

M. citrifolia is a large shrub to medium tree with dense foliage, varying from between 3 metres and 12 metres high.

Leaves are large glossy dark green, opposite, smooth, leathery and broadly elliptic, 300 mm long by 150 mm wide with prominent venation and mid-rib.

Its small, white tubular flowers have five star-like petals and are sweetly scented. They arise on globular heads in the leaf axil. Flowering occurs in July to December but also occurs sporadically.

Individual fruit fuse into a smooth composite fleshy mass, up to 100 mm to 60 mm, oblong to pear shaped. It becomes opaque creamy white when ripe with embedded with numerous brown embedded.

The fruits are edible raw but have a have a very pungent aroma when ripe, apparently to attract fruit bats which are dispersal agents for the seeds.

Photo from: http://www.bio.davidson.edu/

Propagation of *M. citrifolia* can be carried out from both seeds and cuttings growing in well-drained soil.

M. citrifolia contains over 20 different chemicals, some of which have been researched and found to have possible medicinal roles. Some of these include;

- **Ascorbic acid**
- **Xeronine** is an alkaloid claimed to assist various proteins and enzymes to do their job better. Other researchers have refuted evidence of this effect.
- **Damnacanthal** and certain polysaccharides found in the fruit have inhibitory effects on some of the processes involved in initiation and promotion of cancer development.
- **Anthraquinones** have been used in the past as dyes. Some anthroquinones have been investigated for their effect on progression of HIV, although this benefit must balanced by concern of the carcinogenic effect of other anthaquinones

The juice from the fruit is regarded as having a range of medicinal properties. On some Pacific islands industry has but up around the fruit which is being marketed in a fermented form as "Tahitian or Hawaiian Noni". There is a high demand for it as an alternative medicine for a host of illnesses such as arthritis, diabetes, high blood pressure, muscle aches and pains, menstrual difficulties, headaches both mild and severe, heart disease, AIDS, cancers, gastric ulcers, sprains, mental depression, senility, poor digestion, atherosclerosis, blood vessel problems, worms and drug addiction. It has been used internally and externally as a poultice. Scientific evidence of the benefits of the juice is limited but there is some anecdotal evidence for successful treatment of colds and influenza.

Noni or Cheese Fruit

By Andrew Mitchell Editor of the Friends of Botanic Gardens Newsletter

Cheese fruit belongs to the Rubiaceae family, which is a huge family that is spread all over the world. It is a low upright tree growing up to 6m tall with large glossy dark green leaves. The flowers are produced on a compound ball like structure and each individual segment has a 7 mm long tubular white flower. The fruit is a succulent oblong structure and can be 100 x 40 mm when mature. Initially it is green and then turns white and finally turns soft and becomes a translucent light yellowish grey. When fully mature and a bit soft they have the taste of a very mature Roquefort cheese. Hence the tree's name. It's also called "rotten cheese fruit" by people who find it very hard to eat! Apparently the smell is to attract fruit bats. This species is found across northern coastal Australia from the Kimberley region in Western Australia to coastal Queensland and also India, Vietnam, Papua New Guinea and into the Pacific.

The fruit is high in vitamin C, but quite average in most other nutrients and minerals. However it has recognised pharmaceutical properties and is being promoted as a cure for colds to athletes. Aboriginal people of northern Australia regularly eat it when they have colds or flu and have told me how it makes them feel better. After contracting a cold or flu I invariably suffer from

sinusitis, which drives me to take pseudoephedrine to avoid the headaches. About five months ago I contracted a cold and an Aboriginal colleague was about to consume a cheese fruit and I asked if I could have half. Yes it tasted like Roquefort cheese but my sinusitis disappeared for three or four days by eating only half a fruit. About the same I went to see my doctor on another matter and she told me that my blood pressure was up and I told her about the cheese fruit. She says that pseudoephedrine works by raising your blood pressure and perhaps cheese fruit works in the same manner.

A year ago I went to Maningrida in Arnhem Land and there they have a plantation of cheese fruit of some hectares growing on a low gravel plateaux outside town. Its on irrigation and the trees were about 1.5m tall. They are being grown to produce cheese fruit commercially. I wish them luck.

There are numerous trees growing around the NT foreshore and Darwin has its share. There are also numerous plants scattered through the suburbs with fruit rotting beneath them. It is ideal as a verge tree as it grows to a maximum of 6m and will not interfere with the power lines. If you can get past the strong taste it's the best thing for a cold. It does not actually cure the cold. Your nose still runs but you don't have those nasty side effects of sinusitis that I find so debilitating.

Cheese fruit is an ideal low shade tree for a top end garden but has the detraction of the fallen smelly fruit to deal with if you don't eat them on a regular basis. I have seen it growing on pure white beach side sand and so its nutritional requirements are not exacting. The only thing that it appears to hate, are low temperatures. I am told that trees down at Noonamah died due to being exposed to a 6 degree C minimum. This explains the species distribution as it is always found near the coast.

Botanical information from Brock J. Native Plants of Northern Australia Reed New Holland Sydney 2001.

Some web resources on *M. citriolia*
http://www.tahitiannoni.com/ ; http://morinda.allbio.org/ ; http://farrer.riv.csu.edu.au/ASGAP/m-cit.html
http://www.bio.davidson.edu/biology/kabernd/seminar/studfold/Fall/Herb/noni/activechemicals.html

~ What's in Flower this month? ~

Hypoestes floribunda, a member of the Acanthaceae family, is an erect sprawling herb growing up to 1 metre in height. It grows in coastal monsoon vine thickets and in sandstone country. The delicate purple flowers can be seen from March to September. This specimen was brought to the last general meeting. Other flowering plants brought along for members to share around included *Acacia lampracarpa* and *Flueggea virosa*.

Left: *Hypoestes floribunda*

~ Meehans' Place ~

We have five acres in Howard Springs. The ground is a rocky slope, with some patches of deeper soil. The previous owners had horses so the native plant numbers had decreased and weeds taken their place. We have town water but no bore and decided that clearing the "long grass" and revegetation of the bush areas would be the best way to improve the block now that we have retired and have a little more time. We had plenty of *Eucalyptus miniata*, *E. tetradonta* and some of the other most common species. Over a period of time we have identified (with help) over 75 different species, some with only one or two plants growing on the block.

About 18 months ago some members of TENPS visited. They made recommendations about suitable species for us to plant and we joined the society. We have hunted

around the nurseries, Greening Australia and TENPS plant sale; we've also gathered heaps of seeds. We bought and planted a further75 species and have propagated about 20 more species from seed plus one from cuttings. (The one that grew from cuttings is yet to be identified.)

We planted 145 trees and shrubs last year and hand-watered them through the dry season. This year we have added over 200 plants and look like being very busy with the hose for the next seven months or so. Weeding has been a huge job and is not over yet.

Some of the trees grown from seed in 2003 are now two metres high, which is very encouraging. It's hard work at present, but we're looking forward to the time when there will be enough plants growing for the bush to take care of itself and we can relax and enjoy it.

So thanks for all your help. We're learning heaps (and passing it on to our grandchildren).

- Dorothy Meehan

~Survival in the Shadows ~

Spring and Autumn, key shade seasons in the Northern Australian Woodland

Around my house at Horns Creek there was a time in a frequently burned woodland landscape, where every surviving seedling or sapling was located to the south west of an established tree.

On closer inspection, almost all the survivors received tree-trunk shade in the mid to late morning in August and September. Seedlings that were in the sun ay the time would die by the following November

I believe that soil surface temperatures and tree trunk shade appear to be key factors. I set out to plant young trees in this favoured location, only to find in almost every case already occupied

On morning in early August, I was a passenger in a vehicle that was traveling north in Kakadu, on the Graveside gorge track. In the mid to late morning I could plainly see that all of the new plants in the community were standing in the quite deep shadow. There appeared no new individuals growing in sunny places.

Only this morning, did it dawn on me that the same shade pattern is also present in early May. I see that the key shade season has already begun here at Horns Creek today. I would like to survey a wider area to test this proposition.

Accelerated surface soil drying in April and May be the explanation for the observed November seedling mortality

- *Hypothesised by Stridor 21/04/2005. If you would like to comment on this theory please email the editor*

~ Newsletter Contributions ~

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

~ Friends of Lord Howe Island ~

I recently had a break on Lord Howe Island off the coast of New South Wales. It is a great place for walking and diving or just lying on a beach. Whilst enjoying not working I came across the work of the Friends of Lord Howe Island. The group has done a great job removing introduced weed species and encouraging revegetation of native flora. Although as a volcanic island, everything was introduced at one time in its relatively short history.

Weeds have been identified as a major threat to the island's unique flora and fauna. Bush regeneration "tours" have been happening since 1995. The schedule for 2005 is below. If any TENPS members are interested have a look at the website. The group travels for a week, with accommodation, food and airfare out of Sydney or Brisbane costing around $1700.

Lord Howe Island Weeding Ecotours 2005

June 11 to 18	June 25 to July 2
July 9 to 16	July 23 to 30
August 6 to 13	Aug 28 to Sept 4 (Brisbane trip)

For more information contact: Friends of Lord Howe Island. P.O Box 155, Lord Howe Island, NSW 2898

Website:
http://www.lordhoweisland.info/environ/friends.html
Email : lhitours@bigpond.com

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

Sally, Dave and myself accompanied Raylene who works for Carer's NT on a visit to the organisation's Oriole street home recently. TENPS has been invited through Raylene to input into redesigning the garden with a more top end native theme.

The house is used to accommodate rural visitors to Darwin whilst family members undergo medical treatments for example.

The initial visit noted many large fruit trees such as start fruit and guava, with Carpentaria and royal palms amongst other plants. Some ideas included removing some of the larger palms, adding a screening border whilst retaining areas of lawn for visitors to the house to enjoy. Further visits are planned to draw up a plan and allow more concrete ideas to be considered on which plants to retain and were to put what. Any member who would like to be involved in the planning stage should contact Dave or Raylene.

NEXT MEETING THURSDAY 19TH MAY
GUEST SPEAKER:
"CARBON BALANCE"
Lindsay Hutley, Senior Lecturer
Charles Darwin University"

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