TREAT Newsletter Dry Season July - September 2009

Paterson Ck Walk - 15 th August

A field day will be held on **Saturday 15th August** at Paterson Creek. Meeting at the bridge at the end of Bunker's property on Paterson Road at 9am.

We will take leisurely walk and talk weekend alongside the rainforested stream as far as the weed on the Brisbane's property and will finish at the parking area in the 1988 - 2001 and 2006 on the northern side of the Paterson Creek. We will cross the ford (Bibby) twice in the field but the property can also be seen.

We return to our starting point at afternoon tea and we anticipate under the comfort of the TREAT marquee. Everyone is welcome.

Annual General Meeting

The **27th AGM** will be held on **Friday 16th September** at the Kingfisher Restaurant Yard commencing at 7.30pm

Our Guest speaker will be John Chenoweth of QPWS at Mareeba and his talk will be on control on some exotic grasses

Annual reports from the President, Treasurer and Revenue Manager will be followed by the election of TREAT office bearers and committee members for the next year. Members are reminded that they must be financial when voting for the new committee. Membership renewals are due at the AGM. Cost is $20 for individuals and $30 for families. Take-away nibbles with a supper and plate contribution are appreciated. Everyone is welcome to attend.

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It's Not the Snake in the Grass You Should be Wary of

by Jim Carolan QPWS Mareeba

The term 'high tinsman grass' has been coined to describe a suite of exotic species which are often considerably taller and produce more biomass than our native grasses. Species in question are Guinea grass, Para grass, Elephant grass, Giant Rhodes grass. These alien species have grown where they are because of the northern coast of Cape York, Queensland's Gulf country and the Kimberley in Western Australia and farther afield throughout tropical Africa which gives rise to serious concerns for the biodiversity of both plants and animals.

A seven high rain tantrum in Mareeba produced an amazing various threats in the North Queensland:

- Gamba grass - Andropogon gayanus
- Giant Sensitive plant - Mimosa diplotricha
- Annual cocklebur grass - Cenchrus echinatus
- Mission grass - Pennisetum polystachion
- Velvet tamarind - Anthocephalus cadamba
- Lantana - Lantana camara
- Rubber vine - Cryptostegia grandiflora
- Tridax daisy - Tridax procumbens
- Gunnii grass - Megathyrsus maximus
- Hymenachne - Hymenachne amplexicaulis
- Para grass - Urochloa mutica
- Giant Rhodes grass - Pennisetum clandestinum
- Olive hymenachne - Hymenachne stoloniferous
- Giant Sensitive plant - Mimosa pigra

Gamba has the potential to cover more land than any probably all in its habitat. The ecological impacts observed to date are cause for much concern.

Gamba grass is a tall-stemmed perennial grass in affect forms to ones the problem is identified and control works commenced. The grass is unpalatable to cattle and forms a dense thatch which prevents the growth of other plants. Gamba grass is a fire adapted plant as they are others and established before the wind identification is made. Impact of destruction are then sold for the information can be too late. Gamba grass is a fire adapted plant as they are others and established before the wind identification is made. Impact of destruction are then sold for the information can be too late. Gamba grass is a fire adapted plant as they are others and established before the wind identification is made. Impact of destruction are then sold for the information can be too late.

Experienced Farms and Wildlife Service in Vietnam that proven to northern region, with a few exceptions, high tinsman grasses have yet to become established on our shores. Prevention is better than cure. Prevention is better than cure. Prevention is better than cure. Implementation of sound weed hygiene practices to minimise the risk of introduction, staff training in the recognition of alien species and reporting of sightings are important components of a prevention strategy.

Other this is being done in preparation for the eventuality of such regions control are underway for Gamba grass in the Northern Territory and Queensland. A growing area for concern is the increased use of grasses as garden plants as water restrictions force the nursery industry to seek alternatives to the ever popular Lilly pilly species. Some of the grasses are being sold as "non-invasive" but there is no guarantee of unprecedented release of genetic material and the risk of hybrid vigour cannot be ruled out.

Thaki Creek Rehabilitation for Rainforest Carbon and Biodiversity

ARC Linkage Research Project

Rod Pearce

Demand for restoration of landscapes to sequester carbon and improve biodiversity outcomes has recently taken off in many parts of the world. Restoration of degraded landscapes is a key component of the Kyoto Protocol and the Clean Development Mechanism. But what are the impacts of climate change will be particularly severe and the predicted extinction rate of endemic species currently occurring in Queensland's rainforests is amongst the highest in the world. Restoration of Queensland's rainforests will be critical to ensure that the impacts of climate change are not exacerbated by the loss of a unique flora and fauna. Information on how to restore rainforest native species for carbon sequestration and biodiversity benefits are relatively poorly developed and untested. The results of these trials will be critical to ensure that the right trees are planted in the right places for the right reasons.

Thaki Ck has rainforest regrowth on Paterson Creek floodplain and has been used for lower rainforest plantations in the tropical regions of the world. There has been, for instance, little research into the founding conditions of sites such as soil nutrients, soil microbes, seed banks, and the ability of native species to survive and grow in these sites. Thaki Ck is a site with a long history of anthropogenic and mechanical disturbance. These disturbances have much relevance to the 100 year vision of Paterson Creek.

Penny van Oosterzee and Ben Preece, an Ilbert Project physics scientist at Mareeba, have established a revegetation research project in Thaki Creek. Ben has been working on the Thaki Creek site since 2006 and has established a number of research plots and monitoring sites. The group are involved in a collaborative Linkage Australian Research Council (ARC) Linkage grant for the next 3 years. Partners in the project are the Queensland Parks and Wildlife Service, the Queensland Herbarium, the Ilbert Project, the Mareeba Wetlands and Ed Fisher Centre (QL), Dr Corey Bradshaw and Dr David Chittleborough (Ilbert), and Dr Mike Lawes (CSIU). Dr Rose Crossley is the project manager. Dr Rod Pearce is the Ilbert Project Leader. Ben Preece is the Ilbert Project scientist and PhD student in the project.

The research project will investigate biodiversity habitat enhancement and carbon sequestration in a multi-hybridised experiment.

The study is a multi-disciplinary and multi-institutional partnership (ecological, ecophysiological, and ecological) economic and carbon sequestration aspects of rehabilitation. Three core research questions are investigated:

1. Which tree species are most suitable for carbon sequestration and biodiversity?
2. Which functional traits are most beneficial for carbon sequestration and biodiversity?
3. What are the carbon footprints and sequestration rates for relevant carbon pools at various stages of revegetation, starting with grassed paddocks and ending with mature forest?

All three questions will be addressed in the experiment, and have been carried out elsewhere in the world in tropical biomes.

Goals that the ARC project will focus on are:

1. Maximizing biodiversity outcomes from a mixed species, long-lived, hardwood, rainforest, plants, and monitoring
2. Identifying the most cost-effective strategies for the greatest biodiversity payoff
3. Maximizing carbon sequestration in the long-lived, hardwood, rainforest, plants.

This is a complex study, long-term research project starting with a 5-year research program, establishing experimental rainforest ARR reforestation rehabilitation revegetation practices. It will start from an established plantation, a common starting point, and will develop and test a variety of revegetation practices and treatments.

Some attributes of the project include:

- A landscape scale experiment in a degraded area, land in private freehold
- Will be replicated approximately 10 times in different locations
- Evolving presence/ cover for carbon gaining, promoting opportunity to research ARR from a common starting point
- Establishment of a permanent monitoring network of sites for long-term
- Replicated sites in the south and north
- Economic analysis of the various treatments applied
- Carbon footprint analysis, including GHG, BE, the benefits for biodiversity, and crucially, the carbon sequestration benefits to recover from the carbon debt of 100 years.

Carbon budgets

Budgets consider the sequestration of carbon from greenhouse to forest need to be developed. The models to date are limited in scope and number, resulting in significant uncertainties in calculating sequestration rates. Under the Carbon Cash Cow, Lantz and Hoogwijk and Fontkian (2007) have developed a model for the impacts of climate change on forest carbon budgets. Four carbon pools have been identified:

- aboveground biomass
- belowground biomass
- litter
- soil
- and organic matter.

Lantz and Hoogwijk and the one which has most potential dates is attaining now (Hitter. The other has been back-less and wisdom and some cash, and some, and the cash. The research proposed there will investigate and quantify the carbon in each of the pools provide a reliable measure for the impact of the carbon budgets.

Outcomes

Successful outcomes from this project will benefit rehabilitators, industry and governments by providing sound research on which to base decisions on carbon sequestration and biodiversity outcomes from revegetation. Rehabilitators will benefit from the development of a decision support tool based upon the quantitative outcomes. Industry will benefit from the accumulation of carbon credits, and the ability to provide better assessments of the costs and benefits from rehabilitation projects at small scales. Benefits to industry will include reduced risks associated with investment in carbon sequestration projects, and improved confidence in the accuracy of carbon sequestration estimates.

Location

Thaki Creek property is located on the southern Atherton Tablelands of the North Queensland about 20 km south of Atherton, approximately 1447 km 17° 37' 0.00" South latitude and 145° 29' 0.00" East longitude. Thaki Creek is a tributary of the Upper Barron River. The land is flatterm and covers around 16 ha, including about 150 m of rainforest and 50 ha of cleared land which is currently used for cattle grazing.

It is part of a 1990 ha property and is adjacent to a 10 ha State Forest (Lot 3 on Plan SP 113 Parish of Tinaroo). The property is in the Barron Hydrologic Area. It forms part of the Barron Barron complex indicated over forest complex, co-dominant with tall open eucalypt and highly diverse. The Thaki Creek property is in the Barron Hydrologic Area. Rainforest is dominated by Lophostemon suaveolens and Melaleuca sp and to a minor extent by Eucalyptus tereticornis and Eucalyptus pilularis. The land has very high conservation significance. It is linked habitat of the endangered Southern Cassowary Casuarius casuarius, and the vulnerable Spotted-tail Quoll Dasyurus maculatus. The property is also home to numerous other threatened species including Cassowary, Ground Parrot, Kingfisher Dacelo novaeguineae, Northern Leaf-tailed Gecko Phyllurus platurus, Spectacled Flaccidoneura Flaccidoneura ceratopsis and the Cassowary Louse or the property. The remnant vegetation has been fragmented by clearing and selective logging, and is now surrounded by cane farms.

Research design

Expert advice from a wide range of revegetation practitioners and researchers from across the region and across Australia was sought on the various interactive factors which could potentially bias the research outcomes.

The experimental plots will be set up on the grassed slopes of the property. Grass and will be 50 x 50 m square (1 ha hectare) and will be surrounded by a 10 m buffer zone of cleared land. Each plot will be planted with 400 trees at 2.5 m spacing, including controls of grassed and planted plots.

Species selection has undergone extensive trials and consultation with revegetation experts in the region and elsewhere, and the selection of species has been based on the ability of the species to survive and grow in the conditions of the site. The trees selected are that the species have a variety of root systems, have good canopy cover, are fast growing and fruit-bearing, and include native species, and species with different pollination traits. The wide family and species selection will ensure the results more applicable to other rainforest sites.

Below is the water diversion of the Barron Hydrologic Area. Thaki Creek is a tributary of the Upper Barron. The Barron Hydrologic Area. Rainforest is dominated by Lophostemon suaveolens and Melaleuca sp and to a minor extent by Eucalyptus tereticornis and Eucalyptus pilularis.

Species selected for the experiment are:

PIONEERS	**PROTEACEAE**
Macaranga tanarius	**Austromyrtus sulcata**
Ficus hebbeana	**Austromyrtus tenuifolium**
Elaeocarpus dwarrah	**Lomatia fraxinifolia**
Elaeocarpus grandis	**Grevillea pteridifolia**
Endiandra glauca	**Hicksbeachia pinnatifolia**
Endiandra pubens	**Helicia ferruginea**
Cryptocarya hypospodia	**Helicia nortoniana**
Cryptocarya obtata	**Zaclogra decimpiana**
	Zaclogra sayeriana
PITTOSPORACEAE	**MYRTACEAE**
Ficus copiosa	**Syzygium cormiflorum**
Ficus fraseri	**Syzygium hodgkinsoniae**
Ficus obliqua	**Syzygium kuranda**
Ficus virens	**Acmenosperma ankaratra**
Ficus pleurocarpa	**Acmenosperma graveolens**
Ficus platypoda	**Decaspermum**
	Melaleuca viridiflora
MYRISTICACEAE	**EUPHORBIACEAE**
Myristica insipida	**Cleistanthus apodanthus**
Myristica muelleriana	**Cleistanthus cunningii**
Myristica ornatifolia	**Cleistanthus myrianthus**
Myristica ozanonii	**Sumbaviopsis albicans**
Myristica sp.	**Sumbaviopsis**
Myristica Sp. Cooper	**Sumbaviopsis**
Myristica Sp. Mt Spurgeon	**Sumbaviopsis**

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Specimen of trees listed above for the project will be planted, lately, and in the species trees. Species trees will be planted, a monoculture of Pinderosa Ponderosa or of Eucalyptus or of Eucalyptus or of Eucalyptus and Grass lately, and in the species trees.

Specimen of trees listed above for the project will mount intense debate. Trees from planted in the region very widely, with some absent from the region. Species trees will be planted, lately, and in the species trees will be planted lately and in a good forest state. We have chosen two sapling contrasts: the species trees will be planted, lately, and in the species trees.

The arrangement of the replicated experimental plots will be:

- 1.75 ha - 7 species
- 0.5 ha - 2 species
- 0.25 ha - 1 species (of Species)
- 0.25 ha - 2 species (of Species)
- 0.75 ha - 3 species (of Species)
- 1.5 ha - 6 species (of Species)

Species which have bigger canopy radius have plot sizes and species plant species, and the experimental plots have been mapped on ArcGIS. Shades trees like pine and include pine, and detailed and analyses (lock density, carbon, minerals, nutrients).

Thaki Creek - part of the slope being rehabilitated

Aerial view of the area to be planted

Around 50,000 plants will be planted in the plots, early in 2011. These species shows will be planted: a monoculture of Pinderosa Ponderosa or of Eucalyptus or of Eucalyptus or of Eucalyptus and Grass lately, and in the species trees.

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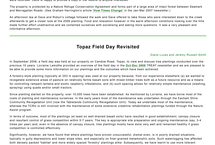

Aerial view of the area to be planted

Lower Paterson Creek Field Day

Angela McCaffey

About 30 people gathered in the sunshine at Mareeba Parish, Kangaroo, at the start of the Lower Paterson Creek Field Day 20 May. Participants came from Mareeba, Dimbulah, Chillagoe, Kuranda and Cairns. Some had come from far flung places such as Victoria and Belgium to sustain huge number of plants. Others had been here for years and have seen the Paterson Creek change from a degraded stream through several revegetations that it is today. We explored the progress of clearing the dense lantana and other weeds before small trees could be planted. We saw the results of the Mareeba Wetlands and Ed Fisher Centre (QL) Paterson Creek Project, the Ilbert Project, the Mareeba Wetlands and Ed Fisher Centre (QL) Paterson Creek Project and Barkers Creek Project and Barkers Creek Project and Barkers