



**Trees for the Evelyn and Atherton Tablelands Inc**  
The right tree in the right place for the right reason

# T R E A T

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## TREAT Newsletter October 2001

### Forward Looking TREAT!

At the August Annual General Meeting (2001), Dan Murphy, the retiring president described our organisation as a forward-looking community group. This is amply borne out by the plans for planting on eight major funded projects in the coming year. Our new president who will lead us into the year 2002 is Mrs Barbara Lanskey.

Next year will mark our 20th anniversary and Nigel Tucker suggested that we look forward to celebrating it with an event of significance.

Our redoubtable secretary, John Hall, was given a well-deserved honorary life membership. Dr Robyn Wilson of James Cook University presented a most interesting, illustrated talk on possums on the Tableland. Among many observed facts she told us that when spot-lighting possums she found that they are most frightened by the sound of feet scarping on gravel and by noisy shutting of campervan sliding doors!

TREAT received a number of awards in 2000-2001 and all members were congratulated on their voluntary work. Keep it up!!

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### TREAT on TAP

On the 10th September, 20 year 5 and 6 students from Ravenshoe Primary School visited the Millaa Millaa Lookout to view the work being done with fauna underpasses in the McHugh Rd (east Evelyn Rd) upgrade.

The tunnels couldn't be seen up close, but Research Scientist Miriam Goosem from JCU Cairns showed the students lots of pictures and kept them interested with statistics of road kills and how the tunnels would be furnished with logs and ropes, etc to assist the animals to pass through safely. Peter Dellow from CTR proved a very able assistant and had the students' keen attention with some animal droppings he found nearby.

An informative little booklet was given to each of the students and TREAT has now received some thank you notes and drawings from the students showing what they learnt. Next year TREAT on TAP will be doing a full program with these students.

### The use of genetics in restoration at Donaghy's Corridor

*by Nigel Tucker.*

Genetic diversity is one of the basic building blocks of any natural ecosystem. A diverse gene pool gives any population more chances to adapt to disease or changing climate by selecting for 'fit' individuals. Conversely, a narrow or 'bottlenecked' gene pool means populations often decline, and some are lost to extinction through habitat loss and fragmentation. There are examples of animals (such as the Florida Panther) that can be classified as 'living dead', because they truly represent the last of the species.

Research using DNA in the Lake Eacham / Barrine area has shown that some of our commonest animals are genetically affected by fragmentation of their habitat. Fragmentation is the breaking up of large forest blocks into smaller, isolated fragments - just what has happened to many local parks and reserves like Eacham, Barrine, Curtain Fig, Wongabel and Tolga Scrub. Isolation results in a narrower gene pool and this appears to be what is happening to animals such as Bush Rats (*Rattus fuscipes*) and White-tailed Rats (*Uromys caudimaculatus*). Bush rats at Lake Barrine have lost enough of their genetic variability that it is now possible to distinguish individuals caught at Lake Barrine from individuals captured in Gadgarra State Forest, just 1.5kms away, based on their genetic structure.

Because we had two populations we could tell apart, it made it theoretically possible for us to obtain good proof that Donaghy's Corridor was re-joining 2 previously continuous populations, of some species. CTR joined forces with the University of Queensland, and geneticists from Canada and Mexico to investigate whether Gadgarra rats had gone east or Barrine rats had headed west, and more interestingly - did any meet in the middle? During small mammal monitoring at Donaghy's we collected DNA samples from all the rats we captured, and this was analysed at UQ's Brisbane labs.

We got some surprising results. As soon as the corridor was completed in 1998, we recorded movement by a number of Bush Rats, Cape York Rats (a closely related species) and Fawn-footed Melomys, a smaller forest dwelling rodent. The DNA analysis proved conclusively that some Bush Rats captured at Barrine had in fact been born at Gadgarra, and vice versa. This is an important finding because the Bush Rat is fairly discriminating (for a rat) and avoids grassy or disturbed areas, preferring good forest, telling us it approves of our efforts so far. For Cape York Rats, the trend was similar but not as pronounced, indicating this species is possibly coping a little better with fragmentation than Bush Rats. Most tantalising of all was the appearance of four Bush Rats whose DNA may be a mixture of both populations. These results are a world first and are currently being written up for scientific journal publication. Work with the Melomys DNA is continuing.

In addition to teaching us more about the effects of corridor restoration on isolated populations, the genetics study had other benefits. Previously it was very difficult to distinguish the difference between Bush and Cape York Rats - our work has finally documented a 100% reliable method based around genetic characters, recently published in the Journal of Molecular Ecology.

Plants are also likely to suffer the effects of isolation on their genetic variability, though there are few concrete examples. However, in our studies of plant regeneration at Donaghy's we were able to show that 40% of all the species colonising the corridor have come from outside the immediate area. This means that if the new arrivals survive they will also add to the genetic diversity of the area, as they represent potentially new genetic stock.

All this adds to our store of information about corridors and their effects, and re-inforces the role everyone's backyard can play in the preservation of species and their gene pools. Many members will have plantings and forest fragments which are home to a fantastic array of native animals. Your 'patch' will undoubtedly be a haven to many species, but just as importantly it will be a pool of genetic diversity which contributes to species survival across the entire landscape.

### Fruit of the Month

#### *Elaeocarpus angustifolius*

The brilliant blue fruit of *Elaeocarpus angustifolius* (Silver Quandong) (Elaeocarpaceae) can currently be seen prominently on the forest floor. Fruits are globose, 15-30 mm diameter with a green flesh surrounding a rugose hard-shelled layer (the endocarp) which surrounds up to four narrow seeds, each in a separate cell. The species is known as "murrngan" (pronounce - "murr-u-gan" with a very short "u" if you cannot roll your "r") in all the Aboriginal languages between Kuranda and Cardwell.

The fruit has an important role in the ecology of rain forest communities because a wide array of animals consume the fruit. This faunal interest makes the tree a "keystone" resource, particularly when the species tends to have two fruitings per year. The next fruiting will occur in late February to April. On the tree, smaller diameter fruits' are consumed by pigeons and flying fox love them. Fruit that falls to the ground is consumed by cassowaries, Musky Rat Kangaroos and the introduced pig. The hard endocarps are soft enough to be chewed open by a variety of rodents ranging from the Fawn-footed Melomys (*Melomys cervinripes*) to the White-tailed Rat (*Uromys caudimaculatus*) to consume the seed. Insects also feed on the fruit.

The flesh of the fruit, like avocados takes 2-4 days to ripen after it falls to the ground and when the flesh becomes mealy and turns green gray, it becomes palatable to humans and has a pleasant acidic taste. The brilliant blue of the skin colour cannot be dissolved into a solvent to produce a blue fluid because as the fruit begins to ripen, the cytoplasm develops a prism-like structure which reflects blue light, causing the blue appearance of the fruit. Hence the blue colour persists in fallen fruit and this may help to catch the eye of some dispersers.

The hard endocarps are similar in appearance to the hard endocarps of the "Red Quandong" (*Santalum acuminatum*) and Sandal Wood (*Santalum lanceolatum*). Both these species are unrelated to the Silver Quandong but the similarity of the hard endocarps probably have influenced the similarities of the common name. In fact the hard endocarps of Sandalwood (which occurs also in China) are used as the classic chequers in the game, Chinese Chequers. So if you have lost some chequers in your set you can substitute the hard endocarps of Silver Quandong.

The flowers of the tree also provide a food source for a wide variety of insects, honeyeaters, flying fox and probably blossom bats.

This canopy-emergent tree is an excellent species for revegetation projects as it is not only a keystone species for fauna but it is very fast growing, light loving and occurs in a wide variety of rain forest types on a wide range of soils from sea level to about 900 meters altitude. The tree can be recognised by its very open crown with its branches occurring in more or less whorled layers at angles usually greater than 60 degrees to the trunk. The bark tends to be lightish gray and the base is distinctively buttressed with spreading roots. Leaves are simple alternate, light green with finely serrated edges and have prominent swellings where each lateral vein meets the midrib of the leaf. On the underside of the leaf it can be seen that these swellings are hooded pits, i.e. domatia. The old leaves turn a brilliant red.

The tree has the ideal architecture and growth rate to emerge through vigorous vine cover of disturbed rain forests. The high angled branches are readily snapped when bearing weight and vines spreading over these branches are soon shed, causing the vines to fall to the ground as the tree emerges through the scramble. The tree can readily be seen emerging through the *Merremia peltata* clad forests around Mission Beach.

### Nursery News

*by Nigel Tucker*

#### Melanie's at Petersen Creek

Our new student is Melanie Schroder from the University of Bremen in Germany. Melanie is undertaking a five month project, looking at small mammal populations at the Curtain Fig end of the Petersen Creek corridor. Her project is designed to give us more information about which animals are present at the other end of the linkage. This will help us to predict which animals are available to use the linkage in the early years, and using the same genetic approach as the Donaghy's example, we hope to show transfer of genes through the new linkage. Melanie's data will complement the small mammal work already done by CTR at Petersen Creek.

Trapping commenced in September and already we have some good records. Probably the most surprising record was the numbers of Canefield Rats (*Rattus sordidus*) inhabiting the tall, rank grasslands around Pearamon Road. This is the native rat which damages significant amounts of sugar cane each year (anything from 2-10 million dollars worth each year). Capture rates are amongst the highest I've seen for this species - in the grassland around 80% of traps contained this rat, and in one trap we consistently caught two rats, an apparently inseparable male and female. The extensive tree planting done by the Burchill family over many years has borne fruit with forest species such as Bush Rats and Fawn-footed Melomys now present in plantings on their property. Our long term objective is firstly to try and encourage these latter animals to move through the linkage - and hopefully others will follow.

Our UQ Gatton student, Bryan Grant, has also been assisting Melanie with the trapping work, in addition to continuing with his mapping project. Mapping is now well advanced, and the Wet Tropics Management Authority is assisting him with setup of a Geographical Information System to produce working maps of the project for landholders, the Eacham Shire Council, TREAT and CTR. Melanie thanks the Burchill, Mather and deTournouer families for use of their properties in her research.

#### Plant Production

Seed collection work is back in full swing as the productive summer season draws nearer. Collectors have been busy particularly in the Kuranda, Tablelands and coastal areas where we have major commitments in the 2002/ 03 season. Over the past 3 months 140 species have been sown, representing 150 seedling trays. Volunteers have potted 18, 213 plants of 67 species. Great work potters, seed cleaners and sowers!!

#### Visitors

During October, CTR staff hosted a visit from Professor Karen Holl from the University of California, Santa Cruz. Prof. Holl has worked in tropical forest restoration in Central America, mostly in Costa Rica, and was keen to visit after seeing results of our work at the 1999 Society for Ecological Restoration conference in Puerto Rico. After touring the Nursery and giving members a talk about her work in Costa Rica, Professor Holl visited Donaghy's and the Petersen Creek project as well as a number of older TREAT/ QPWS sites. Karen was very impressed by the project sites, and considered the TREAT/ QPWS relationship to be amongst the best models of community and government cooperation she had seen anywhere.

In September, Nigel Tucker and Peter Dellow hosted delegates from the International Association of Sugar Cane Technologists - in north Qld to look at all aspects of the sugar industry. Delegates visited 2 of our lowland sites where we have been working with cane farmers to reduce rat damage by restoring harborage areas. The group visited one of our original experimental sites, on the farm of Steve and Frank Gatti at Miriwinni and were enormously impressed by the work done. Since we set up the experimental site in 1994 and demonstrated an 80% reduction in rat numbers within 12 months, the Gatti brothers have re-planted almost 4 kms of creek bank using their own resources, including growing their own plants from locally collected seeds. The result has been dramatic, rat numbers have fallen to almost nothing, and the farm is harvesting cane right to the tree line instead of ploughing in 30 metres of rat damaged cane on either side of their creeks. Wildlife has returned, including crocodiles much to the brother's delight. Steve and Frank have also established significant farm forestry blocks adding to, and diversifying, farm income. This is a great effort and shows what can be achieved by working with farmers on the ground, and most importantly how farmers do respond to new ideas. Congratulations Frank and Steve on what is fantastic effort. Sugar cane technologists from Guatemala to the Philippines are now considering how these techniques can be adopted in their own countries.

#### Staff

All of us are very proud of CTR indigenous Ranger Syb Bresolin, winner of one of the 2001 Cassowary Awards. Syb joins some illustrious award company including Peter Stanton, Joan Wright and Margaret Thorsborne, to name a few. Syb was recognised for her efforts in developing the Centre's 'Healing Country' program, which teaches indigenous people skills in restoration techniques, seed collection, propagation and monitoring techniques. Ably assisted by Warren Canendo, Peter Dellow and other CTR staff, Syb is really achieving great things and her growing volume of work is a reflection of this. Well done Syb!

October saw the final training session for members of the KukuYalanji tribal group from Mossman. For the past 3 months CTR staff have been involved in teaching trainees the methods and techniques used by research assistants in the field. The purpose of the training was to provide the group with the skills they need to work for scientists, and to undertake monitoring on their own property at Wawu Dimby, near the Daintree River. Trainees undertook a range of tasks including vegetation and small mammal monitoring, bird recording, and data collection and analysis. This is the pilot project for the new CTR 'Training the Technician' project which is funded by the Rainforest Cooperative Research Centre and co-ordinated by Syb with great assistance from the Cairns TAFE. This will be a 12 month project designed to teach indigenous people from throughout the region and give them a range of skills to facilitate employment as technicians with scientists undertaking research on traditional lands.

Several staff have recently taken their annual leave in preparation for the busy summer season. Most are now back and looking forward to helping members with advice and trees for their own properties, particularly when storm season begins. Members with projects in mind should be preparing their sites now to take advantage of any early storms. Members whose properties are targets for Friday morning plantings should be well advanced with site preparation. Give us a call at the Centre if you have any queries.

CTR staff thank the previous TREAT Committee for their great assistance over the past 12 months. We look forward to working with the new Committee in what we all hope will be a successful season, and 2001/ 2002 will of course mark TREAT's 20th birthday!

### Volunteers celebrate and support Mabi forest

In this International Year of Volunteers, TREAT was given a Federal Grant to have a celebration to acknowledge the contribution of environmental volunteers to conservation, to celebrate their work and to point towards a future focus.

On Saturday October 20th about 150 environmental volunteers gathered in the Malanda Show Pavilion for the party attended by Councillor Louise de Marzi from the Atherton Shire Council and Councillor Ray Byrnes of the Eacham Shire Council.



An early highlight of the program was the sight of 2 big cassowaries and 2 chicks moving around the pavilion calling forth delight and interest from everyone. Local caterers provided a delicious and ample meal which everyone enjoyed with gusto.

Nigel Tucker led us through an interesting program. Young Tara Bolton beguiled us with her songs with an indigenous flavour. A second edition of the Mabi forest book, Vanishing Vegetation of Far North Queensland was launched. A copy was available for everyone.

The impressive TREAT display on Mabi forest formed a feature of the party. Each person was given the chance to consider future actions to benefit the endangered ecosystem and the completed forms will provide ideas to the Mabi Forest Working Group for future directions.

The new TREAT video, 'TREAT yourself a guide to tree planting' was viewed as well as 'TREATWISE'. They were deemed useful for education work.

The party organisers are to be congratulated on a very happy and successful evening and were thanked by all the environmental volunteers.

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