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Habitat Linkages in the Southern Atherton Tablelands

The Habitat Linkages project was successfully nominated by TREAT as one of the Top 25 outstanding ecological projects being undertaken in Australasia.

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What happened to that planting?

Kylie Freebody Research Assistant, School of Environment, Griffith University; Technical Supervisor, Tablelands Community Revegetation Unit

The reinstatement of rainforest (revegetation) by community groups, local government, state agencies and individual landholders has been ongoing for more than two decades in the Australian Wet Tropics. However, there has been very little monitoring of planting outcomes beyond the initial establishment phase, that is beyond canopy closure (usually at 3-4 years on the Atherton Tablelands). How has the planting progressed 6 years after it was planted? What does it look like 10 years and 15 years down the track?

Revegetation requires several years to establish and decades to develop towards target conditions and we have very little understanding of the development trajectory of 'replanted' sites. Research aimed at our understanding and management of forest restoration for biodiversity outcomes is currently under way within the 'restoring tropical forest landscapes' project of the Marine and Tropical Sciences Research Facility (Reef and Rainforest Research Centre). This project is now in its third year and aims to both build a functional understanding of the ecological processes involved in rainforest restoration, and develop and apply tools for monitoring of forest disturbance, recovery, and restoration. The research team is led by Carla Catterall from a base at Griffith University, with important contributions from a number of other researchers, including John Kanowski (who has recently moved to the Australian Wildlife Conservancy in north Queensland), Debra Harrison (who is located physically at James Cook University in Cairns), Kylie Freebody and Amanda Freeman (both from a physical base on the Tablelands). Debra's role involves managing information about revegetation projects, through collaborative arrangement with Terrain NRM, as well managing information about Terrain's other environmental improvement activities. Kylie is involved in monitoring of outcomes at revegetated sites, especially vegetation data collection, and Amanda is involved in an assessment of the use of revegetated sites by birds. Several PhD and Honours students based at Griffith University have also been involved in research sub-projects.

Current field investigations have focused on two major areas: first, a retrospective monitoring survey of areas revegetated 7-12 years ago through the Natural Heritage Trust (1) (NHT1) program; and second, an assessment of the pattern of development of vegetation, flora and birds at sites which have been planted and maintained in 'best practice' ecological restoration style. In this latter part of the project, we are collecting data at 41 different revegetated sites that vary in age from 1 to 24 years old (the oldest available sites of sufficient area), which will be compared with similar measurements from multiple sites in both pasture and intact rainforest. Sites are located in both uplands and lowlands.

The retrospective monitoring of the NHT1 projects has been focused on field assessments of the current condition of 67 randomly-selected sites across the Wet Tropics region, including many on the Tablelands. A striking result that has emerged from preliminary analysis of the data is that approximately 50% of replanted sites were in poor or very poor condition. This, combined with our observations of more recently revegetated areas (2-7 years old), points to a range of factors which influence the outcomes of a project during both the establishment phase prior to canopy closure and development phase after canopy closure. While it is difficult to tease out the precise cause of some sites' lack of long-term success, there is sufficient local knowledge of the history of other sites to help reconstruct what has happened. External impacts such as climatic events (floods, frost, drought and cyclone), browsing, weed invasion and lack of maintenance have all negatively affected planting outcomes at some of the surveyed sites. In many cases, these were sites which had initially achieved canopy closure, and which would have looked as though they were likely to keep developing as restored rainforest. In particular, these findings indicate that if affected areas within a revegetated project are left unaddressed, this may lead to further degradation of the planting. This appears to have been the case with numerous sites assessed through the retrospective monitoring survey. In some of these sites, very few of the planted trees were left, with grasses or weeds having taken over most of the formerly-planted area. These results are in the process of being prepared for publication. There is an obvious conclusion: it is crucial that funding bodies and practitioners must commit to maintaining and monitoring projects over a longer term (up to 10 years) if successful outcomes are to be achieved on the ground and conservation investments are to be protected.

The toolkit, "Monitoring Revegetation Projects in Rainforest Landscapes, Toolkit Version 2" has been developed as part of the broader project. It provides different methods to help monitor progress and keep track of vegetation development over time within restored sites. It aims to assist landholders, community groups and restoration practitioners in recording the details of their revegetation projects, assessing their condition and monitoring their outcomes for biodiversity and carbon sequestration, using floristic and/or vegetation structure characteristics as biodiversity indicators. Two workshops held recently at Malanda and Cairns showed participants how to carry out a rapid condition assessment of a planting site (similar to the assessment carried out for the survey of NHT1 sites). This is a simple technique from the toolkit which does not require technical expertise (although some experience with revegetation projects is useful). There are no transects and no lengthy data collection and the assessment is based on general observations made over the whole site and indicated on a map. This methodology is valuable for tracking a project's progress and for determining the need for ongoing maintenance over a long time period. Most importantly it will highlight any problem areas and act as a trigger for early intervention, therefore avoiding further degradation of the planting and unfavourable outcomes.

Note: electronic copies of the toolkit can be downloaded from <http://www.rrrc.org.au/publications/>.

The Lakes Corridor, Impressions and Recollections

Ray Byrnes

Recently I revisited the Lakes Corridor to see how it has progressed since the first tree plantings were done there in 1998 and to identify areas of the corridor which might be in need of further rehabilitation. My visit was in response to a request from TREAT's Barbara Lansky who wanted to familiarise herself with the route and condition of the corridor as well as catching up with some of the history of the project.

The Lakes Corridor was a project developed and implemented by the North Johnstone and Lake Eacham Landcare Association during the period I worked with the group as their Landcare Coordinator. The objective was to provide a rainforest corridor linking the Eacham and Barrine sections of the Crater Lakes National Park which would also complement Donaghy's Corridor linking the Barrine section with Gadgearra Forest Reserve. Planning commenced in 1997 and Bushcare funding was secured in 1998.

Site preparation commenced in October 1997. A small farm dam was repaired in November to provide water supply for newly planted trees and the first plantings took place in March 1998. Follow up plantings over the next three years completed the corridor and increased the width of sections at the Eacham end.

The route of the corridor traverses ten properties and for most of its length it follows Maroobi Creek. Most of the target area was extremely degraded, being part of a highly eroded slope heavily infested with Wild Tobacco bushes (*Solanum mauritianum*), Lantana thickets (*Lantana camara*), Budlea (*Buddleja species*), Cockspur (*Maclura cochinchinensis*), and Axelaris (*Macrotyloma axillare*) (climbing legume) as well as sundry other lesser weeds. Thanks to farmer members of the Landcare Group who provided their machinery and labour we were able to limit the amount of manual clearing required to the steepest areas of the site (which were still quite considerable).

As anyone who has experience in tree planting knows, the work is hard and hot and not for the fainthearted. The Lakes Corridor was no exception and some of the volunteers who participated in the site preparation and planting found the going too tough and resorted to spending much of their time avoiding the Coordinator and resting in the support vehicles or under a shady tree. However we did get very good support from groups from Conservation Volunteers Australia and Greencorps which was critical in helping us to meet our planting targets.

Comparing the corridor now with what we started with in 1997, I am greatly impressed with the transformation that has occurred. For most of its length the corridor has developed excellent tree cover which is already providing the type of sheltered environment needed to support movement and interchange of species between the formerly isolated sections of the Crater Lakes National Park.

While the growth and development of trees is impressive in most sections of the corridor, there are areas which have not developed as expected and some sections where tree survival has been poor and where there is an obvious need for further plantings.

The reasons for the poor performance of trees in certain sections appear to be related mainly to variations in soil type and drainage. In one of these sections, waterlogging is a problem and few of the rainforest species planted have survived in this area. Clearly any further plantings in these locations will need to be based on species selected for their ability to cope with the soil and drainage conditions existing at these sites.

Competition from grass appears to have had a significant effect on growth rate of trees in some sections, notably at the Eacham end of the corridor. Here we can see the effects of different maintenance regimes, one where grass is kept mowed and another where grass is controlled by herbicide application. The growth of trees in the herbicide control section is clearly much greater than in the mowed section.

Another useful observation has been the failure of a trial planting of Alphitonia species as a means of site capture using pioneer species and relying on seed delivery by birds and infill plantings to expand the species mix. There has been little recruitment of other species in this section and it is in need of rehabilitation works and infill plantings to achieve an acceptable outcome.

At the Barrine end of the corridor there is an extensive area which was previously infested with Lantana where substantial natural regrowth is occurring. As it develops further this area will greatly enhance the connection between the corridor and the Barrine section of the Crater Lakes National Park because it extends down to the side of Maroobi Creek opposite to the side the corridor is on.

In general I am pleased with the results of our efforts to establish the Lakes Corridor but clearly there are opportunities to build on what has been done to increase its potential and I commend any proposal to include it in further work aimed at augmenting corridor networks across the landscape.

Jim Bourner



Life member Jim Bourner died unexpectedly on 19th March. He was a dedicated member of TREAT and for the past 12 years came to Friday morning working bees at 7am to make up the potting and seed-raising mixes for the morning proceedings. He was also one of the first to arrive at community plantings, believing in planting before the sun got too high. Being involved in education, he often looked after our Display Centre as well. Jim's love of nature made him a tree-planter long before TREAT started, planting trees at schools where he taught and was headmaster. He raised trees from seed and was well on his way to planting his dream of a million trees in his lifetime. He will be missed by all.

New Nature Refuges on the Tablelands

Keith Smith Senior Nature Refuge Officer, EPA

Kerry and Barb Kehoe, the owners of Mt Quincan Crater Retreat at Yungaburra have protected 8ha of endangered Mabi Forest and volcanic crater wetland under the newly declared **Mount Quincan Crater Nature Refuge**.

Mount Quincan is home to the rare Lumholtz's tree-kangaroo and green ringtail possum. It supports 40ha of critically endangered Mabi Forest and 4ha of endangered sedgeland. It is estimated that only 860ha of Mabi Forest remains on the Atherton Tablelands, over 95% having been cleared for agriculture over the past 100 years.

The Environmental Protection Agency (EPA) in partnership with the Commonwealth Government's National Reserve System Program has provided the Kehoes with funding assistance under their Nature Refuge program. The Tablelands Community Revegetation Unit will assist the Kehoes with weed control and site maintenance and will plant 4,500 Mabi Forest tree species over the next 2 years. EPA will continue to work with neighbouring landholders in an attempt to protect the remaining vegetation on Mt Quincan.

271ha of Mabi Forest is protected on Curtain Fig National Park and 34ha on Nasser's Nature Refuge. Whilst broadscale clearing is no longer a threat, fragmentation, weed invasion and logging continue to threaten Mabi Forest across the Tablelands.

The new **Barrine Park Nature Refuge** protects 5ha of the Toohy Creek wildlife corridor that connects Lake Barrine rainforest to the expansive World Heritage Area to the east. The nature refuge owned by Phillip and Carolyn Emms, adjoins Donaghy's Corridor Nature Refuge and represents the last link in the corridor.

Noel Preece and Penny van Oosterzee have also protected 130 ha of cloudy wet highland rainforest on their Upper Barron Road property, as **Thiaki Creek Nature Refuge**. The forest is core breeding habitat for the Lumholtz's tree-kangaroo, six species of possum (including three rare species) and numerous bird, mammal and plant species that are endemic to North Queensland rainforests. Thiaki Creek Nature Refuge provides breeding habitat for the endangered Southern Cassowary.



Other new Nature Refuges include the 25ha **Maple Leaf Nature Refuge** at the top of Kenny Road; the 30ha **Wairambra Creek Nature Refuge** on Old Boonjie Road; and the 35ha **Lake Barrine to Lake Eacham Rainforest Corridor Nature Refuge** on Maroobi Creek. This last nature refuge owned by Jim and Alma Raw connects with the western end of the Lakes Corridor.

A Nature Refuge Conservation Agreement is not always the most appropriate protection mechanism. Other options worth considering include a Conservation Covenant with your Regional Council or a Voluntary Declaration under the Vegetation Management Act with the Department of Natural Resources and Water.

Johnstone River Snapping Turtles

Alastair Freeman

Tim Curran from The School for Field Studies and myself recently completed the first field season of a project on the Johnstone River Snapping Turtle (*Eiseya stirlingi*). This turtle is considered a species of conservation concern to the Environmental Protection Agency in Queensland. (See ["Have You Seen This Turtle"](#) article in the April - June 2008 newsletter.) With the invaluable help of five SFS students (Hadley DeBree, Andy Stanton, Becca Reeves, Carolyn Steinberg, and Lilly Dethier) we measured and marked over 100 Johnstone River Snappers at four sites on the Johnstone River between Malanda and Glen Allyn Road. At all four sites (thanks to property owners; Heather and Dennis Allwood, Kate and David Fanning, Peter and Barbara Mahar and Peter and Carmel Hickey) we caught and observed the full complement of age classes from small juveniles to large females. This is an optimistic sign that the populations, at these localities at least, are in good shape and doing well for the future of the species on the Tablelands.

The other aspect of the project, to develop a habitat model for the species on the Atherton Tablelands, has also been underway. Such a model will help with the conservation of the species on the Tablelands by giving us a better picture of what habitat this species needs to survive here. The first step in this process has been getting an accurate distribution map for Johnstone River Snapping Turtles in the area. Preliminary analysis suggests that the species' distribution is patchy with the turtles preferring deep pools (greater than 3 metres in depth) interspersed with flat rocky riffle areas where the Johnstone River crosses basalt soils.

In 2009 this work will continue, again with the assistance of students from The School for Field Studies. We are still interested in obtaining records of this species at sites around the Tablelands so if you spot a big turtle with a white throat and/or chin and perhaps with a pink nose please let me know.

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Typical Johnstone River snapper habitat pool

Nursery News

Peter Snodgrass

This year's planting season has been very busy with such an action packed schedule that has seen TREAT volunteers involved in the planting of over 15,000 trees in just a few months. The plantings on the Mete's property saw us on the southern side of Peterson creek, a site we haven't had a fresh site on for a few years.

The weather has been very much on our side which has assisted in achieving a very high success rate throughout all planting sites. The sites that were affected by the extreme weather conditions of 2006 and 2007 have now been in-filled and hopefully this time we can get some closure on those sites.

It has taken a dedicated effort from all parties to get so many trees in the ground, so well done everyone. And a very special thanks to the catering crew who have put in such a great effort week after week preparing and laying out a hearty feed and refreshments for all after each planting. Cheers!!

The nursery is looking very tidy as a result of the dedicated efforts of so many people out in the bays giving the trees all the necessary care they require. Well done and keep up the good work. It's been nice to see some fresh faces of new members assisting in the nursery and at tree plantings and we are always glad to see more.

Good luck with your site maintenance this year.

Fruit Collection Diary January - March 2009

Species	Common Name	Collection Location/Regional Ecosystem
<i>Acronychia crassipetala</i>	Crater Aspen	7.8.4
<i>Alphitonia petriei</i>	Pink Ash / Sarsaparilla	7.8.2
<i>Alphitonia whitei</i>	Northern Red Ash	7.8.2
<i>Carnarvonia araliifolia</i>	Red Silky Oak	7.8.2
<i>Cebera inflata</i>	Grey Milkwood	7.8.3
<i>Darlingia ferruginea</i>	Rose Silky Oak	7.8.2
<i>Darlingia darlingiana</i>	Brown Silky Oak	7.8.2
<i>Dysoxylum mollissimum</i>	Miva Mahogany	7.8.3
<i>Elaeocarpus grandis</i>	Silver/Blue Quandong	7.8.2
<i>Endiandra palmerstonii</i>	Black Walnut	7.8.2
<i>Endiandra insignis</i>	Hairy Walnut	7.8.2
<i>Ficus crassipes</i>	Round Leaf Banana Fig	7.8.2
<i>Ficus destruens</i>	Boonjee Fig, Rusty Fig	7.8.2
<i>Ficus fraseri</i>	Sandpaper Fig, Fraser's Fig	7.8.3
<i>Gmelina fasciculiflora</i>	Northern White Beech	7.8.2
<i>Harpullia ramiflora</i>	Claudia Tulipwood	7.3.10
<i>Mallotus philippensis</i>	Red Kamala	7.8.3
<i>Melicope rubra</i>	Little Evodia	7.8.3
<i>Phaleria clerodendron</i>	Rosy Apple, Scented Phaleria	7.8.2
<i>Rhodomyrtus sericea</i>	Grey Rhodomyrtus	7.8.4
<i>Sarcotoechia serrata</i>	Fern-leaf Tamarind	7.8.3
<i>Sloanea macbrydei</i>	Northern Yellow Carabeen	7.8.4
<i>Sundacarpus amara</i>	Black Pine	7.8.2
<i>Syzygium sayeri</i>	Pink Satinash	7.8.10
<i>Terminalia sericocarpa</i>	Damson Plum	7.3.10
<i>Trema orientalis</i>	Woolly Cedar	7.8.3

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