

Forest Matters



Rainforest CRC Newsletter

june 2005

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Siam Weed: Spreading The Word (Not The Weed)

In May 2005 the Queensland Department of Natural Resources and Mines (NR&M) commenced a national survey aimed at establishing the full extent of Siam weed in Australia.

Siam weed infestations are currently known to exist in the Tully, Townsville and Thuringowa areas of north Queensland, and at present these infestations are being controlled with the future aim of eradicating them altogether. However, Siam weed does have the potential to spread up the coast of Queensland through to Cape York, across to the Northern Territory and northwest of Western Australia and south to northern New South Wales.

To justify ongoing national and interstate funding for the Siam weed eradication program, the national survey will establish the full extent and size of infestations within Australia, and then take the necessary steps to control the invasive species. While the NR&M will undertake some ground survey work in the hunt for Siam weed, landholders, bushwalkers, naturalists and other concerned community members will be able to provide crucial information about the possible spread of Siam weed.

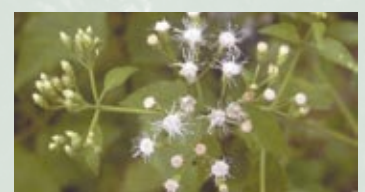
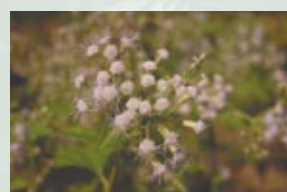
If you think you have Siam weed on your property, or suspect it to be growing in any location, you can report it by calling toll free 1800 084 881 or by visiting www.weeds.org.au.

How can members of the community identify Siam weed?

Siam weed tends to grow abundantly along watercourses, however it has also been found growing on granite hillsides. It tends to establish itself in the same environment as Lantana.

Siam weed is an erect or sprawling shrub, forming dense tangled thickets up to three metres in height when growing in the open, or up to twenty metres as a climbing vine. Its leaves are almost triangular with a distinctive 'pitchfork', three-vein pattern, and it emits a pungent odour when crushed.

Its flowers range from white to a pink mauve and occur in clusters of dense tasselled heads similar in appearance to Blue Top and Billy Goat weed. Flowering occurs predominantly in the May to July period and occasionally in the September to October months in suitable climate and soil conditions. The winter months are its major flowering time, and so is an important time for people to be on the look out.



Left: Siam weed with mature flowers (Image: NR&M).
Right: Siam weed in the early flowering stage (Image: NR&M).

Cover Photos:

(Top) Researchers of CSIRO's laboratories in Atherton have successfully gathered data about the movements of Spectacled flying-foxes on the Atherton Tablelands of north Queensland. As one of the main project outcomes, the movements of the radio-collared animals, tracked via satellite, will be shown on an online tracking map (Image: Louise Shilton).

(Bottom) The colours of *Neosepica jucunda* of the family Bignoniaceae, taken by Project 3.1 researcher, Sarah Boulter, at the Australian Canopy Crane site at Cape Tribulation.



The Commonwealth Government has now confirmed that it will be establishing a Marine and Tropical Sciences Research Facility in north Queensland, following their Election promise of 2004. The proposed facility forms part of the Commonwealth Environment Research Facilities programme (CERF), a new national programme that will support world-class environmental research (further information is available at <http://www.deh.gov.au/programs/cerf/>). The new facility will have hubs located at the Cairns and Townsville Campuses of James Cook University, and we expect to soon hear how the Department of the Environment and

Heritage will manage it.

The good news is that bridging funding has been committed to keep both the Rainforest CRC and CRC Reef in full flow until mid 2006, when the new facility takes over. This is particularly important, as the CRC Programme's funding for our Centre will wind down in our final year (2005/2006).

The collaboration between the Rainforest CRC and CRC Reef is increasing. This year we will hold another joint conference (see the notice on page 11) – entitled 'Rainforest meets Reef', the meeting will highlight collaborative research solutions to environmental challenges in the tropics, and will be held in Townsville. Please make sure you submit your presentation abstracts.

This year, for the first time, the Rainforest CRC submitted nominations for the 2005 Cooperative Research Centres Association Awards for Excellence in Innovation. I was delighted to learn that the Yalanji Fire Management Book was awarded with this prestigious award – see our coverage on page 4.

Although the Rainforest CRC is in wind-down mode, the productivity of its researchers is rapidly increasing. The report by Steve Turton below on his recent review of the CRC draws attention to some of the recent highlights. Congratulations to all, and keep up the good work!

Professor Nigel Stork
Chief Executive Officer



Researchers Shine

Rainforest CRC researchers have been exceptionally productive over the past twelve months, with a significant number of research papers being published in high-impact journals, including *Science*, *Nature*, *Ecology* and *Global Change Biology*. A number of Rainforest CRC publications have also been produced, including our first 'best practice manuals'.

There have been many research highlights in 2004/2005 across all of our programs. Here, we shine the light on some of our researchers' best outputs this financial year:

- The publication of 'landmark' reports *Sustaining the Wet Tropics: A Regional Plan for Natural Resource Management 2004–2008* and *Caring for Country and Culture: The Wet Tropics Aboriginal Cultural and Natural Resource Management Plan* by Program 1 and 7 researchers, led by Professor Geoff McDonald (CSIRO) and Dr Sandra Pannell (Rainforest CRC).
- Publication of the hard cover *Yalanji Warranga Kaban. Yalanji People of the Rainforest Fire Management Book*, by Dr Rosemary Hill (Australian Conservation Foundation and James Cook University) and many Kuku-Yalanji Traditional Owners of far north Queensland.
- Publication of *Freshwater Fishes of Northern Australia*, by Drs Brad Pusey and Mark Kennard and Professor Angela Arthington (all based at Griffith University), a major achievement for the Rainforest CRC with over 530 copies sold to date.
- Research results indicating the ability of lowland forests to act as filters for agricultural runoff, hence reducing pollutant loads to the Great Barrier Reef

lagoon. The findings of research on this topic, led by Project 2.2 Leader Dr David McJannet (CSIRO), shows the importance of matching forest type with local conditions. This information will become useful for those planning revegetation projects across the Wet Tropics region.

- Examining impacts of climate change on Wet Tropics rainforest ecosystems, Project 2.5 researchers, Dr Dave Hilbert (CSIRO) and Dr Steve Williams (James Cook University), have developed distribution models for several species of vertebrates using abundance data. The project primarily aims to assist in the conservation of rainforest ecosystems and their biota in the face of rapid climate change. Results are being used nationally by government agencies to inform conservation policy and practice. Internationally, results are contributing to the science of climate change impacts on biodiversity.
- Working from the Australian Canopy Crane at Cape Tribulation, Project 3.1 Leader Professor Roger Kitching and his team are exploring the response of rainforest pollination systems to forest fragmentation. Researchers are working on the biology of specific pollinator species and their multifunctional roles in the canopy, community ecology of the flowering process and parentage amongst and variability of small or isolated plant communities.
- Research findings from visitor and community surveys, conducted by Dr Joan Bentrupperbäumer's (James Cook University) research under Project 4.1, have been incorporated into the State of the Wet Tropics reporting procedures by the Wet Tropics Management Authority, which includes information on how the

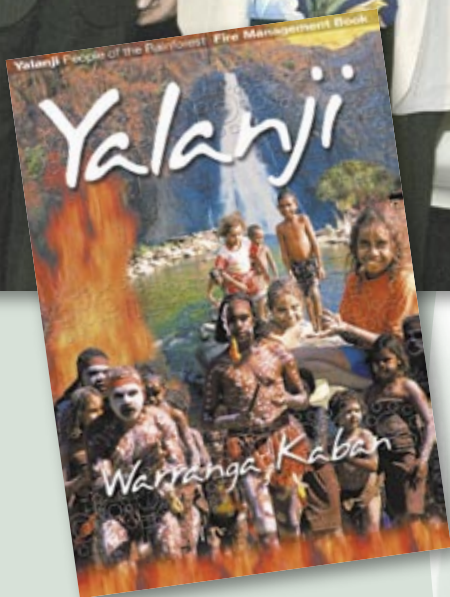
Wet Tropics World Heritage Area functions in the life of the community.

- Project 5.1 researchers, led by Associate Professor David Lamb, have completed a peer-reviewed book that draws together research on reforestation with rainforest trees that has been carried out in Australia over the last ten to fifteen years. The same group have been invited by the prestigious journal *Science* to write a review on restoring tropical forests in degraded landscapes.
- Associate Professor Carla Catterall and her team, under Project 5.2, have made significant advances in understanding and monitoring how reforestation in rainforest landscapes results in improved biodiversity values. It is also providing new knowledge of how ecological processes can be managed to improve biodiversity in regenerating rainforests, and of alternative techniques for restoring biodiversity to degraded landscapes. Much of their work is now appearing in high impact journals.
- Work undertaken in Project 6.3.2, led by CSIRO's Dr David Westcott, has produced data on seed dispersal across intact and fragmented forest landscapes. Understanding the roles species play in ecological processes through seed dispersal work has led to the development of appropriate measures for scoring species for management priority.

I congratulate all of our many researchers and postgraduate students for their hard work and many successes over the last year. We may look forward to continued achievements over coming months as we move into the wind up phase of the Rainforest CRC.

Steve Turton
Deputy Chief Executive Officer





Winners are grinners... from left, The Hon. Dr Brendan Nelson MP (Minister for Education, Science and Training), Adelaide Baird (Yalanji Traditional Owner), Dr Rosemary Hill (Australian Conservation Foundation and Project Leader, Rainforest CRC), Professor Nigel Stork (CEO, Rainforest CRC), Steven Nowakowski (Photographer/Publisher, Little Ramsay Press), Roy Gibson (Yalanji Traditional Owner), and The Hon. Tony Staley (Chair, Cooperative Research Centre Association) (Image: Ric Magazowski, Shot on Sight Photographics).

The hard cover Yalanji Waranga Kaban: Yalanji People of the Rainforest Fire Management Book is defined by superb artwork and photography.

Winners!

The temperature in Melbourne might have only reached a chilly 18°C on Thursday 19 May, but there was a warm feeling in the air for a very special group of far north Queensland's Eastern Kuku-Yalanji people. In a first for the Rainforest CRC, staff, researchers and community members of Mossman and Wujal Wujal descended upon Melbourne to take part in the Cooperative Research Centres Association (CRCA) Awards for Excellence in Innovation for 2005.

Following a very successful launch in Cairns in December 2004, the spectacular hard cover Yalanji Waranga Kaban: Yalanji People of the Rainforest Fire Management Book has received rave reviews and has now been honoured with a prestigious national award, one of only four presented each year. The Award for Excellence and Innovation recognises the outstanding contribution the book has made to education, training and public outreach.

For the Yalanji people, the award caps almost ten years of collaborative fire research with the Rainforest CRC. The book explores traditional natural resource management practices used by Yalanji Traditional Owners from the Daintree

The successful launch of the book, covered by our January 2005 issue of Forest Matters, lit the way to nomination for a 2005 Award for Excellence in Innovation.

COMMUNITY CHEST

Yalanji Fire Management Practices Defined

A new book entitled Yalanji Waranga Kaban: Yalanji People of the Rainforest Fire Management Book was launched by Traditional Owners of the Daintree rainforest on 20 December 2004 in Cairns. Stunning images of Yalanji people, their country and culture, and a captivating story presented in both Kuku-Yalanji language and English provide a rare glimpse into the depth of knowledge and the spiritual connection behind fire management practices that have sustained the values of the rainforest for millennia.

Led by Dr Rosemary Hill of the Australian Conservation Foundation, the project is a culmination of nearly ten years' research, and was proudly partnered by the Rainforest CRC, Cape York Land Council, Wujal Wujal Community Council and Bamanga Bulu Ngadimunku, with support from the Australian Conservation Foundation, Natural Heritage Trust, James Cook University and publisher Little Ramsay Press.

Invited guests, Traditional Owners and their families filled the Cairns Cruising Yacht Squadron club house to witness the special milestone for Yalanji people, and were treated to live dance performances by Bamanga Bulu Ngadimunku Dancers.

Copies of the book are available for \$29.95 and may be ordered through Little Ramsay Press (email ramsaypress@semail.com.au). All proceeds from the sale of the book return to Yalanji organisations to support ongoing land management and cultural projects.



Stunning artwork and photography complement personal recollections, stories and practical advice contained in the Yalanji People of the Rainforest Fire Management Book. (Image: Steven Nowakowski)

Visit the Conference websites at www.rainforest-crc.jcu.edu.au



WILDLIFE DISEASE ASSOCIATION
INTERNATIONAL CONFERENCE
June 26 - July 1, 2005
Cairns, Queensland, Australia



Frugivores and Seed Dispersal
Theory and its application in a changing world

rainforest



rainforest, part of Queensland's Wet Tropics World Heritage Area and one of Australia's 'biodiversity hotspots'. Fire management in the Wet Tropics is a current resource management issue of growing relevance. In sharing their knowledge of fire management, Yalanji people can provide invaluable insight into traditional approaches and assist sustainable rainforest management.

The book is written by Traditional Owners – it transfers oral history into written words, both in English and, for the first time, in Yalanji language. The passing on of intimate traditional knowledge in natural resource management and culture will make a significant contribution to future generations.

A Plan Unfolds...

Earlier this year, the Rainforest CRC identified a unique opportunity to bring national attention to not only the Yalanji Fire Management Book but also the extensive research and knowledge gained through collaborative work involving Yalanji Traditional Owners and Dr Rosemary Hill of the Australian Conservation Foundation. Also Leader of the Rainforest CRC's Project 1.5, Rosemary has helped to develop policies, protocols and practical mechanisms for recognising Aboriginal peoples' values, rights and responsibilities associated with rainforest environments. The Yalanji Fire Management Book was nominated for the Award for Excellence in Innovation in February.



During the filming of the three minute Award video, Birgit Kuehn snapped this photo of a tourist group at Bloomfield Falls. Kuku-Yalanji Dreamtime Walks include the falls in their tour trail.



Dr Rosemary Hill, left, discusses issues relating to Yalanji Country with Traditional Owners. Many regular meetings such as this were held during the production of the Yalanji Fire Management Book (Image: Steven Nowakowski).



Film producer, Chloe Lucas, with project photographer Steven Nowakowski (Image: Birgit Kuehn).



Chloe Lucas (left) of Imagocean Productions with Dr Rosemary Hill during the filming of the three minute video for presentation at the Awards Night (Image: Birgit Kuehn).



Filming of the three minute video was conducted at some of far north Queensland's most precious places, including Bloomfield Falls, near Wujal Wujal Community, shown here (Image: Steven Nowakowski).

Success!

By March, the Rainforest CRC had confidentially received the news it had been waiting for – the Yalanji Fire Management Book was a winner of an Award. The next step involved production of a three minute video for presentation at the Award Night in Melbourne, carried out by Chloe Lucas of Imagocean Productions, based in Townsville. Chloe had previously undertaken filming with Giringun Aboriginal Corporation and Queensland Parks and Wildlife Service in Cardwell.

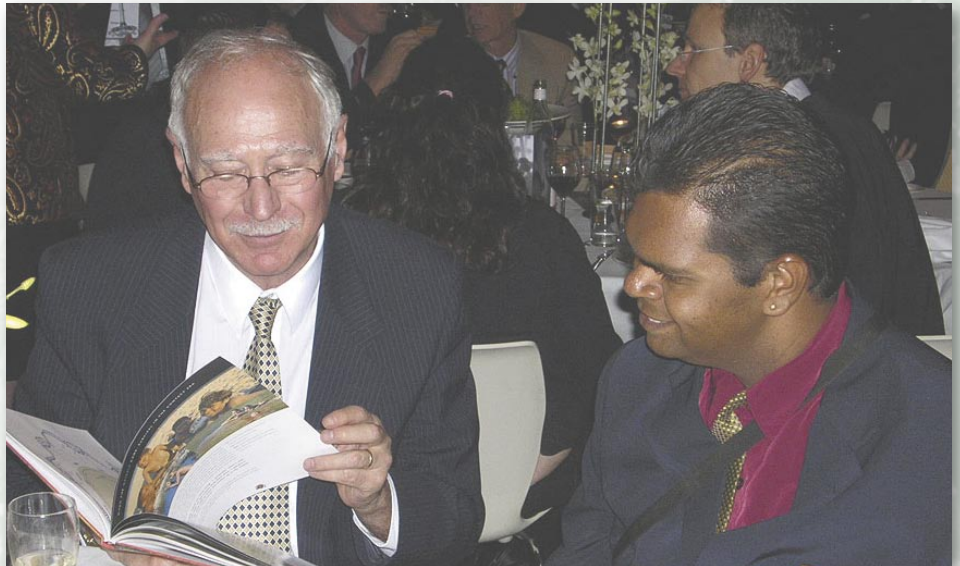
With support from the Australian Conservation Foundation and Rainforest CRC, Traditional Owners, researchers and staff flew to Melbourne in May to accept the Award. On behalf of the Yalanji Traditional Owners, Francis Walker said, "It's not just a book for us, it's cultural survival, it will keep our language, culture and Law alive." Senior Traditional Owner, Edward Barney, added, "This book will help government land managers understand our way of running fire management on our country from our Law and culture".

The Rainforest CRC would like to extend particular thanks to, and congratulate:

- Yalanji Traditional Owners, for sharing their unique knowledge of country and fire;
- Dr Rosemary Hill, for many years' hard work and determination in seeing the project through to fruition;
- Steven Nowakowski, who took such beautiful photographs of the Yalanji people, effectively documenting their way of life for future Yalanji, Australian and international generations;
- Chloe Lucas, who ensured the professional production of the three minute Award video at short notice; and
- Birgit Kuehn, who coordinated the successful nomination of the Yalanji Fire Management Book for the 2005 Awards for Excellence in Innovation.



Adelaide Baird with the 2005 Award for Excellence in Innovation (Image: Ric Magazowski, Shot on Sight Photographics).



Professor Leon Mann, Director of the Centre for Research and Development Leadership at The University of Melbourne, reads through the Yalanji Fire Management Book with Desmond Tayley, Chair of Wujal Wujal Community Council (Image: Steven Nowakowski).



Yalanji Traditional Owner, Edward Barney (left) with photographer Steven Nowakowski, who provided superb images for the Yalanji Fire Management Book (Image: Steven Nowakowski).



Professor Nigel Stork, Rainforest CRC CEO, with co-author Dr Rosemary Hill of the Australian Conservation Foundation (Image: Steven Nowakowski).



Yalanji Fire Management Book co-researcher and co-author, Adelaide Baird, with Don Henry, Executive Director of the Australian Conservation Foundation, at the Award Dinner (Image: Steven Nowakowski).



Aboriginal NRM Plan Reaches Fruition

Researchers and staff of the Rainforest CRC joined forces with Aboriginal, political and community leaders from the north Queensland region on 29 April to celebrate the official launch of **Caring for Country and Culture: The Wet Tropics Aboriginal Cultural and Natural Resource Management Plan**, a major milestone for Program 1.4 of the Rainforest CRC.

Special guests at the launch, held in Innisfail, included the Hon. Desley Boyle MP and the Hon. Greg Hunt MP with Steve Larkin, Principal for the Australian Institute of Aboriginal and Torres Strait Islander Studies. The launch was held in conjunction with the signing of the Wet Tropics Regional Agreement, an agreement between eighteen Rainforest Aboriginal tribal groups and the Australian and Queensland Governments to cooperatively manage the Wet Tropics World Heritage Area.

Available with a poster and CD-ROM, The Aboriginal Plan, as it is also known, represents a new era in environmental management for Indigenous peoples throughout Australia. It is the first plan of its kind to specifically address the many challenges of maintaining distinct and diverse cultures in a multi-tenured and rapidly changing landscape. The official launch "represented an historic achievement for the [north Queensland] region's Traditional Owners", said Desley Boyle at the event.

The Aboriginal Plan was developed through a unique partnership between the region's Traditional Owners, the Rainforest CRC and FNQ NRM Ltd, and forms part of the overall Natural Resource Management Plan for the Wet Tropics region, currently being finalised under Project 1.1 of the Rainforest CRC with FNQ NRM Ltd.

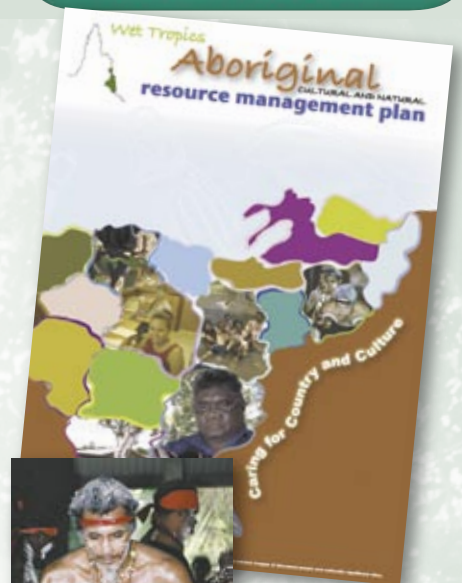
The document identifies the aspirations and a range of management and resourcing options for the Aboriginal Plan region's 17 Traditional Owner Groups, including access to a share of the \$1 billion extension to the Natural Heritage Trust among a range of other funding sources. Aligning with other regional programs is also fundamental to achieving the goals of the Plan. The Aboriginal Plan links with a number of key regional processes, including the Wet Tropics Regional Agreement. The Regional Agreement outlines how the Commonwealth and State Governments will work with Aboriginal people to manage the Wet Tropics World Heritage Area. Many of the Agreement's guiding principles and protocols are acknowledged in the Aboriginal Plan.

Both the Commonwealth and Queensland Governments have acknowledged the lack of success in existing service delivery to Indigenous peoples, and have committed to developing practical solutions to addressing Indigenous disadvantage. The strategies identified in The Aboriginal Plan are practical and culturally appropriate approaches to addressing not only environmental concerns but also broader social and economic disadvantage experienced by Aboriginal people with respect to health, education and economic well-being.

The Aboriginal Plan will also increase the awareness of community conservation groups, and Local, State and Commonwealth Government agencies about Indigenous



Dr Sandra Pannell (left) with Ms Yvonne Canendo, both Leaders of Rainforest CRC Project 7.1 (Image: Sandra Pannell).



Copies of *The Aboriginal Plan*, as it is known, are available from FNQ NRM Ltd, (07) 4061 6477.

Dancers from each of the Wet Tropics Traditional Owner groups celebrated the historic day (Image: Sandra Pannell).

peoples' concerns and values in, and inform policy and management arrangements for, natural resource management. The Aboriginal Plan also provides for practical on-ground projects between Aboriginal people and the broader community including cultural revitalisation camps, language programs, the development of cultural tourism and bush tucker businesses and the documentation and utilisation of traditional knowledge.

To obtain a copy of the Plan and accompanying items, contact the offices of FNQ NRM Ltd on (07) 4061 6477, or email info@fnqnrm.com.au. Further information can be found at <http://www.fnqnrm.com.au/ACNRMP.htm>.

Economic Benefits Identified For Cape York

The Rainforest CRC joined forces with the Australian Conservation Foundation (ACF) and Balkanu Cape York Development Corporation (Balkanu) on 10 March to launch the report **Culturally and Environmentally Appropriate Economies for Cape York Peninsula**.

A record of presentations made at a Roundtable in Cairns, the report identifies possible drivers for economic development on Cape York, including nature-based and cultural tourism, cultural industries, protected area and land and sea management.

Invited speaker, Professor Ian Lowe of the ACF, said the report demonstrated how linking nature conservation to Indigenous peoples'

role on Country is the best means of sustainable economic development for the region.

The Roundtable identified the issues of land tenure and conservation management arrangements as important barriers to enabling Indigenous peoples to secure economically viable futures on Cape York. Richard Aken of Balkanu acknowledged a \$7.5 million Beattie Government commitment for the acquisition of land on Cape York as a step in the right direction towards providing Traditional Owners with Country from which to base their economic and conservation goals.

The report is just one of many publications to be published by the Rainforest CRC in 2005.



From left, editors of the report, Dr Rosemary Hill (ACF) and Associate Professor Steve Turton (Rainforest CRC), with Rainforest CRC CEO Professor Nigel Stork, ACF President Professor Ian Lowe, and Balkanu Chair Mr Richard Aken (Image: Birgit Kuehn).

What Lies Beneath?

James Cook University Masters by Science student, Andrea Pullo, dug around to check out plant species in the soil seed banks of rehabilitated sites on the Atherton Tablelands.

Over the past fifteen years, rainforest rehabilitation has become increasingly popular in northeast Queensland in the interests of repairing degraded and fragmented ecosystems. Two common aims of rainforest rehabilitation on the Atherton Tablelands include accelerating natural successional processes and recruiting native species.

In order to achieve these aims, rehabilitation has occurred on degraded land adjacent to remnant forests to maximise native species recruitment. Management priorities have included weed control for up to three years after planting to reduce the risk of exotic species establishment on rehabilitated sites. However, little is done to ensure that rehabilitated sites are catalysing natural successional processes, or that native species recruitment is in fact occurring.

Currently, methods to investigate acceleration in successional processes and native species recruitment include analysis of the seed rain, or the seedling bank. Andrea's Masters research project investigated the soil seed bank, which can be defined as a collection of seeds that remain dormant in or on the soil. Soil seed bank



Seedlings were monitored on a weekly to fortnightly basis, and individual species identified, to enable Andrea to establish which species might germinate on rehabilitated sites (Images: Andrea Pullo).



Andrea and a team of researchers took soil samples from sites on the Atherton Tablelands to research the germination of seeds within each sample (Images: Andrea Pullo).

research has been neglected in rehabilitated areas. Knowledge of the composition of the soil seed bank is especially important because seeds from the soil-stored seed bank are likely to germinate and establish following a disturbance in the rainforest, i.e. canopy gaps or cyclone damage. Despite this importance, minimal research has been conducted on investigating the composition of seeds in the soil seed bank of rehabilitated sites.

Andrea's study, funded under Project 5.2 of the Rainforest CRC, aimed to identify the composition of seeds in the soil seed bank of remnant rainforests and rehabilitated sites both adjacent to, and isolated from, remnant rainforests. Secondly, Andrea set out to determine whether distance from remnant rainforest influences the composition of exotic species and native species recruits to the soil seed banks of rehabilitated sites.

The study, conducted on the Atherton Tablelands, identified seventeen research sites: six remnant rainforest sites, six rehabilitated sites adjacent to remnant rainforest, and five rehabilitated sites isolated from remnant rainforests (600-1800 metres). Twenty soil samples were collected at each site. Following soil collection, soil was taken to the CSIRO laboratories in Atherton for seed germination. Seeds were monitored on a weekly to fortnightly basis and germination continued for three months. Seedlings were identified to species level at each census interval. After seedling identification, the life history traits of each species were collected. Traits included family, life form, successional stage, dispersal mechanism, seed size, and origin (native or exotic).

The soil seed banks of rehabilitated sites were much larger in size than the soil seed banks of remnant rainforest, mainly due to the exotic herb and grass component in the soil of the rehabilitated sites. Minimal native species recruitment occurred across all three rainforest site types. Surprisingly, the exotic component and native species recruitment did not differ based on planting location, either adjacent to or isolated from remnant rainforest. The species dominating the soil seed banks had small seeds (0-10 millimetres), were wind dispersed, and early successional.

The soil seed bank composition suggests that exotic species may germinate after a disturbance and establish rehabilitated sites following ten to twelve years' weed control. Rehabilitated sites are not catalysing natural successional processes since native species recruitment is small and the soil seed banks are dominated by early successional, wind dispersed herbs and grasses. These results have significant implications for future rehabilitation efforts on the Atherton Tablelands due to evidence of exotic herbaceous dominance, which requires longer and more intense management.

Although much emphasis has been placed on planting sites adjacent to remnant rainforests, the soil seed bank does not detect a difference in the composition of soil-stored seeds. Andrea's results suggest that rehabilitated sites can be planted either adjacent to or isolated from remnant rainforests. Since this information is not found in above-ground surveying, the soil seed bank should be an added component to soil rainforest rehabilitation management.

Estimating Biodiversity In The Wet Tropics

For Terry Reis, currently completing his Honours with Griffith University, a long history of volunteering and field trip assistance in far-flung rainforests of Borneo and Australia provided him with the opportunity to undertake a very interesting Honours project.

Terry used data collected over approximately ten years through biodiversity surveys led by Professor Roger Kitching of Project 3.1, and recent work under Project 5.2 (involving Associate Professor Carla Catterall, Dr John Kanowski, Dr Grant Wardell-Johnson, Dr

Heather Proctor and Terry himself), to investigate the efficiency of taxa as surrogates for each other on rainforest plots in Borneo, New Guinea and Australia.

Taxon surrogacy is a conservation tool used to predict the biodiversity of rainforests and other poorly surveyed areas on the basis of limited knowledge. A successful surrogate taxon should represent the diversity of other taxa that are too difficult or expensive to be measured. Terry chose taxa based on the available datasets using a total of seven taxa: birds, vascular plants, beetles, moths, flies,

ants and mites.

For most taxa, Terry found that simple measures of species richness were not as useful surrogates as measures of assemblage composition. At the assemblage level, all taxa across both scales



Terry Reis, of Griffith University, researched the predictive method of establishing biodiversity levels in a given area by studying taxon surrogacy (Image: John Kanowski).



(with the exception of ants) showed some predictive relationships with some other taxa. Birds and plants, which are often popular choices as surrogates, showed themselves to be relatively efficient as surrogates at both the transcontinental and local scales. However, two taxa not usually selected for surrogacy measures, flies and mites, also showed some predictive relationships with other taxa. However, species richness was only a useful correlate at the transcontinental scale, and then, not for all taxa.

Analysis of the data at the transcontinental scale showed a latitudinal gradient of taxon richness for all taxa except moths. Correlations between taxa reflected expected relationships such as herbivory (moths and trees) and insectivory (birds and moths). These patterns were harder to see at the local scale.

Terry discovered that in addition to available data sets, the careful construction of bird species data from the literature proved a very cost-effective and practical alternative to the collection of plot data with patterns of concordance with other taxa mirroring those of plot data at the transcontinental scale.

Terry worked under the supervision of Dr John Kanowski of Program 5 and Professor Roger Kitching of Program 3.



In March 2004, the ABC's *Catalyst* program featured Jim's research into establishing an effective way of managing the increasing population of Feral pigs in north Queensland.

An extract of the transcript is included here. For the full transcript, visit *Catalyst* online at <http://www.abc.net.au/catalyst/default.htm> and search for the story "Man vs. Pig".

Narration: "...While Jim's traps definitely catch pigs, they're only really practical over small, accessible areas. And his radio tracking experiments have shown pigs like this one have a territory of up thirty square kilometres. Something more efficient was needed to wipe out pigs over huge areas. The most popular control method is aerial shooting. Jim found shooting from a chopper is great for bringing down pig numbers in open country. But even with this control method – he's found one major drawback."

Dr Jim Mitchell: "We found in some projects that aerial shooting will actually disperse the pigs. After a while we've actually found one pig moved two hundred kilometres from an aerial shooting project and that's something we don't want in an exotic disease outbreak."

Narration: "Scattering the pigs would just help to spread diseases like foot and mouth. Jim needed a way to kill pigs that would work over large areas, was cheap, and most importantly would contain pigs to their home range. And he's finally found the pigs Achilles heel."

Dr Jim Mitchell: "They just about, they'll eat anything including their own kind. They'll graze. They'll kill, chase and kill small mammals and snakes and reptiles. They get in the river and they eat mussels, crayfish, anything they can find. You name it they'll eat it."

Narration: "Jim has found that the way to the pigs's heart is through his stomach – using poisoned meat baits."

Dr Jim Mitchell: "Aerial baiting is by far the most cost effective especially for large scale pig management like in exotic disease outbreak for example where you have to do millions of square kilometres, aerial baiting is probably the only way to go."

Narration: "Jim has put a huge effort into working out the best way to control feral pigs, but even he admits he'll never wipe them out completely."

Dr Jim Mitchell: "In certain locations, in high priority areas it is possible to eradicate pigs in small areas but over the Australian mainland, no. Eradication is just not feasible at present."

Narration: "With 23 million pigs out there control is the best we can hope for."



Caught out... a group of unsuspecting feral pigs were photographed using a motion-detector camera, built by Bill Dorney, NR&M (Image: Bill Dorney).

Feral Pigs Dining Out

Feral pigs (*Sus scrofa*) are widespread and well established in the Wet Tropics rainforests of far north Queensland, utilising the cover of the rainforest to avoid capture. They interact with agricultural areas adjacent to forest areas (predominantly sugar cane and banana crops) and occasionally habit suburban areas. There are large tracts of rainforest and coastal swamps supporting free ranging feral pig populations that have

minimal contact with people, and live solely on rainforest resources.

As part of Project 6.2.2 of the Rainforest CRC, Jim Mitchell of the Department of Natural Resources and Mines designed a method to quantify the diet of feral pigs in the Wet Tropics region to provide a basis for assessing pig impacts on native species (both as food items and as competitors for resources), and to identify native foods that potentially could be used for control programs.

Stomach samples from 58 feral pigs were collected from four broad habitat types (rainforest, coastal swamps, sugar cane crops and banana crops). Pigs were found to predominantly eat plant materials, although animals (both vertebrates and invertebrates) were commonly found. Feral pigs can be defined as generalist omnivores, preferring plant material (between 85% and 95% of diet by wet weight), particularly the above ground parts of plants (fruits, seeds, leaves and stems). Feral pigs also actively hunt small animals (both mammals and birds) as well as scavenge carcasses. Animal derived foods, both invertebrates and vertebrates, are a minor but consistent feature of the diet – between 5% and 15% by wet weight.

Interestingly, there were significant differences in the diet of pigs in different habitats. Feral pig diets in rainforest and swamps are similar and have consistently higher proportions of animal food categories (15% and 13.8% by wet weight respectively) than those of pigs from sugar cane and banana crop habitats (5.5% and 11.1% respectively). In sugar cane crops, cane stalks form 93% of the diet by wet weight, and in banana crops fruit accounts for 66% of the diet by wet weight.

No significant differences in the diet of male and females in either the rainforest or sugar cane habitats could be detected. No seasonal influences on diet could be detected. Feral pigs compete with a large number of native species for available food resources.



Canopy Capers

Fourth International Canopy Conference

Professor Nigel Stork and Associate Professor Steve Turton will both attend the Fourth International Canopy Conference in Leipzig, Germany in July this year, following a successful third meeting in Cairns in 2002.

Entitled Canopy Ecology: Tropical Versus Temperate Forests, this year's theme seems entirely appropriate as permanent canopy access facilities are located world-wide in both tropical and temperate forests. The term 'temperate' is meant here to also include boreal forests. The Conference is intended to bring together experts in forest canopy biology from all over the world in order to spread and share research results and ideas, to strengthen existing collaborations, and to establish new projects

'Whole Forest Observatories' Proposal Backed by United Nations

Latest news from the Global Canopy Programme (GCP), of which the Australian Canopy Crane (managed by the Rainforest CRC) is a registered research site, indicates the United National Environment Programme has backed a GCP proposal to establish a series of 'whole forest observatories' across the tropics. These observatories will be linked to others already in existence in temperate forests around the world. The aim of the network is to investigate how climate change might alter the way forests function and what risks this poses to humans and the huge diversity of life such forests sustain.

More information at:

<http://www.globalcanopy.org/news/press-releases/GCPressRelease7Mar05.pdf>



The rainforest canopy at the Australian Canopy Crane site, Cape Tribulation (Image: Shannon Hogan).

Australian Canopy Crane in the Spotlight

Currently in preparation by the Rainforest CRC is twelve page glossy booklet highlighting research successes of the Australian Canopy Crane since commencing operation in 1999. The booklet will be published in time for distribution at the Fourth International Canopy Conference in Leipzig, Germany in July this year.



Rainforest CRC canopy extraordinaire, Professor Roger Kitching, flexed his muscles and climbed a 45 metre dipterocarp tree in Sabah for his 60th birthday. Just your ordinary birthday really... (Image: Danum Valley Field Centre)

Xiao Dong, an attendee at the Sabah Canopy Training Course, on the climb up to check the malaise trap (Image: Danum Valley Field Centre).

Global Canopy Programme Sabah Canopy Training Course

We are at the end of this year's training at Danum Valley Field Centre (Sabah, Malaysia), so I thought you might like a final news update. All trainees from both BCAPs (Basic Canopy Access Proficiency) graduated – some with flying colours, others with compensated passes – but all after a great deal of very hard work and solid graft. They deserve their certificates for sure!

Roger Kitching celebrated his 60th birthday with a 45 metre climb up 'Ahab', our monolithic high-climb training dipterocarp. I thought he looked rather dapper in his burgundy shirt!

We set up yellow pan traps (in two esplaniums), a malaise trap, several butterfly traps, moth traps and a remote sensor rig, all in the canopy. Xiao Dong from China climbed up with me to check the malaise trap first thing Wednesday (see photo). In his words he is one in 1.2 billion, since he is in all probability the first Chinese person ever to climb so high in a dipterocarp. A certain amount of artistic license, but fun all the same!

All the best and kind regards,

James Aldred
Chief Climbing Instructor,
Sabah Canopy Training Course





Rainforest CRC



Rainforest meets Reef

Joint Rainforest CRC and CRC Reef Conference
Townsville Queensland 22-24 November 2005

Highlighting collaborative research solutions to environmental challenges in the tropics

We are calling for papers or posters in the following themes from a biological, social or Indigenous perspective:

- Responding to climate change and building resilience
- Solutions for water quality issues
- Sustainable economies in the tropics
- Maintaining diversity in the face of change
- The role of science in conservation planning and management
- New era of environmental governance and institutional change

Places for oral presentations are limited and only some abstracts will be selected to present. Abstracts are due on Friday 17 June. The deadline for early-bird registration is Friday 15 July, and registration closes on 2 September.

To register, download the registration form at
CRC Reef website: www.reef.crc.org.au
Rainforest CRC website: www.rainforest-crc.jcu.edu.au

More information: Louise Goggin
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Also present at the Strategic Alliance meeting was Kerry O'Brien (centre), a Rainforest CRC funded Honours student who completed her research on best practice cut designs for roads in the Wet Tropics. Kerry is now working with Biotropica Pty Ltd, researching roadside rehabilitation.

Main Roads Strategic Alliance Update

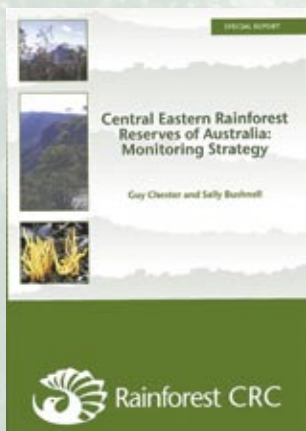
Road ecology researchers of the Rainforest CRC, and staff from Queensland's Department of Main Roads, Wet Tropics Management Authority and Biotropica Pty Ltd attended a workshop at CRC Headquarters in Cairns on 18 May to discuss a number of research projects currently funded through the Rainforest CRC/Department of Main Roads Strategic Alliance.

Since the project commenced in 2002,

the Alliance has set about to expand on roads research and apply it to current and future roads planning, construction and maintenance in the Wet Tropics region. A major thrust of the partnership over the past two years has been the application of research to provide best practice outcomes. Important initiatives have been an update of the Roads in the Wet Tropics Best Practice Manual and establishment of a number of research projects associated with the Kuranda Range Road Upgrade.



New Rainforest CRC Publications



For information on how to obtain these reports, please contact Shannon Hogan on (07) 4042 1244 (email Shannon.Hogan@jcu.edu.au)



Forest Matters is edited and produced by the Cooperative Research Centre for Tropical Rainforest Ecology and Management (Rainforest CRC). Articles and stories can be used with permission. If you have ideas, contributions or comments, please contact the Communications Officer at Rainforest CRC headquarters.

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