



Mammal Mail

August 2011

Newsletter of the Tree-Kangaroo & Mammal Group Inc.

Making Connections

By: Deb Pople

Senior Planning Officer, Wet Tropics Management Authority

The beautiful misty mountains of the Wet Tropics World Heritage Area are home to an amazing array of plants and animals, many of which are found nowhere else in the world. Unfortunately, clearing of land to make way for towns and farms, has left some of these unique animals stranded in small fragments of forest. Rising temperatures and possible changes in rainfall patterns are likely to increase the stress on our upland endemics, forcing some species to retreat to higher areas. Limited connectivity, however in the landscape is a significant barrier to natural migration.

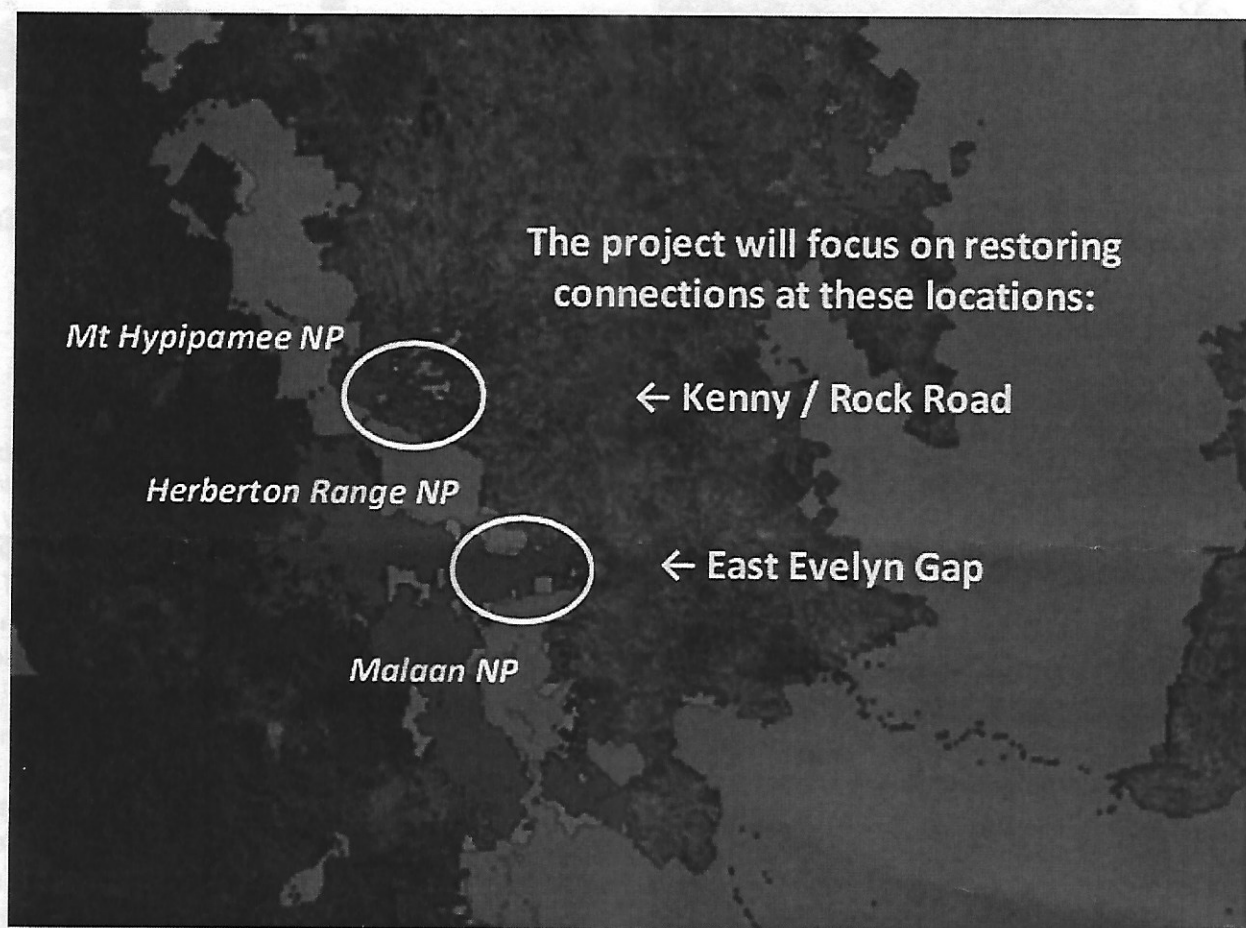
Climate projections for the region suggest that temperatures may increase between 1.4°C by 2030 and 4.2°C by 2070. Many of the highly-valued endemic species are confined to the higher, cooler parts of the region. Modelling indicates that a 1°C increase would decrease the habitat for many high-altitude specialists by over 50%. A 2°C increase would significantly reduce the area with a mean annual temperature of less than 22°C suitable for temperature-sensitive plants and animals, like lemuroid ringtail possums. While the total amount of annual rainfall is not predicted to change significantly, rainfall is predicted to become more seasonal with wetter wet seasons and longer dry seasons. Cyclone intensity is predicted to increase, carrying the risk of more frequent and severe ecosystem disruption. The El Niño phenomenon is predicted to occur more frequently, causing more frequent droughts and increasing the risk of bushfire along rainforest edges. While climate scientists and sceptics continue to argue over the extent and causes of climate change, average temperatures continue to rise, slowly but steadily placing the Wet Tropics ecosystem under increasing stress.

Restoring connections in these high altitude areas is therefore increasingly important in building landscape resilience to climate change. Long term, the aim is to establish a "Coast to Cool" corridor between the coastal lowland rainforests of Mission Beach up to the cool high refuge of the Herberton Range, which will allow the natural migration of plants and animals to higher areas.

A collaborative project, made possible by a recent grant of \$600,000 to WTMA from the Australian Government's *Caring for our Country* initiative, will help to reconnect remnant forest on private land to the World Heritage Area in the high-altitude areas around Herberton Range NP. The project draws on climate modelling by Dr Luke Shoo to identify the most suitable areas as climate refuges for temperature-sensitive species, including Herbert & Daintree River ringtail possums, golden bowerbirds, rainforest skinks, and of course, also benefiting Lumholtz tree kangaroos. In addition to planting and restoration work (including weed control and fencing), scientific trials of lower cost alternatives to planting, and microhabitat manipulation (the addition of log piles to encourage the return of reptiles, insects and frogs to revegetated areas) will be undertaken by Dr Carla Catterall of Griffith University and Dr Luke Shoo of JCU / the University of Queensland.

Over the next two years, WTMA, QPWS, TRC, TREAT, TKMG, Malanda & Upper Johnstone Catchment & Landcare Association, traditional owners, and CVA, will be working together to replant approximately 5ha and restore 35ha of rainforest in the Southern Atherton Tablelands. Restoration work is already underway, with two hectares recently planted at John Hatton's property on the corner of Kenny Road / McKell Road by Tablelands Regional Council (TRC) Community Revegetation Unit, and Conservation Volunteers Australia (CVA) volunteers and National Green Jobs Corp teams. This is along the same corridor as the TKMG planting on the Emm's property on Rock Road earlier this year (featured in the December 2010 newsletter), which

the WTMA CFOC project will also help to widen.



KEY: Grey = existing National Park

Blue = High altitude climate refuge (native vegetation) on private land

Pink = priority high altitude areas for revegetation

Climate modelling by Dr. Luke Shoo, JCU

The connection across the East Evelyn Gap will be strengthened by weed control and planting adjacent to the wildlife tunnels, which are also being refurbished at the moment with funding from the Department of Transport & Main Roads and assistance from Biotropica and Tablelands Regional Council. A second connection will also be established with the support of landholders to the west of the tunnels.

Keep an eye out for the dates of future plantings in the TKMG and TREAT newsletters if you'd like to get involved!



Tree kangaroo spotted on Dave Hudson's property during the field visit, April 2011

New Committee Member

In April this year Dr Sigrid Heise-Pavlov joined the committee of the Tree kangaroo and Mammal Group. Sigrid is lecturer for Rainforest Ecology at the School for Field Studies near Yungaburra with a background in mammalogy. She studied Terrestrial Ecology in Halle, Germany where her interest in mammalian pheromones started. After finishing her study she did some research on common voles, little cute rodents with a voracious appetite which can destroy the entire harvest of farmers in years when these little critters develop mass populations. However, at the peak of their mass population young females stop reproducing and this is likely due to chemical signals emitted by adult females. Sigrid tried to find these chemicals to use them in a biological control method but the German unification crossed Sigrid's path and she had to continue this project with other rodents such as house mice in England and bank voles in Belgium.

In 1998 Sigrid immigrated to Australia living with her husband in the Daintree Lowland Rainforest. As her husband did feral pig control in the lowland rainforest, Sigrid saw a chance to look at pheromones in these animals. Together with her husband she caught feral pigs and collected their carpal glands. Back in England she analyzed their content in a chemical laboratory.

In 2008 she took up the position of a residential lecturer at the School for Field Studies (SFS), Centre for Rainforest Studies, near Yungaburra. Experienced in teaching Australian ecosystems and nature conservation to German students, she now started introducing American undergraduate students to the beautiful rainforest and its critters. Undergraduate students join the school for entire semesters over three months. They complete three courses, one in Natural Resource Management, one in Socio-economics and one in Rainforest Ecology. The fourth course aims at the development and completion of research projects. Each student has to choose a project that is linked to the Five-year Research Plan of SFS and supervised by one of the three course faculties. During the past years, Sigrid started focusing more and more on the ecology and behaviour of tree kangaroos in her student directed research. Not much is known on the intra-specific communication of these cryptic animals. Do they mark their territories? How do they use rainforest fragments which are so common on the Atherton Tablelands? Why do so many tree-kangaroos get killed by dogs? When do they use replanted riparian areas and which individuals use them first?

Over the last semesters a few interesting aspects of tree-kangaroo biology have emerged from the work of Sigrid's students. In following issues Sigrid will introduce some of the projects that have been done so far and will outline future projects that can be undertaken in collaboration with members of the TKMG. These projects can contribute to our understanding of the biology of tree-kangaroos and can assist in planning efficient conservation activities for this beautiful animal.



Sigrid (middle) with SFS students.

TKMG Raffle

TKMG will be holding a raffle again this year, it will be drawn at the December meeting, prizes are still being finalised but the main prize is a Mahogany Glider print on canvas art work by Daryl Dickson, as discussed at the committee meeting was looking to support the Mahogany Gliders post Cyclone Yasi. The money raised will help purchase infra-red wildlife cameras to help with monitoring Mahogany Gliders initially. The cameras will be retained by the group but available to loan to students or researchers studying mammals in the region.



Tolga Bat Rescue & Research Inc.

ABN: 1563 484 5633

RECENT MEDIA, HENDRA, HORSES AND FLYING FOXES

By Jenny Maclean
Tolga Bat Hospital

Recent calls to move flying foxes to prevent Hendra spillovers can only come from people who have no understanding of the research to date, or the simple messages being given out by our public health experts. Media releases from various State Government bodies, most State politicians and even the Horse Council have been giving consistent clear messages that involve the following:

1. Humans can only get Hendra virus from horses. Hendra is a health problem for people who work with sick horses. This is a very small percentage of the population, who are safe if they follow the hygiene guidelines. Horses can be contagious before they show signs of illness, so anyone working with horses needs to be aware of the issues. Bat carers are the canaries in the coalmine for zoonotic (animal to human) diseases from bats. Blood taken from bat carers has shown no evidence (antibodies) of exposure to Hendra.
2. No one knows how horses come into contact with Hendra virus. There has been very little research money for Hendra over the 17 years since it was first discovered, because the incidence is so low. Consequently there is very little known about it. Flying foxes are a reservoir for the disease but researchers have been unable to infect horses from flying foxes. There is a missing piece of the puzzle. Some people believe there is evidence to suggest there are animals other than the flying fox involved in the disease cycle.
3. The most likely route of transmission that is being investigated is from bat urine. Scientists from Biosecurity Queensland regularly collect urine samples from plastic sheets under flying fox colonies and monitor for the incidence of the virus. About 3% of samples are usually positive for the virus. Recent testing in some colonies near spillover events in south east Queensland have shown an incidence of 30-50%. What does this mean? Did one positive bat produce most of this urine, or were there 10 bats responsible. How does the virus persist in the bat populations?
4. The most logical advice to date is: Keep horses away from trees in which flying foxes are currently feeding. Trees do not need to be removed, but should be fenced off from horses while they are fruiting or blossoming. Cover food and water containers. If possible house horses at night.
5. Horses with Hendra virus can present with a range of signs from neurological to respiratory. Horses with mainly respiratory symptoms are considered most contagious for humans as they produce large amounts of bodily fluids from the lungs and sinuses. This recent outbreak has been mainly affecting the neurological systems of the horses.
6. Research indicates that like us, flying foxes are more susceptible to viruses when under stress. The new mantra is One Health – you cannot have healthy people without a healthy environment and this includes wildlife. Attempts to move or cull flying foxes, as well as natural disasters like floods and cyclones, will increase the likelihood of Hendra virus in flying foxes. Calls to move flying foxes are like promoting smoking as a cure for lung cancer.

Studies involving Little Red flying foxes have found a 4-fold higher seroprevalence for Hendra (prevalence of antibodies for Hendra in the blood serum) in pregnant and lactating females compared with seroprevalence in males and pre-breeding females. During a nectar shortage, when animals were nutritionally stressed, all demographic groups exhibited approximately 80% seroprevalence, 14–42 times higher than the odds of seropositivity in any other season.

7. Most attempts to move flying foxes fail as they have high fidelity to roost sites or camps. They usually return within days or weeks. Where dispersals work in the short term, flying foxes are often then forced into areas that are less desirable for humans and bats alike, for example peoples' backyards. Should you be able to remove flying foxes from one area with horses, this will only move them to another area with horses.

8. Flying foxes are highly mobile, they can travel up to 80 kms a night foraging for food. They can travel many hundreds of kms in a week to go to new areas of fruiting and flowering. Removing flying foxes from one area will not stop their arrival from other areas if there is food available. Shifting their roosting location won't stop them feeding in fruiting or flowering trees in the same nearby horse paddocks.

Finally, flying-foxes are protected native animals and in need of conservation. Two species, including our local Spectacled flying fox, are nationally threatened. Flying-foxes are important to the environment. They spread pollen and disperse the seeds of native plant species, helping forest regeneration. Some of our hard wood eucalypts rely entirely on flying foxes for pollination and therefore their survival.

For further information see the **Tolga Bat Hospital** website:

www.tolgabathospital.org

The influence of riparian corridors on movements and residency of non-flying mammals in tropical remnants

By Katrien Geurts



Habitat loss and fragmentation cause subdivision and isolation of animal populations. Many tropical rainforest species have low mobility, high ecological specialisation and low tolerance of

edge and cleared land, which make them prone to extinction in fragmented landscapes.

The Atherton Tablelands in North Queensland have suffered a great deal of forest clearing and degradation. Tree-dwelling mammals such as tree-kangaroos and possums, together with climbing rodents and other rainforest dependent mammals such as pademelons, terrestrial rodents and bandicoots depend on the structural continuity of their habitat for dispersal. Their habitat, however, has been substantially cleared for pasture and agriculture and when crossing open land they could suffer collisions with cars or attacks by dogs and dingoes. Therefore they prefer the cover of trees for safe passage and shelter. Trees which were allowed to persist along streams offer these vital attributes and can serve as corridors between otherwise isolated remnants.

In the Wet Tropics bioregion endemic upland species are also threatened by climate change, as suitable habitat will contract when temperatures increase. Connectivity through corridors to highland refuges is imperative for continued existence of these species.

I aim to discover which mammal species live in and move between remnant patches, if they use the streamside vegetation as a corridor and what environmental factors influence their movements and residency patterns.

To evaluate this I will study my research species using three different methods: spotlighting, radio tracking and mark-recapture. I will compare rainforest remnants connected by riparian strips with unconnected ones. As a baseline control I will perform the same survey work in continuous rainforest. On the edge of the forest and along the stream I will spotlight to document presence and number of each species. Over a one-year period, white-tailed rats, bush rats, Cape York rats, bandicoots and melomys will be trapped and then marked with ear tags and microchips.

Subsequently they will be released and recaptured later in time. The place of recapture will tell us if they have moved. For the radio-tracking component several individuals of brushtail possums will be caught in traps. They will then be radio collared and their movements tracked for a period of about 8 to 10 months. At the end of our research, some animals will be translocated from one remnant to the adjoining other and the same distance in continuous rainforest. The translocation experiment will reveal extra information on species' mobility if individuals are not observed to move between remnants because of their high site fidelity.

Using ecological traits of the species studied and environmental (microclimate, vegetation structure and resource availability) variables measured in the different remnants I will construct an index of matrix permeability. This will assist in future management decisions regarding restoration and revegetation of corridors to accommodate successful dispersal of these species, especially to climate change refugia, and thus allow their future persistence.

This research is part of a PhD project at James Cook University Cairns. I have received financial support from funding organisations such as the Skyrail Rainforest Foundation and Australian Geographic to whom I would like to extend my gratitude. However, I am still in need of assistance to perform my field work, so whoever is interested in lending me a hand and getting up close and personal with some cute and furries from the Tablelands feel free to contact me on katrien.geurts@my.jcu.edu.au or 0409 775 593.

TKMG Committee

Lee Beecheno who has been a mainstay of the TKMG Committee for a number of years was elected president at the last AGM but since then has moved out of the area for work, a big THANKYOU to Lee for her work over the years. At the June meeting Noel Preece was nominated by Alan to fill the vacancy, accepted and was duly elected by the members present at the public meeting.

While we have people interested in most committee positions more nominations are welcome at the AGM. We are in particular need of a Newsletter Editor; this does not have to be a committee position. Also anyone interested in helping out at the Yungaburra Market stall (not necessarily on the Committee)?

Atlas of Living Australia

By Alan Gillanders

In Cairns in early December I got to play with the Atlas of Living Australia for the first time. This is an online collection of information held in various places. Sometimes the institution will share their information on the site but at other times you will find that specimens or data of other kinds are held at a particular place and if needed approach them for access.

From the web site, www.ala.org.au, "The Atlas of Living Australia" (the Atlas) is a biodiversity information management system with a goal to integrate information on all Australian species. It provides the infrastructure and tools to allow data contributors to share their data and the derivative information generated through its analysis, processing and integration.

"It also aims to provide access to biodiversity information for data users. To achieve these goals, the Atlas promotes the free and open exchange of biodiversity information to support science, policy making and public understanding."

By typing in a few letters of the name, common or scientific, one is able to select a species. Type in 'l, u, m, h,' and then you can see the collections of Lumholtz's Tree-Kangaroo. The map looks a little funny as there are records for central Queensland and for New Guinea. The PNG ones represent specimens held in institutions and the one from central Qld is probably lacking accurate location information. Click on the icon for the fact sheet for more information.

The picture is limited to an old ink drawing but you can share your pictures and observations if you wish.

One can construct maps with features such as drainage or geographic regions shown with the species of interest, change the colours and how strongly any particular layer is displayed.

"With the Spatial Portal you can:

- Map the distribution of a species

- Identify what species live in an area (and export the list)

- Map and list all occurrences of all species within an area (and export the full data records)

- Sample environmental and contextual data values at the locations of species occurrences

- Predict where a species could occur

- Map any formally named geographic features (gazetteer features)

- Map environmental (gridded) and contextual (polygonal) data layers

- Classify the environments in an area (environmental domains)

- Modify and manage the appearance of mapped data using Active Layers

- Define the Active Area in one of eight ways (the default being the displayed map area)

- Print maps in a range of formats."

Bryn Kingsford from ALA said they would be very happy to provide the infrastructure for a community survey of the Bennett's Tree-Kangaroo population. This site allows for citizen science in a big way and I encourage you to have a play with it and start contributing your knowledge.

What's On?

TKMG AGM

Presentation by Assoc
Professor Darryl Jones

'Ecoducts Overdue: Wildlife
Overpasses and the Promise of
improving road permeability.'

Malanda Hotel

7:30pm

Thursday

4 August 2011



1 Yellow-bellied Glider, 1 Squirrel Glider and 1 Feather-tail Glider
Photo by Ann Swindon. (Send in your Mammal Photo for this spot)



Drawing by William Cooper

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PO Box 1409, Atherton, Q, 4883

Please post to:



Tree Kangaroo and Mammal Group Inc (TKMG)

E-mail: info@tree-kangaroo.net

Web site: <http://www.tree-kangaroo.net/>

President: Noel Preece 0407 996953
noel@biome5.com.au

V. President: Alan Gillanders 4095 3784
alan@alanswildlifetours.com.au

Treasurer: Ilona Moerman 4095 2509
treasurer@tree-kangaroo.net

Secretary: Simon Burchill 0407 091347
sbburchill@gmail.com

Newsletter: Simon Burchill & Ceinwen Edwards (this issue)

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