

## NCCARF – Terrestrial Biodiversity 2010 Honours/Masters

### Research Grant Report.

### Carphodactyline geckos and Climate change: will adaptations in behaviour and habitat use be enough?

#### Masters by Research

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#### Summary and Aims.

This study aims to describe the ecology of two species of rainforest geckos: *Carphodactylus laevis* and *Saltuarius cornutus*. Primarily, the study investigates the movements and thermal ecology of individuals in an attempt to determine patterns of daily activity, microhabitat and refuge use, dispersal rates and home range size as well as their preferred temperatures. Particular emphasis is then placed on the potential temperature patterns provided by rainforest canopies and the microhabitats created within.

#### Progress to date.

- +1 year data of stratified canopy temperatures gathered over 3 latitudes in Mt Lewis, Mt Edith and Mt Spec over elevational gradients (6 sites, 3 sites and 3 more respectively at ~200m intervals), or approximately 500 000 data points describing patterns and stratification of air temperatures in rainforest canopies.
- Some tracking in 2011 with spooling and radio transmitters, reflectors and UV powder, all with varying degrees of success. The only reasonable method for successfully tracking these animals and sampling temperatures experienced in the wild is by using thermally sensitive radio-transmitters. Although no harm came to the animals, all other methods either obstructed the animal's movement and behaviour, or did not allow us to gather appropriate body temperatures.
- That is the extent of the data gathered at this point, as I have been unable to complete any fieldwork since early 2012. National Parks has now approved my permit until the end of 2013.
- I am now in the process of relocating the canopy dataloggers to new locations to record a higher resolution in air temperatures within site. This is to be incorporated in the radiotracking experiment.
  - This methodology has been proven this past year and will now give me a dataset describing in detail within site variability in canopy air temperatures.
  - These dataloggers will be installed in the same sites used for radiotracking.

- More Distance Surveys.
  - Following the sampling design used by the CTBCC, we have now been conducting slightly modified surveys including more accurate records of habitat use, height and particularly of distance from transects.
  - Distance sampling helps us determine the detectability of a species in its habitat, leading to a more accurate estimate of abundance.
  
- Radiotracking.
  - Over the next 6 to 8 months, I plan on conducting intensive radiotracking sessions, focusing on remotely sampling habitat use and temperature for concurrent individuals over ~2 week trips.
  - In concordance to the radiotracking methodology, I will also use numerous 'lizard' models (PVC tubes with ibuttons) to record temperatures in microhabitats used by the geckos (in contrast to actual air temperatures).
  - The geckos will also be subjected to a thermal gradient in situ, to sample each species preferred temperatures.
  - The same three sites used for datalogging will be used for radiotracking, relating the temperature data sampled by the loggers, the PVC models and the radiotransmitters.