NCCARF – Terrestrial Biodiversity Network

What do we do?

Yvette Williams – Network Coordinator





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Network Activities

- Communication
- Noticeboard
- Must reads and grey literature
- Research support
- Events





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Network Membership

1042 members

- Doubled in 2010
- Particularly in government & other stakeholder groups
- Lower uptake (TAS, NT, ACT)

Expanded via:

- invitation letter
- brochure
- promotion at conferences
- Roadshow
- Word of mouth

Institution	Number of members
Research	428
Government	
- Federal	43
- State	220
- Local	148
- NRM	45
Community (NGOs)	30
Industry/Private sector	28
Other	43
Total	**1042**





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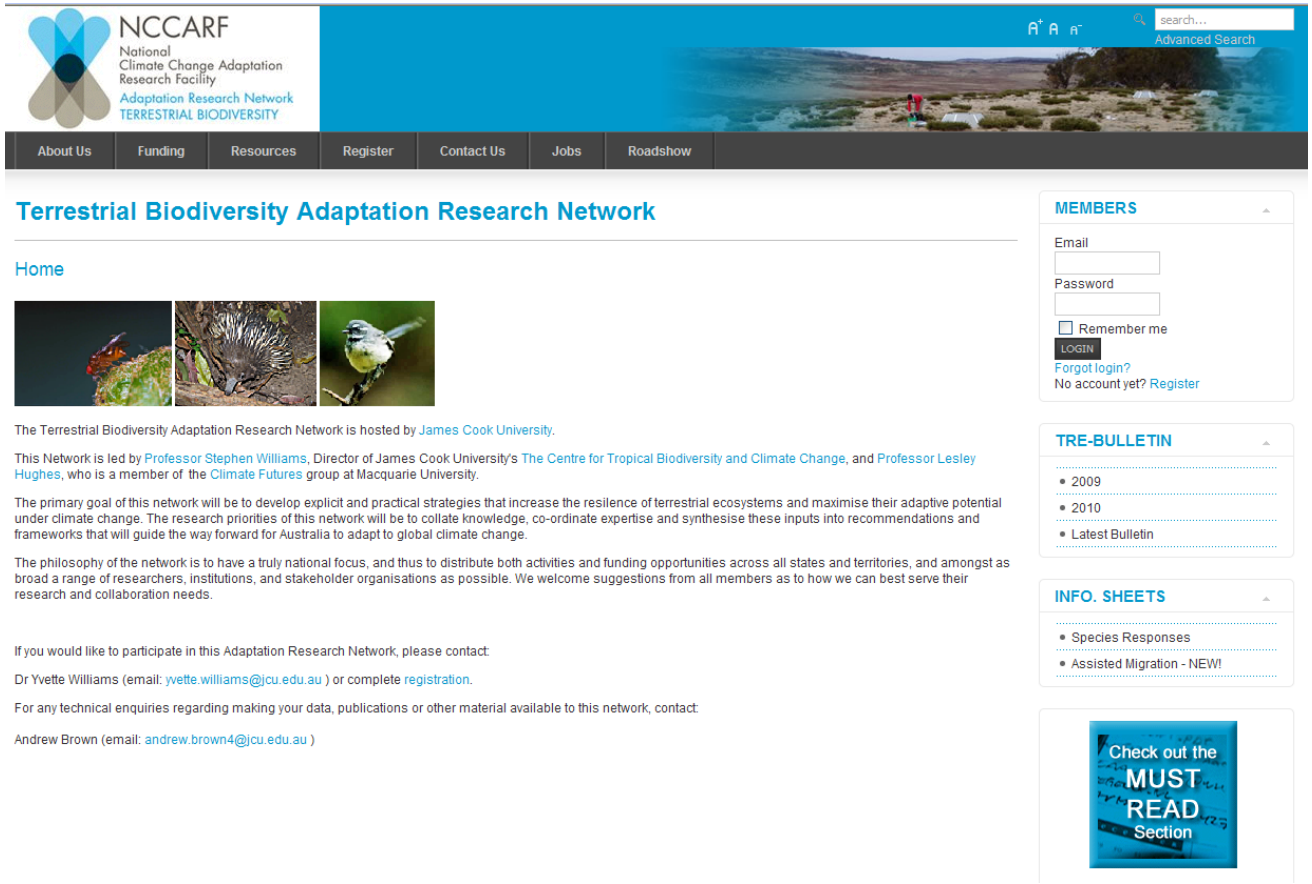
Communication:

Website

- Network Structure
- Priorities and Goals
- Funding
- Downloadable resources
- Roadshow
- Noticeboard
- Registration



Noticeboard

- Funding Opportunities
- Student Projects
- Jobs
- Events

Terrestrial Biodiversity Adaptation Research Network
(1 viewing) lauren.hodgson

Mark all forums read | Board Categories | Go

Terrestrial Biodiversity Noticeboard

Please advertise or browse through project and funding opportunities relating to climate change and terrestrial biodiversity below. There are specific boards for student projects, research funding, collaborative opportunities and employment.

Forum	Topics	Replies	Last Post
Welcome to the NCCARF Terrestrial Biodiversity Network Introduce yourself here and network with researchers and stakeholders from your state	1	0	Welcome to Kunena! by Kunena | 09/22/2009 17:07
Student Scholarships and Project Opportunities Advertise or browse project opportunities for students	0	0	No Posts
Research Funding Opportunities Advertise or browse funding opportunities here	1	0	TERN - EIF submission process now open by lauren.hodgson | 08/05/2010 00:45
Events What's happening in terrestrial biodiversity climate change adaptation? Seminars, workshops, conferences advertised here.	1	0	NCCARF-TB Queensland Roadshow - Brisbane 14 Sept by lauren.hodgson | 08/13/2010 11:36
Job board Advertise or browse employment opportunities	2	0	PostDoc in Amphibian Population Ecology - 25 Aug by lauren.hodgson | **Today** 00:40

Mark all forums read | Board Categories | Go





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Noticeboard

- To link stakeholder research needs with researchers
- Associated funding not necessary
- Advertise student projects
- Jobs and Events notices

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Must reads and grey literature

Must reads:

- Recent published literature on adaptation for terrestrial biodiversity placed on the website
- Currently working on 100 best reads section

Grey literature:

- Reports or links placed on website for access to both national and international sources.

- invite people to send these reports if they feel relevant to the network.





Database and GIS information

- Link to ARCS, Atlas of Living Australia and Australian National Data Service (ANDS)
- Help with data input
- Link to GIS resources





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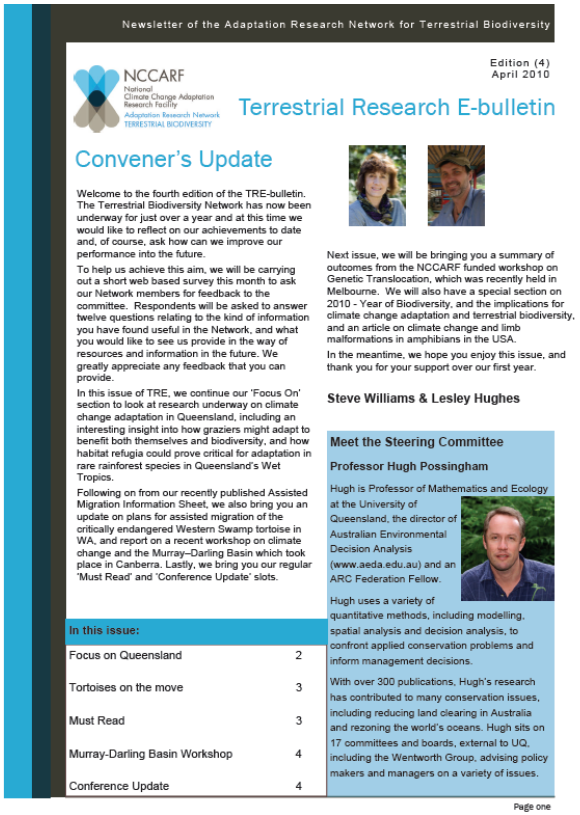
TRE-bulletins 2011

Four page, quarterly research update to inform researchers and stakeholders

- January
- April
- July
- October



Newsletter of the Adaptation Research Network for Terrestrial Biodiversity

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Edition (4)
April 2010

Terrestrial Research E-bulletin

Convener's Update

Welcome to the fourth edition of the TRE-bulletin. The Terrestrial Biodiversity Network has now been underway for just over a year and at this time we would like to reflect on our achievements to date and, of course, ask how can we improve our performance into the future.

To help us achieve this aim, we will be carrying out a short web based survey this month to ask our Network members for feedback to the committee. Respondents will be asked to answer twelve questions relating to the kind of information you have found useful in the Network, and what you would like to see us provide in the way of resources and information in the future. We greatly appreciate any feedback that you can provide.

In this issue of TRE, we continue our 'Focus On' section to look at research underway on climate change adaptation in Queensland, including an interesting insight into how graziers might adapt to benefit both themselves and biodiversity, and how habitat refugia could prove critical for adaptation in rare rainforest species in Queensland's Wet Tropics.

Following on from our recently published Assisted Migration Information Sheet, we also bring you an update on plans for assisted migration of the critically endangered Western Swamp tortoise in WA, and report on a recent workshop on climate change and the Murray–Darling Basin which took place in Canberra. Lastly, we bring you our regular 'Must Read' and 'Conference Update' slots.

Next issue, we will be bringing you a summary of outcomes from the NCCARF funded workshop on Genetic Translocation, which was recently held in Melbourne. We will also have a special section on 2010 - Year of Biodiversity, and the implications for climate change adaptation and terrestrial biodiversity, and an article on climate change and limb malformations in amphibians in the USA.

In the meantime, we hope you enjoy this issue, and thank you for your support over our first year.

Steve Williams & Lesley Hughes

Meet the Steering Committee

Professor Hugh Possingham

Hugh is Professor of Mathematics and Ecology at the University of Queensland, the director of Australian Environmental Decision Analysis (www.aeda.edu.au) and an ARC Federation Fellow.

Hugh uses a variety of quantitative methods, including modelling, spatial analysis and decision analysis, to confront applied conservation problems and inform management decisions.

With over 300 publications, Hugh's research has contributed to many conservation issues, including reducing land clearing in Australia and rezoning the world's oceans. Hugh sits on 17 committees and boards, external to UQ, including the Wentworth Group, advising policy makers and managers on a variety of issues.

In this issue:

Focus on Queensland

From desert uplands to tropical rainforests, Queensland is a vast state offering a variety of terrestrial habitats. Indeed, the Wet Tropics rainforests contain more endemic terrestrial animals than any other region. But the climate across Queensland has already changed; daily temperatures have risen by 1°C state-wide, and rainfall and seasonality patterns have altered. Scientists predict that in the future we could see a decline in the extent of rainforest, severe coastal flooding and an increase in severe weather events, such as drought and high intensity cyclones, with likely catastrophic impacts on the state's biodiversity. Here we focus on some of the adaptation projects currently underway in the Sunshine State.

In Search of Cool Refugia by Dr. Luke Shoo
CTBCC, James Cook University, Townsville, Qld.

The Wet Tropics World Heritage Area has afforded high level protection to the tropical rainforests of Australia's north-east. Despite this, many researchers worry that contemporary climate change will spell environmental catastrophe for this ecosystem.

One tangible action we can take to minimise loss of biodiversity is to safeguard places where species are most likely to survive as the climate warms. These places, termed refugia, are areas in the landscape that are naturally buffered from extreme weather by features such as dense canopy, elevation, coastal influences and shading. These elements combine to generate unusually cool microclimates.

Cool refugia are already a critical component of the current protected area network. Around 46 per cent of the regions endemic rainforest species are found in just 25 per cent of the coolest rainforest and these limited areas of cool habitat could become increasingly important if species shift upslope in response to increasing temperatures.

With colleagues from the Centre for Tropical Biodiversity and Climate Change at James Cook University (funded by the Marine and Tropical Sciences Research Facility), I am working to identify climate refugia that could promote adaptation to climate change in rainforest species*. Major priorities are to identify existing refugia not currently included in the protected area network, along with sites where land degradation could potentially be reversed to strengthen refugia.

Climate refugia, such as Queensland's highest mountain, Bartle Frere, could be critical in helping some species adapt to climate change (© L. Shoo).

Targeted forest restoration can be achieved in a short time-frame - high density rainforest plantings yield foliage cover comparable to intact vegetation within 10-20 years and could increase the extent and connectivity of cool habitat. Longer periods are required (30-70 years) for less intensive plantings, and naturally established regrowth is another lower cost strategy. There is now an urgent need to assess whether forest plantings for carbon sequestration can be harnessed to help fund restoration efforts within important refugia.

*More: Shoo et al. Global Change Biology, in press or email luke.shoo@jcu.edu.au

Helping Graziers Support Biodiversity Adaptation

Helping graziers adapt to climate change will benefit adaptation in many other terrestrial species which occur on grazing lands. (© T. Cornish).

Of Queensland's land area, nearly 90% is used for livestock grazing; predominantly cattle. As a result, much of Queensland's terrestrial biodiversity occurs on land used for cattle farming and ecosystem health is inherently connected to how farmers work their land.

In these regions, temperature and rainfall variation are the factors that determine not only biodiversity, but how rural communities manage the land. Under climate change, many cattle grazing regions are expected to experience increasingly variable rainfall and seasonality patterns, higher temperatures and more frequent extreme weather events such as floods and drought. Thus, the future of biodiversity on cattle grazing lands will be linked to the measures farmers take to adapt to climate change.

Using questionnaires, Network member Dr. Nadine Marshall, from CSIRO's Climate Adaptation Flagship, evaluated the adaptive potential of 100 cattle graziers in north Queensland*. She found that while these resource-users perceive themselves to be resilient to climatic variability, this perception may make them more vulnerable to future climate changes as they are less likely to use technology such as seasonal climate forecasts. "The problem is that many graziers are not planning for a future of environmental change." Nadine explains. "Not only will this increase their vulnerability and threaten their land, it makes it difficult to imagine how biodiversity might be maintained in the region. We need to increase the adaptive capacity of graziers in general – and I'm sure we can!"

She suggests that adaptive capacity can be influenced through a number of avenues such as assisting graziers to develop strategic skill sets and encouraging them to collaborate and plan for the future. The information generated through Nadine's work will help grazier communities become resilient to climate change and improve the sustainability of environmental assets.

*Marshall, N.A. (2010) Global Environmental Change, 20, 36-43.





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Information sheets

Released:

- Species responses to climate change
- Assisted Migration
- Genetic Translocation

Upcoming in 2011:

- Fire and climate change
- Conservation planning

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INFORMATION SHEET TWO

Assisted Migration as a Management Tool for Species Threatened by Climate Change

Climate zones are shifting rapidly. For some species, dispersal is adequate for tracking environmental change, but for others the rate of climate change will exceed their ability to adapt in their current range or disperse to more climatically suitable habitat. In some cases, a radical management action known as 'assisted migration' may be required to help species persist into the future and prevent climate change related extinctions.

This information sheet explains the concept of assisted migration as a management strategy for terrestrial species threatened by climate change, including some of the more controversial aspects of this approach and implications for managers and policy-makers.

What is Assisted Migration?

Assisted migration (AM), also known as translocation, assisted colonisation, or managed relocation involves removing individual plants or animals from an area which has, or will become, unsuitable due to climate change, and moving them to a new site where conditions will be more suitable.

AM is considered a radical and controversial type of human intervention. Most previous instances of AM have been undertaken to protect threatened species from predators, but it is increasingly being discussed as a potential tool for conservation in the face of climate change.

Although the role of AM is still being vigorously debated, some prominent climate change scientists support it under certain circumstances, along with the Ecological Society of Australia.

Climate change induced events, such as frequent wildfire, cyclones or drought, could make habitat unsuitable for some vulnerable species (© L.Valentine).

Translocations to predator-free Escape Island have helped boost numbers of the endangered marsupial, the dibbler (*Parantechinus apicalis*). (© K. Bleby)

Assisted Migration in Action

An estimated 200 translocations or re-introductions of 42 vertebrate species have been undertaken in Australia for conservation purposes.

Mammals and birds have largely been the focus of these efforts to date.

For example, a population of captive-bred dibblers, an endangered marsupial from Western Australia, was translocated to a predator-free island in the 1990's. This translocation has been deemed a success and dibblers have since been re-introduced on the mainland at several other sites.

A similar translocation of Gilbert's potoroo's, Australia's most endangered mammal, to Bald Island also seems to have been successful, at least in the short term.

However, not all translocations are successful and Australia seems to have a higher failure rate than many other parts of the world. This is probably related, in part, to the presence of introduced cats and foxes in most mainland habitats.

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People / Research finder / cross-referencing tool (aligning research interests based on NARP)

AIM: facilitate research collaboration on the Priority Research Areas outlined in the NARP.

The files linked to each priority research area below are the people which nominated this area of research interest.

- 5.1 National/ Continental scale goals
  5.1.1 New conservation goals under Climate change
  5.1.2 Legal, policy and institutional architecture needed to achieve conservation goals
  5.1.3 Long term observation systems and conceptual models
- 5.2 Regional issues
  5.2.1 Designs of landscapes to confer maximum resilience
  5.2.2 Climate change interaction with other key stressors
  5.2.3 Carbon mitigation to maximise biodiversity conservation
  5.2.4 Linking socio-economic trends to yield biodiversity outcomes
- 5.3 Local land management issues
  5.3.1 Costs/benefits of adaptation measures to key communities and ecosystems
  5.3.2 Fire management adaptation
  5.3.3 Response of management in local protected areas
  5.3.4 Whole area management for minimising biodiversity loss
- 5.4 Managing key species
  5.4.1 Prioritising species for investment.
  5.4.2 Effective management of priority species
  5.4.3 Managing problem species

Roadshow Timetable

State	Location	Date
QLD	Brisbane - Ship Inn, Southbank	Tuesday, 14th September
VIC	Melbourne - Rydges on Swanston	Tuesday, 5th October
WA	Perth - Curtin University	Thursday, 11th November
ACT	Canberra - CSIRO Discovery Centre	Wednesday, 8th December
SA	Rydges, South Park on South Terrace	Tuesday, 8th February 2011
NSW	-	TBA
TAS	-	TBA
NT	-	TBA





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Research Support:
Honours/Masters Funding 2011

- Project funding for climate change adaptation research
- Seven students supported in 2009
- Eight students supported in 2010
- Completed project summaries available on website

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PhD Collaborative Travel Grants 2011

- Students awarded funding to collaborate and learn new skills unavailable at their home institute
- Nine students supported in 2009
- Nine students supported in 2010
- Completed student reports available on the website





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International invited speakers

- International guests to speak on Climate Change adaptation

- Present in capital cities around Australia

- 2009 – Jeff Price from WWF, USA
- Rachel Warren from Trindle Centre, UK

- 2010 – Jessica Hellmann from University of Notre Dame, USA

Other suggestions for presenters welcome.
- 2011 ?





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Workshops 2009 – 2010 completed

Conservation Planning (November 2009)

- Convened by Bob Pressey and Steve Williams
- Daintree, North Queensland

Genetic Translocation (April 2010)

- Insuring against extinction and increasing local adaptation
- Convened by Ary Hoffman and Carla Sgro
- Melbourne, Victoria

Managed Relocation (November 2010)

- Move why (whether), what, where, when and how
- Convened by Stephen Garnett and Nicki Mitchell
- York, WA





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Workshops - 2011

Riparian vegetation (June 2011)

- with Freshwater Network
- Convened by Sam Capone and Stephen Williams
- Crab Island, NT

Estuarine ecosystems (Nov 2011)

- with Marine, Freshwater and Settlements and Infrastructure Networks
- Convened Melanie Bishop (Macquarie Uni)

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