



Edition (16)
May 2013

Terrestrial Research E-bulletin

Convener's Update

Welcome to our 16th, and final issue, of the Terrestrial Research e-bulletin. With NCCARF funding ceasing in June, we present a final summary of workshop and publication outputs from our network in this issue.

We include three more workshop summaries:

- ◆ Riparian ecosystems and climate change – vulnerabilities, impacts and adaptation.
- ◆ Hard decisions and soft options: Developing a decision framework for adaptation of urbanised Australian estuaries to climate change that considers both property protection and ecosystem values.
- ◆ Preparing for climate change: move who when, where, how and why?

We also provide details and links to recently published National Research Adaptation Plans.

While this will be the final newsletter, resources and information will continue to be maintained on the [network website](#) and the final NCCARF Conference will be held at the end of June in Sydney, where the Terrestrial Biodiversity Report Card is expected to be launched.

We will notify network members as these and other resources become available. We hope you have enjoyed the e-Newsletter of these past five years.

Lesley Hughes & Steve Williams



In this issue:

Workshop outputs	2-3
NARP Outputs	3-4
Conference Update	4

Behind The Scenes

Dr Yvette Williams

Yvette is the network coordinator and has been responsible for the day to day running of the Terrestrial Biodiversity Network. Yvette's core responsibilities have been; working with the network steering committee and implementing their recommendations, ideas and knowledge in adaptation science. This has led to the organisation, development and summarising of symposia, seminar series, stakeholder workshops and key adaptation issues workshops for the network. This, combined with regular updates for network members; the organisation of postgraduate funding, and general administrative tasks, have made for a busy but interesting past 5 years. Yvette hopes to continue to work in the field of adaptation science after the network concludes as this is a field she is passionate about and hopes to help make a difference for future generations.



Dr Jo Isaac

Jo is the Scientific Communications officer for the Terrestrial Biodiversity Network and has been responsible for collating and editing the e-newsletters, case studies, information sheets and upcoming Report Card. She also works as a freelance science and environment writer and is passionate about conservation and the environment.



Terrestrial Adaptation Focus Workshops and Outputs

Hard Decisions and Soft Options: Developing a decision framework for adaptation of urbanised Australian estuaries to climate change that considers both property protection and ecosystem values

This workshop was convened by Dr Melanie Bishop and Dr Sam Capon and took place at Port Stephens New South Wales on 4th - 9th December 2011. Twenty-four participants discussed the question "Is adaptation of estuarine settlements always at odds with adaptation of ecosystems, or are there instances where goals of the two may overlap, and outcomes are complementary?" The workshop drew on expertise from four NCCARF networks: Marine Biodiversity and Resources, Freshwater Biodiversity, Terrestrial Biodiversity and Settlements and Infrastructure.



Over the first two days, participants engaged in a variety of discussions on climate change adaptation in estuarine environments, while the following day was spent working on the two main outcomes of the workshop. The first is a synthesis of how ecological and socio-economic goals for adaptive management of estuaries under climate change differ and overlap among stakeholder groups; the second is a typology of Australian estuaries that takes into consideration socio-economics, morphology and ecology, and that could be used for making decisions regarding climate change adaptation.

A report resulting from this workshop is currently being finalized: **EK Davey, WL Peirson, AR Jones, M Beger, SJ Capon, RG Creese, B Edgar, WL Hadwen, TF Smith and RB Tomlinson (2013) *Managing Estuaries for Resilience Under Climate Change: Integrating Socio-Economic and Ecological Goals and Proposing Appropriate Strategies*. Water Research Laboratory Research Report 248. ISBN TBA**



Riparian Ecosystems and Climate Change – vulnerabilities, impacts, and adaptation

This workshop was held from the 20-24th of June 2011 at Crabclaw Island, Northern Territory and was convened by Dr Sam Capon and Dr Stephen Williams. Experts from a variety of backgrounds including ecology, biogeochemistry, social science and economy attended the workshop producing an integrated holistic approach to the topic.

The key areas that received focus included; a cohesive definition of riparian zones that encompasses variations of riparian zones in all forms; the key values of riparian zones and the goods and services that they provide; likely vulnerabilities and potential impacts of climate change on riparian zone structure and function; adaptation

options with respect to these vulnerabilities; and areas that require immediate actions.

From these topics, a synthesis paper on the workshop discussions and six paper outputs have been developed. The outcomes of this workshop will assist towards the appropriate management of riparian zones, avoiding perverse solutions or mal-adaptation of these highly vulnerable systems.

The primary published paper from this workshop is; **Capon et al.(2013) *Riparian ecosystems in the 21st century: hotspots for climate change adaptation? Ecosystems*. DOI:10.1007/s10021-013-9656-1**

Preparing for climate change: move who when, where, how and why?

This workshop took place in November 2010, in York, Western Australia and was convened by Dr's Stephen Garnett and Nicki Mitchell. Twenty researchers came together to discuss what factors need to be considered if managed relocation (MR) is undertaken as an adaptation strategy to conserve biodiversity.

Discussions covered five broad areas relating to MR: the selection of taxa or processes to move (who), optimization of timing (when), the procedures for choosing appropriate sites to which to move taxa (where), the protocols of moving (how) and the underlying philosophy of moving biodiversity (why). Workshop outcomes were presented to the 50th meeting of the Ecological Society of Australia in December 2010. The workshop concluded that MR is not a panacea to climate change adaptation for biodiversity and is pointless without substantial commitment to mitigation, ongoing management of existing threats and a belief in the community that biodiversity can and should be conserved. If these preconditions can be met then the group had the following recommendations:

- ◆ Acknowledge that MR has uses in addition to conservation of threatened species, such as restoration of ecological function
- ◆ Develop formal processes immediately so rapid action possible when necessary
- ◆ Harmonize policy across different jurisdictions
- ◆ Develop quantitative and transparent decision points for process initiation
- ◆ Treat MR as experimental, with appropriate monitoring
- ◆ Discourage 'guerrilla' MR that ignores risks and opportunity costs
- ◆ Minimise risks of failure or invasiveness at destination site
- ◆ Recognise that, under climate change, deployment of MR will need revision and monitoring
- ◆ Recognise that MR is more than just an ecological decision, but should also be framed in sociological, economic and ethical terms make MR part of the grand vision of minimising biodiversity loss

The following publication resulted from this workshop: **Burbidge, A. H., M. Byrne, D. Coates, S. T. Garnett, S. Harris, M. W. Haywards, T. G. Martin, E. McDonald-Madden, N. J. Mitchell, S. Nally, and S. Setterfield. 2011. *Is Australia ready for assisted colonisation? Policy changes required to facilitate translocation under climate change*. *Pacific Conservation Biology* 17:259-269.**

National Adaptation Research Plans

The following National Adaptation Research Plans (NARP's) have recently been released and are available on the internet:

Byrne, M, Prober, S, McLean, E, Steane, D, Stock, W, Potts, B, Vaillancourt, R 2013 [Adaptation to climate in widespread eucalypt species](#), National Climate Change Adaptation Research Facility, Gold Coast, pp. 86. ISBN: 978-921609-98-5

Hughes, L, Downey, P, Englert Duursma, D, Gallagher, R, Johnson, S, Leishman, M, Roger, E, Smith, P, Steel, J 2012 [Prioritising naturalised plant species for threat assessment: developing a decision tool for managers](#), National Climate Change Adaptation Research Facility, Gold Coast, pp. 69. ISBN: 978-1-925039-02-3

Moir, ML, Leng, MC 2013 [Developing management strategies to combat increased coextinction rates of plant-dwelling insects through global climate change](#) National Climate Change Adaptation Research Facility, Gold Coast, pp. 111. ISBN: 978-1-925039-03-0

Thompson, RM, Beardall, J, Beringer, J, Grace, M, Sardina, P 2013 [Mitigating impacts of climate change on stream food webs: impacts of elevated temperature and CO₂ on the critical processes underpinning resilience of aquatic ecosystems](#). National Climate Change Adaptation Research Facility, Gold Coast, pp.136.

Barmuta, L, Davies, P, Watson, A, Lacey, M, Graham, B, Read, M, Carter, S, Warfe, D 2013 [Joining the dots: hydrology, freshwater ecosystem values and adaptation options](#), National Climate Change Adaptation Research Facility, Gold Coast, pp. 219. ISBN: 978-1-925039-10-8

Bino, G, Jenkins, K, Kingsford, R, 2013 [Adaptive management of Ramsar wetlands](#), National Climate Change Adaptation Research Facility, Gold Coast, pp 244. ISBN: 978-1-925039-13-9

Maggini, R, Kujala, H, Taylor, MFJ, Lee, JR, Possingham, HP, Wintle, BA, Fuller, RA 2013 [Protecting and restoring habitat to help Australia's threatened species adapt to climate change](#), National Climate Change Adaptation Research Facility, Gold Coast, pp. 59.



Pickering, C, & Venn, S, 2013 [Increasing the resilience of the Australian flora to climate change and associated threats: a plant functional traits approach](#) National Climate Change Adaptation Research Facility, Gold Coast, pp. 94.

Dyer, F, El Sawah, S, Lucena-Moya, P, Harrison, E, Croke, B, Tschierschke, A, Griffiths, R, Brawata, R, Kath, J, Reynoldson, T, Jakeman, A 2013 [Predicting water quality and ecological responses](#) National Climate Change Adaptation Research Facility, Gold Coast, pp. 210.

(cont...)

Kingwell, R, Anderton, L, Islam, N, Xayavong, V, Wardell-Johnson, A, Feldman, D, Speijers, J 2013 Broadacre farmers adapting to a changing climate, National Climate Change Adaptation Research Facility, Gold Coast. pp. 171.

Kinnear, S, Patison, K, Mann, J, Malone, E, Ross, V 2013 Network governance and climate change adaptation: collaborative responses to the Queensland floods, National Climate Change Adaptation Research Facility, Gold Coast, pp. 110

Hanson-Easey, S, Bi, P, Hansen, A, Williams, S, Nitschke, M, Saniotis, A, Zhang, Y, & Hodgetts, K (2013) Public understanding of climate change and adaptation in South Australia, National Climate Change Adaptation Research Facility, Gold Coast pp. 95.

Dobes, L, Jotzo, F, Doupé, P 2013 Adaptor of last resort? An economic perspective on the Government's role in adaptation to climate change, National Climate Change Adaptation Research Facility, Gold Coast, pp. 81.

Garnett, ST, Franklin, DC, Ehmke, G, VanDerWal, JJ, Hodgson, L, Pavey, C, Reside, AE, Welbergen, JA, Butchart, SHM, Perkins, GC, Williams, SE 2013 Climate change adaptation strategies for Australian birds, National Climate Change Adaptation Research Facility, Gold Coast, pp. 109.

Doerr, V, Williams, K, Drielsma, M, Doerr, E, Davies, M, Love, J, Langston, A, Low Choy, S, Manion, G, Cawsey, M, McGinness, H, Jovanovic, T, Crawford, D, Austin, M, Ferrier, S, 2013 Designing landscapes for biodiversity under climate change: final report, National Climate Change Adaptation Research Facility Gold Coast, pp. 276.

Reside, AE, VanDerWal, J, Phillips, B, Shoo, LP, Rosauer, DF, Anderson, BA, Welbergen, J, Moritz, C, Ferrier, S, Harwood, TD, Williams, KJ, Mackey, B, Hugh, S, Williams, SE 2013 Climate change refugia for terrestrial biodiversity: Defining areas that promote species persistence and ecosystem resilience in the face of global climate change, National Climate Change Adaptation Research Facility, Gold Coast, pp. 216.



About the Adaptation Research Network for Terrestrial Biodiversity

The Adaptation Research Network for Terrestrial Biodiversity is one of eight Research Networks administered by the National Climate Change Adaptation Research Facility - www.nccarf.edu.au.

It is hosted by James Cook University in Townsville.



Convenors:

Prof. Steve Williams
Ph.: +61 (0)7 4781 5580
stephen.williams@jcu.edu.au

Prof. Lesley Hughes
Ph.: +61 (0)2 9850 8195
lhughes@bio.mq.edu.au

Coordinator:

Dr Yvette Williams
Ph.: +61 (0)7 4781 5552
yvette.williams@jcu.edu.au

TRE Editor:

Dr Jo Isaac
joanne.isaac@jcu.edu.au

Our Website

<http://www.nccarf.edu.au/networks/terrestrial-biodiversity-network>

To subscribe to our Network -
<http://nccarf.jcu.edu.au/terrestrialbiodiversity/index.php/register>

For more information or to join our Network, please email
yvette.williams@jcu.edu.au.

To contribute stories or ideas to TRE, please email
joanne.isaac@jcu.edu.au

TB Network Partners



Australian Government
Department of Climate Change

Curtin
University of Technology



THE UNIVERSITY OF
WESTERN AUSTRALIA
Achieving International Excellence

MACQUARIE
UNIVERSITY
SYDNEY ~ AUSTRALIA



JAMES COOK
UNIVERSITY
AUSTRALIA

