Wildlife Corridor Planning

The Landscapes and Policy Hub is developing a framework for regional planners to use best practice science in their regional-scale planning of wildlife corridors. The planning tool provides for ecological connectivity within a whole-of-landscape and a cooperative approach to biodiversity conservation.

This independent research is contributing to the regional sustainability planning for the Lower Hunter, jointly undertaken by the Australian Government and the Government of NSW. The research was funded by the Australian Government through the Sustainable Regional Development Program and National Environmental Research Program (NERP), which supports science that informs environmental policy and decision making.

Key Research Outcomes

- A decision making framework that applies the principles of the National Wildlife Corridor Plan to landscape-scale regional planning with the ability to:
  - Identify the most important patches and appropriate locations for wildlife corridors based on the habitat and dispersal requirements of target species, communities and other important landscape elements.
  - Compare the outcomes of a range of land use scenarios.
  - Assess trade-offs between ecological, social and economic interests.
  - Run on commonly available spatial data on a regular desktop computer using readily available GIS software.
- The Lower Hunter is the pilot region for the development of the framework that will then be tested in other regions.

1. **What are we doing?**

The study is building a transferable GIS framework and tool that can be used by operators with varying degrees of experience. It combines two established planning techniques, Multi-Criteria Decision Analysis and connectivity modelling, to produce a Multi-Criteria Connectivity Planning framework.

2. **Why are we doing this study?**

Human activities fragment wildlife habitat, resulting in landscapes that support smaller, more isolated populations of native species with reduced population viability and increased risk of extinction. Local and regional governments face planning challenges that require complex trade-offs and prioritising between ecological, social and economic interests.

The new framework is a practical tool to support the process of regional-scale planning with a robust and scientifically based approach to wildlife corridor planning that incorporates the principles of the National Wildlife Corridor Plan.
3. **How did we collect the data/information?**

Dr Alex Lechner leads this study and started by taking stock of what existing spatial information for wildlife corridor plans, natural values and planned infrastructure corridors is available.

A literature review was conducted before analysing the principles of the National Wildlife Corridor Plan. Based on this research, we are developing the multi-criteria connectivity planning tool and software to automate the processing of spatial data.

A range of stakeholders and experts was engaged to ensure that the developing tool and framework were appropriate for our target audiences. This includes practitioners, planners, ecologists and end-users from federal and state governments, and non-government organisations.

4. **What have we found so far?**

- We have produced a series of maps describing the importance of patches for connectivity in the Lower Hunter quantitatively using a graph theoretic approach.

  For example, we have identified patches that are important as stepping-stones and critical for preserving connectivity across the region.

  Using these methods, we can quantitatively assess the impact on connectivity at the local and regional scale of a range of planning scenarios such as the Lower Hunter regional growth plan and scenarios related to the guiding principles of the national wildlife corridors plan.

- Our analysis shows that there is a large area in the west and a smaller area in the east of interlinked connected patches that include the majority of native vegetation in the region. These groups of interlinked patches are isolated from each other.

  This research provides guidance on the most promising locations to restore connectivity between isolated remnant patches in the region to enhance ecological processes and build resilience to climate change.

5. **Where to from here?**

The development of the prototype in the Lower Hunter is progressing well, as presented to the Hunter and Central Coast Regional Environment Management Strategy Seminar on 11 September 2013.

A draft report is almost complete and once reviewed and confirmed, will be published and made available on the hub’s website later this year. We will then roll out the prototype in the Tasmanian Midlands.
The Guiding Principles in the National Wildlife Corridors Plan

1. Building wildlife corridors across Australian landscapes is a cooperative endeavour.

2. Corridors should be designed and implemented in ways that benefit local communities.

3. Healthy, functioning landscapes require connectivity at a variety of scales.

4. Effective corridors connect the landscape across a mosaic of land tenures and land uses without affecting property rights.

5. The design and location of corridors should be based on the best available information derived from scientific research, traditional Indigenous knowledge and practitioner experience.

6. Corridors should be designed to assist native species’ adaptation to the impacts of climate change.

7. Corridor design recognises and manages for potential risks such as those posed by invasive species and fire.
6. Who are the researchers involved?

**Dr Alex Lechner**

(University of Tasmania) is a multidisciplinary researcher with skills and experience in applying spatial analyses to ecological problems. He has held a variety of different roles which have included conducting spatial analyses and developing ecological models to address natural resource management issues.

**Professor Ted Lefroy**

(University of Tasmania) is the Hub Director and leads the Communication and Knowledge Brokering Team that underpins the research integration and delivery of research outputs to people involved in biodiversity conservation.

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### Where can I find out more?

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### Further Reading:


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### About the NERP Landscapes and Policy Hub

The Landscapes and Policy Hub is a research collaboration that focuses on integrating ecology and social science to provide guidance for policy makers on planning and management of biodiversity at a regional scale. The research hub is developing tools, techniques and policy options to integrate biodiversity into regional scale planning.

The University of Tasmania hosts the multi-disciplinary research collaboration that is one of five research hubs funded to study biodiversity conservation by the National Environmental Research Program (NERP) for four years (2011-2014).

[www.nerplandscapes.edu.au](www.nerplandscapes.edu.au)