Habitat and connectivity modelling project: The mapping of fauna habitat and connectivity values in the South East Local Land Services area

Jamie Love, Rainer Rehwinkel and Kristy Moyle
NSW Office of Environment & Heritage and South East Local Land Services

Maps comprising this poster show areas under grasslands and woodlands across south-eastern Australia, both as they are thought to have been before Europeans settled here, and as they exist now. Several of the maps also show specific habitat and connectivity needs for selected fauna/flora groups. The examples on the next three pages show (i) the vegetation of the region with broad vegetation structure classes; (ii) land use and cover class of the region, with current vegetation disturbance classes; (iii) an example profile; and (iv, v) two examples of connectivity modelling.

The report from this project details the connectivity modelling component of the Southern Rivers NRM Stream 1 Project funded through the Australian Commonwealth Government Regional Natural Resource Management Planning for Climate Change Fund. This modelling was undertaken jointly by the Office of Environment and Heritage and the University of New England under contract with the South East Local Land Services (SE LLS), formerly Southern Rivers Catchment Management Authority (CMA).

The objective of the modelling is to identify areas across the South East Local Land Services region where maintaining or improving connectivity of native vegetation will best support those species most sensitive to landscape fragmentation. The methodology used for this project is based on an ecologically driven spatial process modelling approach employing Rapid Evaluation of Meta-population Persistence (REMP) modelling (Drielsma & Ferrier 2009) and Spatial Links connectivity modelling (Drielsma, Manion, Ferrier 2007) – techniques developed by the NSW Office of Environment and Heritage.

Species habitat and connectivity models from the project have been designed to balance ecological scales with the property management scale, to adequately guide investment in activities that occur at this scale. For example: revegetation, protection of remnant vegetation, maintenance of ground cover and increasing soil carbon. These products are intended to provide consistency with the National Wildlife Corridors Plan 2012 and Draft NSW Biodiversity Strategy 2010–2015 and where possible complement existing wildlife corridors and biodiversity products adopted by Local Environment Plans.

The key activities and deliverables of this project are to:

- assist the CMA to identify species and vegetation communities that will drive modelling;
- assist the CMA to identify and collate datasets that will assist with modelling process;
- undertake preliminary modelling;
- prepare a connectivity map;
- provide a brief report to the CMA with the connectivity map.

The innovation of this report is that separate models have been produced for a series of fauna/flora groups, each with different habitat use and movement patterns.

The report is available from Kristy Moyle at SE LLS (http://southeast.lls.nsw.gov.au).

References

Drielsma M. & Ferrier S. (2009) Rapid evaluation of metapopulation persistence in highly variegated landscapes. Biological Conservation 142(3): 529–540. http://www.sciencedirect.com/science/article/pii/S0006320708004412

Drielsma M.J., Manion G. & Ferrier S. (2007) The spatial links tool: Automated mapping of habitat linkages in variegated landscapes. Ecological Modelling 200(3): 403–411. DOI: 10.1016/j.ecolmodel.2006.08.017

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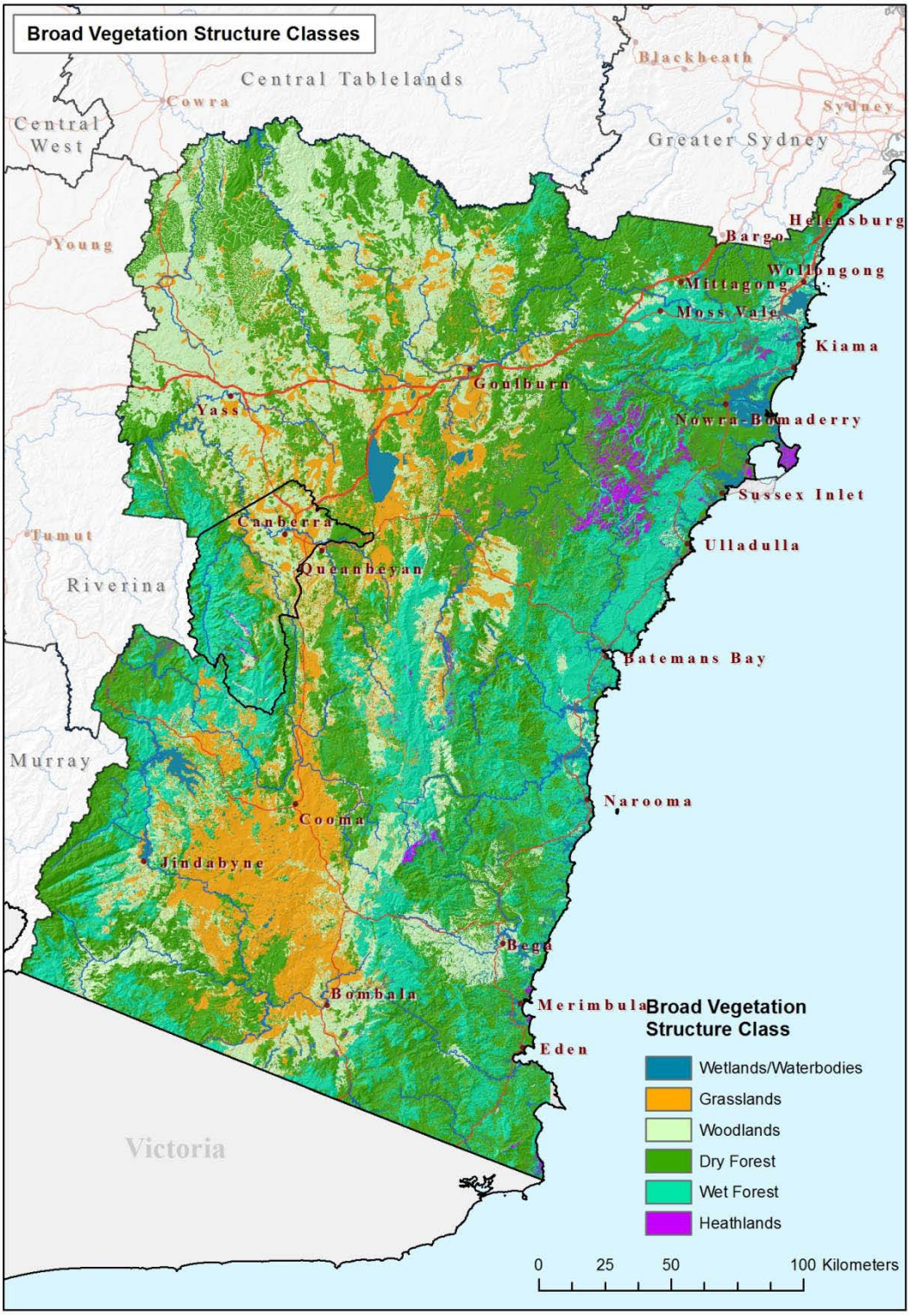

Vegetation map of the region, showing broad vegetation structure classes, by Love, Rehwinkel and Moyle.

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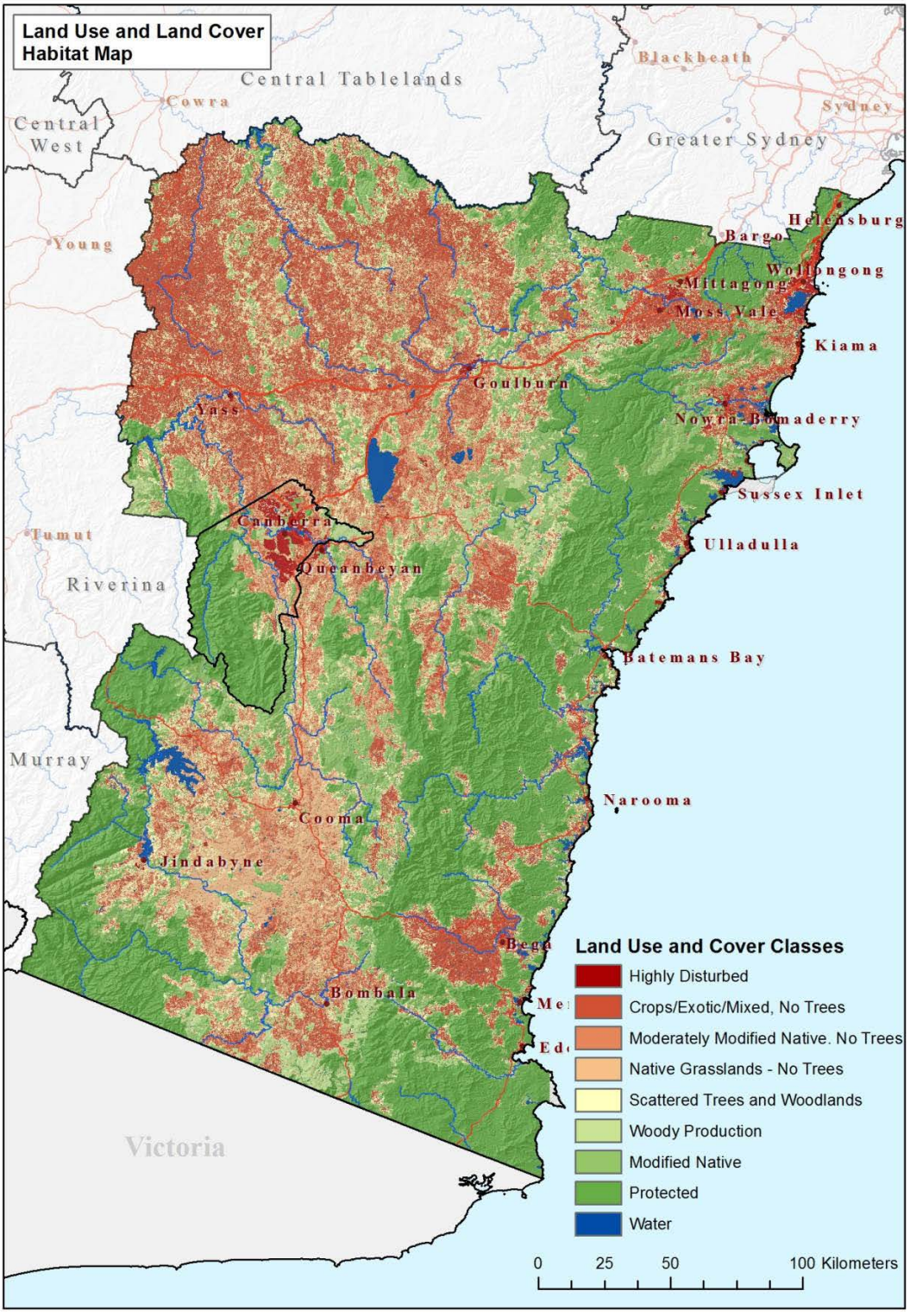

Land use and cover class map of the region, showing current vegetation disturbance classes, by Love, Rehwinkel and Moyle.

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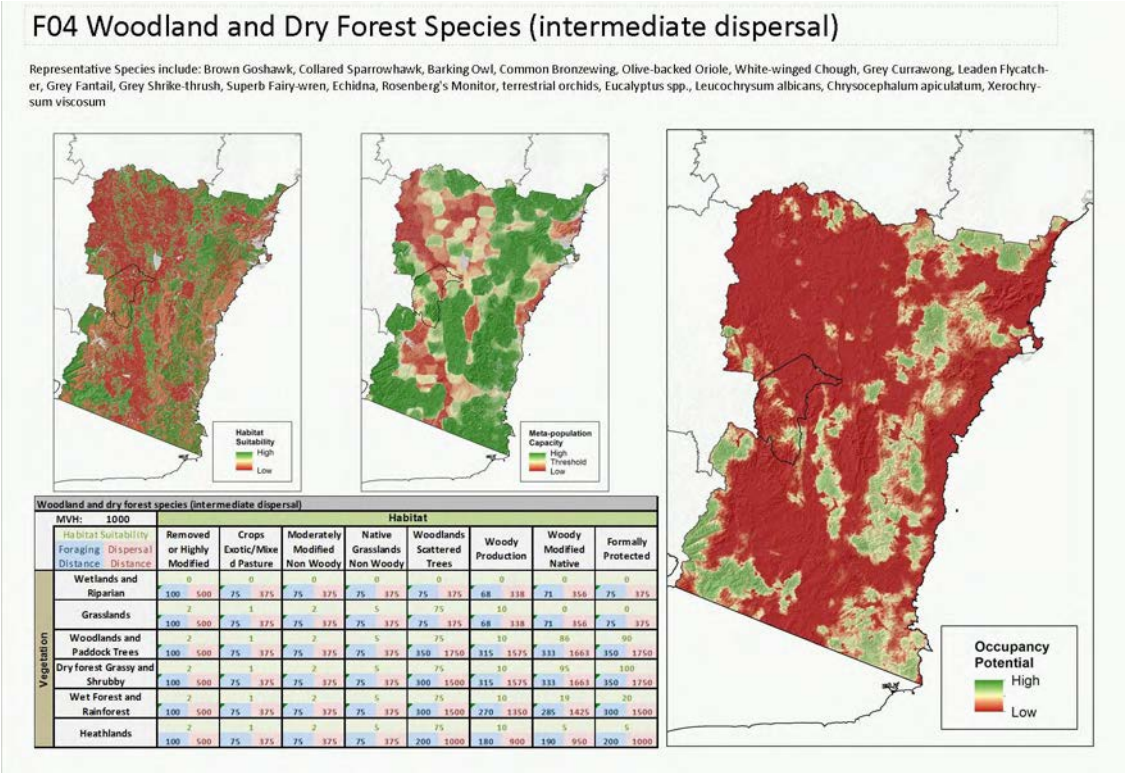
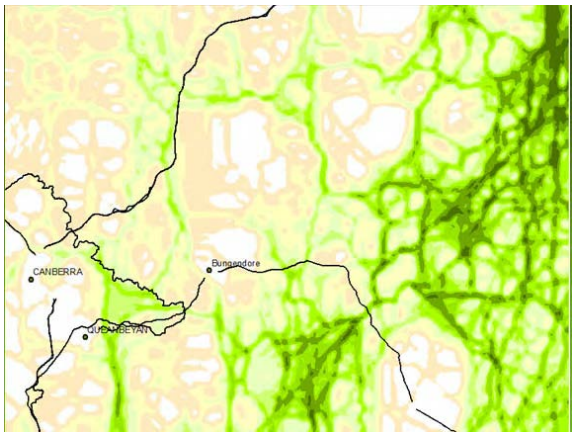
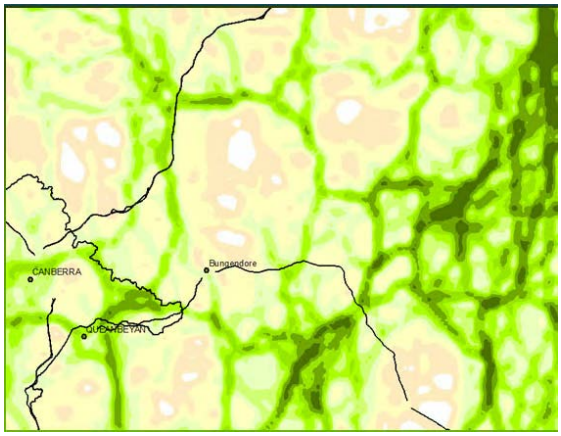


An example of the profile for one of the species groups (in this case Woodland and Dry Forest Species (intermediate dispersal)), showing species included in the group, parameters for habitat suitability, foraging distance and dispersal distance, and mapped models for habitat suitability, meta-population capacity and occupancy potential for these species. By Love, Rehwinkel and Moyle.



Left: An example of connectivity modelling for one of the species groups (in this case Open Woodland Species (intermediate dispersal)), showing 'connectivity pathways' of various strengths in a region to the east of the ACT. The pale colours indicate weak pathways, and the darker green, stronger pathways. By Love, Rehwinkel and Moyle.



Right: Another example of connectivity modelling for one of the species groups (in this case Open Woodland Species (high dispersal)), showing 'connectivity pathways' of various strengths in a region to the east of the ACT. The pale colours indicate weak pathways, and the darker green, stronger pathways. By Love, Rehwinkel and Moyle.

Rainer Rehwinkel is a Senior Threatened Species Officer at the NSW Office of Environment and Heritage (OEH). He works on the conservation of grassy ecosystems and their species, including working on policy issues, recovery and rehabilitation of sites and community engagement programs. He is currently Chair of the Executive Committee of the Kosciuszko to Coast Partnership and is a co-author of *Grassland Flora*. (*This bio was current at November 2014. Rainer retired from NSW OEH in 2015.*)