

Movement science and biodiversity policy

A NERP ED Workshop (Mollymook, September 2013)

By Pia Lentini (UMelb), Annabel Smith (ANU) and Philip Barton (ANU)

The movement of organisms has a fundamental influence on the distribution of biodiversity. Movement affects community structure and ecological phenomena such as reproduction, resource availability, genetic diversity, food webs, and species interactions. Anthropogenic disturbances and inappropriate management can disrupt these important processes, so movement information should be considered in conservation decisions. For example, it's critical to consider how species might disperse across a protected area network to ensure gene flow, where nomadic species could seek refuge during drought, whether suitable habitat is available for vectors and pollinators of threatened plant species, or how to inhibit the movement of a threatening process, such as an invasive predator.

However, a recent review indicated that despite rapidly escalating research on connectivity, there remains a dearth of information on species movement. In light of this, a workshop funded through the National Environmental Research Program (NERP ED) and run by three early career researchers was held in Mollymook (south coast of NSW) in September. The broad aim was to identify the relevance of movement information to a range of government policy and management issues and develop a framework for managing uncertainty when making environmental decisions. The workshop was attended by four staff from the Commonwealth Department of the Environment (Environmental Assessments and Compliance; Sustainability Analysis and Policy; Parks Australia; and Wildlife Heritage and Marine) and 11 academics from across the ANU, the University of Melbourne, the University of Queensland, and the Hebrew University of Jerusalem.

Participants split into two groups to address two key issues. The first group identified environmental decision-making domains where movement information is most relevant, with a view to providing advice

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The 'Movement' crowd at Mollymook: Front row (left to right) are Sana Bau (UMelb), Ran Nathan (Hebrew Uni. Jerusalem), Lydia Guja (DotE), Emma Burns (ANU), Yvonne Buckley (UQ), Erika Alacs, Pia Lentini (UMelb), José Lahoz-Monfort (UMelb), Annabel Smith (ANU) and Heini Kujala (UMelb). Back row (left from right) are Ross Rowe (DotE), Randal Storey (DotE), Alessio Mortelliti (ANU), Philip Barton (ANU), and Don Driscoll (ANU).

to both sides of the policy-science interface on how to effectively share information. This group also identified emerging areas of biodiversity policy that might benefit from movement knowledge.

The second group developed a conceptual framework for managing the two types of uncertainty encountered within these decision-making domains: the relevance of movement to the environmental decision, and information on movement itself. During this process Department staff provided policy case studies and decision scenarios, which were extremely valuable in providing context so that researchers could ensure that the approaches taken were realistic and relevant.

This was one of eleven workshops funded through a NERP ED scheme which targeted issues specifically being driven by early career researchers (often referred to as ECRs). It enabled ECRs to engage not only with leading academics in the field but also with officers from the Department of the Environment. This helped researchers to learn more about the inner working of the Department of the Environment, and policy makers to better understand where our research would be most useful. It also allowed Departmental staff to increase their knowledge of research themes relevant to movement science and biodiversity conservation, and identify key investigators working on those themes.

It's hoped that the new collaborations arising from this workshop will enable movement science to better inform policy in a range of areas (for example in connectivity and restoration policy). Papers emerging from this workshop should be available over the coming year.

And just as a post script on the workshop, Ran Nathan from Hebrew University Jerusalem (and possibly the world's foremost expert on movement science) commented it was one of the most worthwhile workshops he'd ever attended. 🍌

More info: Pia Lentini pia.lentini@unimelb.edu.au

Trade-offs between carbon farming and biodiversity

A CEED/NERP workshop (UWA November 2013)

By Marit Kragt (UWA), Fleur Maseyk (UQ), Louise Blackmore (UWA)

Under the Carbon Farming Futures Programme, rural landholders have the potential to generate carbon credits through activities such as agro-forestry, re-vegetation of land or changed agricultural practices. Each of these activities may have positive or negative effects beyond their intended mitigation of climate change (externalities or co-benefits). For example, tree belts can have a positive impact on crop productivity in neighbouring fields, or native tree plantations can increase the availability of native habitat.

If carbon farming proposals are evaluated only on their carbon mitigation potential, there is a risk that management creates 'perverse' outcomes (eg, by supporting activities that have negative impacts on biodiversity). There are many, and often complex, costs and co-benefits that should be taken into account when assessing different carbon farming mitigation options. If we are looking to achieve multi-functional landscapes, we need to assess the carbon mitigation as well as the co-benefits of carbon farming. Unfortunately, there are still many gaps in our understanding about carbon sequestration, the co-benefits provided by carbon farming activities, and the tradeoffs between different impacts.

This workshop, set in the leafy grounds of the University of Western Australia, brought together various players working on this issue from around Australia. We aimed to create valuable collaborations and produce useful research outputs. The workshop drew together ecologists, economists, social scientists, modellers, foresters, policy officers and carbon consultants; all sharing their insights on how farming for carbon and farming for biodiversity can be understood, measured and traded off.