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Evaluating the effectiveness of Conservation Management Networks and Biosphere Reserves

by James Fitzsimons

The conservation of terrestrial biodiversity faces a number of key challenges ranging from habitat clearance and degradation to the overexploitation of species and ecosystems and to the impacts of introduced species. One of the main responses has been for governments to protect samples of natural habitats by setting aside areas in national parks or conservation reserves. Increasingly private individuals and organisations are either purchasing land or actively managing all or part of their properties for nature conservation. Thus a new challenge arises: How do we coordinate the myriad of approaches to biodiversity conservation, and in particular the management and protection of natural areas across various tenures?

‘Multi-tenure reserve networks’, which incorporate public and private lands managed for conservation, are considered a means of achieving landscape scale conservation. Biosphere Reserves and Conservation Management Networks are characteristic models in Australia, and have been established with enthusiasm in parts of south-eastern Australia in the past decade.

Research undertaken as part of my PhD aimed to evaluate the role of such networks in protecting biodiversity, specifically by: (1) analysing the spatial configuration (size, shape, connectivity) of networks and their individual components; (2) evaluating the contribution of networks (in real terms and in reporting procedures) to biodiversity conservation objectives; (3) analysing the influence of the attitudes and perceptions of land managers on the functionality of networks; and (4) evaluating the influence of coordinating bodies on network functionality.
Three Australian case studies were chosen as the basis for the research - the Bookmark (now Riverland) Biosphere Reserve (BR) in South Australia, the Gippsland Plains Conservation Management Network (CMN) in Victoria and the Grassy Box Woodlands CMN in New South Wales. A combination of geospatial data and questionnaire analyses was used to measure aspects such as reserve design, protection of under-represented ecosystems, management actions of landowners, and operational aspects of the networks.

It was found that the sizes of individual components varied markedly between the three networks, however within each network public reserves were on average larger than private conservation lands. Although levels of physical connectivity varied between networks, Bookmark BR and Gippsland Plains CMN showed greater similarity to each other than to the Grassy Box Woodlands CMN.

All networks, and particularly those components outside the public protected area estate, contributed to enhancing the protection of ecosystems unrepresented or under-represented in the reserve system, although the extent of this contribution varied between networks. Trade-offs between reserve design efficiency and a contribution to a comprehensive, adequate and representative reserve system were evident between networks. For example, Bookmark BR was characterised by high connectivity, strong reserve design integrity but a lower contribution to protecting under-reserved ecosystems, whereas the opposite was evident in the Grassy Box Woodlands CMN.

Over 88% of managers considered their involvement in multi-tenure reserve networks to be a positive or very positive experience. A lack of resources and time for management were considered major limitations of these networks. The majority (80%) of private land managers within networks were willing to be included in a national reserve system of conservation lands. This has important implications for the Australian National Reserve System, which currently incorporates mostly public land. The changing nature of the network coordination arrangements suggests an organic fluid evolution of network structures is likely, contrasting with the desire for legalistic and administrative rigidity often promoted by government agencies.

The research concluded that all the networks studied contribute in varying degrees to biodiversity conservation. The key factors influencing the current and potential contribution that such networks make are: (1) the aims, directions and restrictions set by or imposed upon the coordinating body; and (2) the biophysical nature of the surrounding bioregion and resultant historical land use and tenure pattern. Although the successful operation of such ‘multi-tenure’ networks ultimately relies on the willing participation of private landholders, ongoing institutional support is likely to be required for maintaining networks in the longer term. Considering networks are increasingly formed outside of the influence of government institutions, this presents a significant challenge for effective coordinated conservation.

Further reading and information:


