

Report

Hodder, K.H.; Douglas, S; Newton, A; Cantarello, E; Birch, J; **Bullock, James**. 2011 *Projecting the benefits of landscape-scale conservation for wildlife and people*. Sheffield, Natural England. (In: *Adapting Conservation to a Changing Climate*. Natural England Commissioned Report Number 081, pp16-17)

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- The results show that there is a considerable time lag in the effects of climate change: Until 2050, the effects across different scenarios are still moderate. Under the high emission no dispersal scenario, around 60% of species are still rated as experiencing a low risk until 2050, while in 2080 these are a mere 6 %.
- Under the moderate SEDG scenario, 33% of species could experience a net increase in climate niche space until 2050, while until 2080 this option is still potentially available for 30% of the species.

Conservation recommendations are given, including a no regrets approach to managing landscapes that will help conserve biodiversity regardless of climate change. The results are important because butterflies are one of the few groups of insects for which such comprehensive data are available at a European level. As insects comprise over two-thirds of all known species, the results are valuable to help understand the possible impacts of climate change on biodiversity as a whole.

Settele J., Kudrna O., Harpke A., Kühn I., van Swaay C., Verovnik R., Warren M., Wiemers M., Hanspach J., Hickler T., Kühn E., van Halder I., Veling K., Vliegenthart A., Wynhoff I. & Schweiger O. (2008) Climatic Risk Atlas of European Butterflies. Pensoft, Sofia and online: www.pensoftonline.net/biorisk.

Projecting the benefits of landscape-scale conservation for wildlife and people

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It is compellingly argued that management which reverses habitat fragmentation and proactively aims for dynamic, connected landscapes should provide numerous benefits both for wildlife and people, and that conferring the ability for species to move will provide increased resilience to climate change. Quantification of these benefits is difficult, given the large spatial and temporal scales involved. However, using scenarios it is possible to demonstrate the potential outcomes of such landscape-scale management. Here we demonstrate such scenarios for 6 sites in England and Wales and discuss the utility and limitations of this approach.

Provision of some services, recreation and aesthetic value, was enhanced by all of the landscape-scale scenarios, and where there were losses, these tended to be compensated by gains. There was a tendency for a shift from food and fibre to carbon storage and recreation. However, there were notable exceptions where premium products, such as meat, significantly increased. Numerous assumptions are implicit in the scenarios but comparison is the aim, rather than generation of absolute values. A number of methodological aspects were of particular note:

- The comparisons were highly sensitive to the value of carbon which dominated any monetary analysis.

- Proxy values are relatively available but should be used with caution: comparison with locally derived values showed that major differences in valuation can accrue.
- Simplified representation of change in ecosystem services may be more appropriate than monetisation where uncertainties may obfuscate the results.
- Inclusion of values that cannot be assessed in monetary terms (e.g. biodiversity) is crucial.

Envisaged increases in priority habitats would provide major contributions to national targets and trade-offs between habitats can be usefully explored through scenarios. Improvements in habitat condition would also be expected, and in urban environments, space-limitation may allow only improvements in quality. Increase in habitat connectivity was indicated but changes in connectivity did not always follow the greatest increase in area - suggesting that spatial planning can increase connectivity while allowing conservation of other habitats. These analyses will be enhanced in future through replacement of generalised values for movement of species in the landscape with more detailed ecological knowledge.

To be realistic, the landscape-scale initiatives must be sustainable economically over the long term. A wide range of commercially exploited ecosystem services indicated by the case studies, such as premium meat, reeds and recreation, shows the way forward for integrating with the local economy. The domination of the combined benefits by carbon values suggests that support of many landscape-scale initiatives through carbon-offset potential should be considered, and other benefits, such as flood mitigation, may be future recipients of Payments for Ecosystem Services. Although these market forces should be encouraged, the market alone cannot be expected to deliver the full range of ecosystem services and the challenge is to enhance natural assets with economic and social sustainability. The projects examined here showed the key importance of agri-environment schemes in delivering landscape-scale projects. Suitably targeted, this has enormous potential for enabling the restoration of an ecologically functioning landscape and further integration with research on functional connectivity and systematic monitoring will enhance these approaches. The landscape-scale approach consolidates effort which should prevent lack of coherence and continuity in funding. Nevertheless, even for larger partnership projects, the lack of continuity in funding has been a limiting factor. Realistic landscape-scale initiatives will be well integrated with the local economy, and supported through appropriate policy instruments, to ensure that there is adequate sustainability for large temporal as well as spatial scale.

Putting climate adaptation plans into action: an international perspective

James Watson

Wildlife Conservation Society, New York

The reality of human-forced rapid climate change presents an unprecedented challenge for the conservation of biodiversity. In this talk I will describe how the environmental non-government organisation (NGO) Wildlife Conservation Society (WCS) is tackling this challenge. WCS is a science-based environmental NGO that currently works in 71 landscapes and seascapes in 41 countries across Earth to conserve biodiversity. WCS often