



Chilterns landscape © Peter J Dean CC BY NC ND 2.0

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Sympathetic management of habitats across farmland is vital for helping to conserve wildlife populations. Farm-scale efforts can increase the size of wildlife populations, and encourage species diversity across a farm. It has become increasingly recognised, though, that for conservation efforts to be even more effective, local populations of wildlife need to be linked at the landscape-scale. This can be done by enhancing habitats and their connectivity across neighbouring farms, rather than by working at single sites and in isolation.

Key points

- Wildlife populations have become fragmented, leaving them vulnerable to further loss
- Enhancing habitats and increasing their connectivity helps wildlife populations
- Landscape-scale approaches can help achieve this very effectively, by joining up habitats across larger areas

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Species-rich patches of habitat have often become isolated in intensively farmed landscapes © Paul Howzey CC BY NC ND 2.0



Farm-scale conservation is vital, but even more effective when applied across landscapes © Tara Proud



Hedgerows are one way to increase landscape connectivity © Rob Wolton, Hedgelink

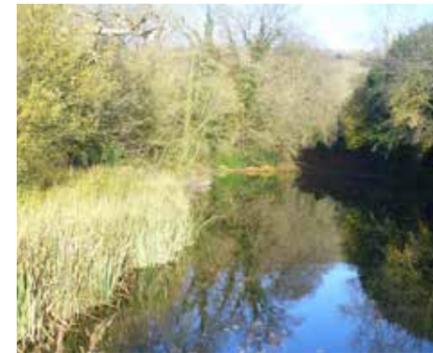
Over a number of years, habitats for farmland wildlife have changed. Many patches of habitat have been lost altogether, while others have become less species-rich, because of production demands on the land. Added to this, the land in between habitat patches is generally more inhospitable to wildlife than it used to be, with fewer or poorer quality connecting habitats such as ditches, ponds, hedgerows or field margins. These changes have together resulted in many wildlife populations becoming isolated and disconnected.

A landscape-scale approach to wildlife conservation recognises that linkages and stepping stones need to be established between high quality wildlife sites and across the wider landscape. The overall environmental quality of landscapes needs to be enhanced to enable species movement and re-colonisation of areas to occur. There also needs to be a greater variety of habitat types and features to support higher numbers and a wider range of wildlife within the wider landscape. Adopting a landscape-scale approach to nature conservation also brings wider economic and social benefits (known as ecosystem services).

More, bigger, better, joined

An independent review of England's wildlife sites and the connections between them was published in 2010. 'Making Space for Nature' gave recommendations to help achieve a healthy natural environment that will allow plants and animals to thrive.

Led by Professor Sir John Lawton, the review was set up to look at our wildlife sites and whether they are capable of responding and adapting to the growing challenges of climate change and other



Ponds can be viewed as 'stepping stones' in the landscape © Colin Smith CC BY SA 2.0



Birds are generally mobile but also need resources over a larger area © Ruth Sharville CC BY SA 2.0



Inhospitable landscapes may present particular difficulties for ground-dwelling species such as toads © LHG Creative Photography CC BY NC ND 2.0

demands on our land. The essence of what needs to be done to halt and reverse the declines in Britain's wildlife was summed up in four words: more, bigger, better and joined. We need to develop an approach to nature conservation that results in more and bigger areas that are rich in wildlife, better managed sites, and more inter-connected sites.

Protecting existing species-rich areas, including designated sites, such as SSSIs or county wildlife sites, is fundamental to landscape-scale projects. These core areas of high nature conservation value provide places within which species can thrive and from which they can disperse to other areas. Wherever possible they should be buffered by managing the land area around them in a way that helps protect the core area and its wildlife.

A crucial part of landscape approaches to wildlife conservation is to try and re-establish the linkages between such areas. Even if a population appears to be flourishing, if it is isolated from others it is vulnerable to extinction. A catastrophic event, such as flood or fire, puts an isolated population at risk as individuals may be unable to escape, and there is less chance of recolonisation from other areas. Isolation from other populations increases the chances of inbreeding and loss of genetic diversity, which again increases the risk of the population becoming extinct. Enhancing connectivity between species-rich areas must take into account the differences in mobility between species. Birds, for example, can generally more easily disperse or move across fields or farms (although there are differences in mobility between species). Other creatures, such as those that are ground-dwelling, or closely linked to particular habitats such as ponds, may be especially sensitive to habitat connectivity, requiring habitat patches to be near to each other or better connected.

Increasing habitat connectivity can be done by creating physical corridors of habitat such as hedgerows, field margins or ditches. Connectivity can also be enhanced by creating more features such as ponds or hedgerow trees; these can act as stepping stones across a landscape, making it easier for species to move through the farmed landscape. By managing intervening farmland as sympathetically as possible, wildlife is able to disperse more easily, helping species to colonise new areas, re-colonise old ones (Box 17), and reduce the chances of inbreeding.

Landscapes



River quality is particularly affected by the surrounding landscape © Stephen McKay CC BY SA 2.0

Farming and landscape-scale conservation

Farmers and land managers have a vital role to play in landscape-scale projects. To conserve wildlife, the delivery of habitat management and enhancement has traditionally been carried out at a farm level. These individual actions and participation in schemes such as Environmental Stewardship have delivered substantial and important wildlife gains on farmland.

A key aim of the landscape-scale approach is to try and ensure that these actions are not done in isolation. A strategic approach across neighbouring farms will ensure that blocks of habitat are looked after, and dispersal opportunities are created for fragmented populations of farm wildlife. For example, some habitat features can only be

Wildlife and climate change

Some birds, insects, mammals and plants are showing changes in their geographic distribution and have moved northwards or to higher altitudes in response to changes in the UK climate. There is increasing evidence that many species with the northern limit of their range in the UK are expanding further north and onto higher ground (275 of 329 animal species analysed moved north by 31-60km in the last 25 years: Hickling et al. 2006, Global Change Biology, 12). In contrast, some cold-adapted species with their southern limit in the UK are retreating northwards and are being lost from now climatically unsuitable southern sites and lower ground.



© Mohammed Mahdi Karim GFDL 1.2

Typically, widespread species with general habitat requirements and good dispersal ability are expanding into new areas; whereas species with small geographical distribution, poor ability to disperse and specific habitat requirements are less able to move. These species are greatly affected by factors such as habitat loss and fragmentation.

For a species to respond and move to a suitable climate, it needs increased habitat availability and connectivity. This further highlights the importance of landscape-scale conservation approaches.



Connecting habitats creates dispersal opportunities for wildlife © Rob Wolton, Hedgelink



Partnerships are crucial for landscape scale projects © Rob Wolton, Hedgelink



A recent large-scale initiative is Catchment Sensitive Farming © Stephen McKay CC BY SA 2.0

conserved effectively by a landscape-scale approach. An example is that of a river, the health of which is affected by management of all the land in the catchment. Actions to conserve and improve river quality will be much more effective if they are carried out across the whole landscape through which the river flows. This may involve, for example, working with neighbouring farmers and land owners to manage their land in a way that reduces nitrate use near water courses to improve water quality, or promoting wildlife through, for example, pond restoration.

Landscape-scale conservation will also help farmland to provide more resources for a range of different species. A greater diversity of habitat types and features across the wider landscape will support more wildlife, and a greater range of wildlife. For groups such as bats or birds, individuals may use large areas, for example, spanning several farms. For these species, habitat improvements may need to be carried out over a much larger scale to provide them with the resources they need. A single farm might be unable to meet their habitat needs, while a landscape-scale conservation project could do so.

Working in partnerships

Landscape-scale projects and approaches will all be different, but a common theme is that of partnerships between those involved in managing the landscape and other stakeholders (Box 18). Projects do not need to start big - setting achievable objectives over a smaller area and building upon successes is a positive way to engage others and help a landscape scale project develop.

Opportunities exist to receive funding for such group applications that can maximise environmental benefits. At a policy level, there are now many initiatives designed to support larger-scale conservation efforts. One example is Catchment Sensitive Farming. This is a joint venture between the Environment Agency and Natural England, funded by Defra and the Rural Development Programme for England, working in priority catchments within England. It delivers practical solutions and targeted support to enable farmers and land managers to take action to protect water bodies and the wider environment.



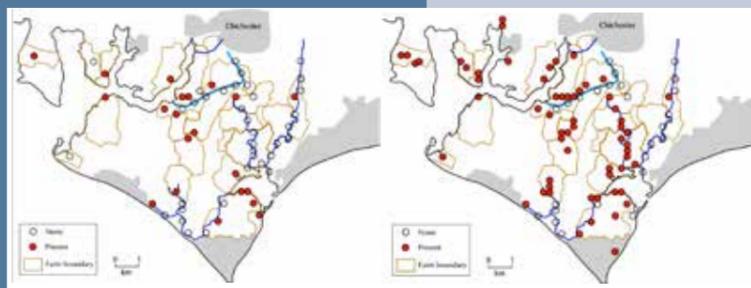
Water vole © Andrew Harrington

Conserving water voles on Chichester Plain

In a partnership project across the Chichester coastal plain, farmers were encouraged to participate in agri-environment scheme agreements to benefit the rapidly declining water vole. The water vole had declined in numbers by 95% in Sussex over the previous 20 years, as a result of degradation of habitats and predation by introduced American mink. Instead of viewing farms as individual entities, the project considered the whole landscape of the coastal plain in terms of land-use and river catchment management.

Through the delivery of whole-farm conservation plans, the partnership was able to create linked habitat corridors across and between neighbouring farms, mostly through agri-environment agreements. These created over 61km of 6m-wide grass margins and, as many of these margins were targeted beside rivers and watercourses, they formed direct linkages across and between farms.

Before the project, water voles were scarce within the area, with the populations highly fragmented and largely confined to a small number of farm ditches and ponds. However, they responded well to the habitat enhancements and linkages across the landscape so that, three years later, their numbers had more than tripled. In particular, 68% of the ponds and ditches had been occupied, together with those watercourses protected from cattle trampling by fencing.



Sites (in red) where water voles present in 2000 (left) and in 2003 (right) © Rob Strachan

Key results

- In a landscape-scale project, linked habitat corridors were created across Chichester Plain
- Water voles and other wildlife benefitted from these habitat linkages
- Partnerships were crucial, and advice and agri-environment scheme funding underpinned the work



Oxfordshire landscape © Rosalind Shaw

The Upper Thames Project

Restoring wildlife species and their habitats across farmland is best achieved through a landscape approach that aims to link local populations. This can be done by enhancing the connectivity of habitat across neighbouring farms, rather than by working at single sites and in isolation.

We aimed to 'join-up' habitats in this way, across the Upper Thames river catchments. Our success hinged on a partnership approach involving farmers, landowners and a range of conservation organisations, an approach that proved enormously successful in our pilot study on Chichester coastal plain (opposite). We offered farmers a funded service, including a Whole Farm Conservation Plan and advice on available grants. Conservation advice and activity at any one farm not only considered the species and habitats found on that farm but also the context of the farm in relation to neighbouring farms and areas of wildlife importance, such as nature reserves.

We achieved a range of targets for habitat improvements and monitored the impact of these changes on wildlife. We found, for example, that some habitat features, such as hedgerow trees, had a much bigger positive impact on wildlife when they were in these joined-up landscapes. Moths, bats and brown hares all benefited from landscape-scale conservation.

The Upper Thames Project highlighted the importance of considering landscapes in terms of the needs of, and benefits to, both humans and wildlife. Wildlife gains came about with great effort from the many partners working with our team.

Key results

- The Upper Thames Project took a landscape-scale approach to conservation
- This partnership project delivered a range of habitat enhancements across catchments
- Benefits to a range of wildlife, including moths and hares, were recorded



Brown hares benefited from landscape-scale conservation © Keith Marshall CC BY NC SA 2.0

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Management summary	
Key actions	Potential benefits
<ul style="list-style-type: none">• Safeguard species-rich areas and increase habitat connectivity• Create habitat corridors and 'stepping stones'• Provide more wildlife resources over larger areas	<p>Helps conserve wildlife populations</p> <p>Helps species move through the landscape</p> <p>The variety of habitats will support a greater diversity of wildlife</p> <p>Species can shift more easily in response to changing conditions</p> <p>Helps wildlife adapt to climate change</p>
<ul style="list-style-type: none">• Advice, knowledge, partnerships and governmental and agency support are crucial	<p>These are the keys to success</p>

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