

Delivering Nature Conservation at a Landscape-scale



Our country's wildlife is in trouble

Between 2006 and 2016, 53% of species in the UK declined in abundance, with some 15% considered at risk of extinction in Great Britain (State of Nature report, 2019). This includes once common species such as hedgehogs, house sparrows and common toads. Alongside climate change, the main cause is changes in land use – for agriculture and urban development – that have resulted in the loss, fragmentation or inadequate management of habitats.

It is not all bad news. Our conservation know-how continues to improve and some species' populations are recovering, including otters, stone curlews and red kites. Certainly, without our protected areas and conservation action to date, the scale of losses would have been much worse.

But the current approach is not enough. Across the country, and even within our protected sites, the diversity and abundance of wildlife continues to decline and there are ever more pressures facing the environment.

Making space for nature

Our response is to make space for nature: moving away from simply trying to conserve what remains, and instead restoring and creating habitat at a landscape-scale.

This approach is based on the concept of 'ecological networks'. At the core of such networks is a collection of high quality sites capable of sustaining species' populations. But crucially these core sites need to be connected, so that wildlife can move between sites through the wider landscape. And the whole must be robust and resilient, allowing nature to respond to the inevitable changes faced by the environment.

Necessarily, our approach must be ambitious, but also realistic: this is not about turning the whole countryside into a nature reserve, but about working alongside other land uses to ensure that we make space for nature.



Saving **Norfolk's Wildlife** for the Future

Ecological principles

- **Size matters:** larger sites, with their more diverse habitats, will support bigger species populations. Although the size of any population naturally varies in response to environmental factors, the smaller a population becomes, the more likely it will fluctuate to the point of extinction.



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- **Meta-populations:** many species exist not as isolated populations but as sets of populations linked by the movement of individuals between them. Individual populations may decline or even be completely lost, but will re-establish through re-colonisation from nearby sites. If a habitat patch is lost, however, this can impact the whole meta-population, leading to a decline or even extinction (even if remaining habitat is in good condition).

- **Edge effects:** compared with the centre of a block of habitat, the edges are likely to be impacted by different climatic conditions; pollution and disturbance arising from adjacent land uses; and different species interactions (including predation). The proportion of a site subject to these edge effects increases the smaller a site becomes, making some or all of a site less suitable for specialist species.



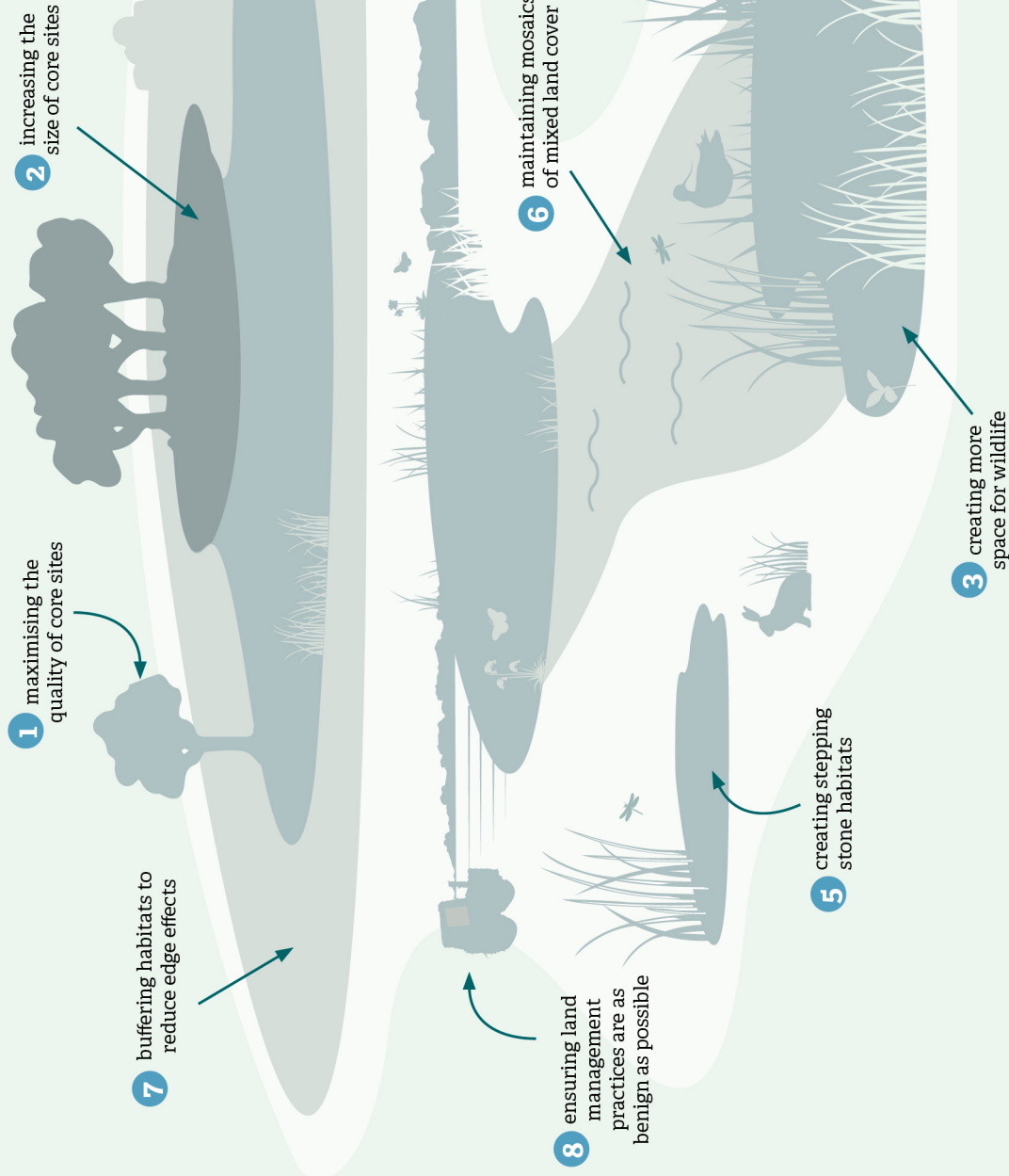
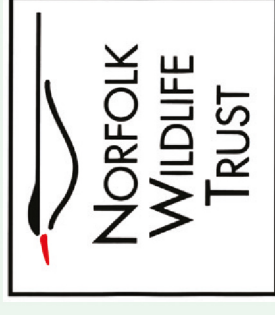
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- **Site proximity:** the long-term survival of species depends on individuals being able to move between sites, so the closeness of sites to one another is important. The greater the distance between blocks of good quality habitat, the fewer species those blocks will support, since colonisation from other sites is less likely to occur following a decline or extinction.

Creating a Living Landscape



Better, bigger, more, joined

The principles of 'better, bigger, more, and joined', as described by Professor Sir John Lawton in his report Making Space for Nature (2010), provide a valuable framework to guide the effective delivery of nature conservation at scale.

- **Better:** at the core of any ecological network are existing wildlife habitats, in particular protected sites such as nature reserves, SSSIs and County Wildlife Sites. These support the largest part of our remaining biodiversity and, provided species' populations are sufficiently strong, will act as sources from which to colonise new areas in the future. Maximising the quality of these core sites [1] is the key first step in delivering landscape-scale conservation.

Most UK habitats are semi-natural: the result of human activity. Maintaining and improving them therefore requires the continuation or re-establishment of conservation management such as grazing or mowing. Even with this on-going management, sites and the wildlife they support will inevitably change in the future, not least due to climate change. However, provided they retain the underlying characteristics which allow them to support a high level of biodiversity, these sites will remain of core importance.

- **Bigger:** the historic loss and fragmentation of habitats across the country means that surviving patches are generally much smaller – critically so for habitats such as chalk grassland and species-rich flower meadows. Increasing the size of core sites through adjacent habitat restoration or creation [2] is required alongside quality improvement. Larger sites will not only support a greater abundance of wildlife, but they can be managed more cost-effectively and naturally.

While making remaining wildlife habitats better and bigger will improve the survival chances of our biodiversity, decades of habitat loss and fragmentation mean that this alone will not be enough to halt further losses. This is where the real step change needs to come.

- **More** space needs to be created for wildlife. This requires the establishment of new habitat [3], strategically located according to the needs of the local landscape and its wildlife, to replace at least some of what has been lost. Whatever is created must be as large, and of as good a quality, as possible.

- **Joined:** the long-term survival of wildlife requires that individuals move between patches of core habitat, either to sustain meta-populations or to allow adaptation in light of environmental change, including climate change. Ensuring this movement requires greater connectivity between habitats.

This connectivity may take the form of continuous habitat corridors [4] such as hedgerows between blocks of woodland, or ditches between wetlands. Appropriately managed, these linkages can support populations in their own right and can enhance the dispersal of populations.

But direct links are not essential. Creating stepping stone habitats [5] can also act to increase connectivity. While generally smaller than core habitats, and not necessarily capable of supporting sustainable populations in their own right, when located between core sites stepping stones provide shelter, feeding and resting opportunities for species moving through the countryside.

Maintaining mosaics of mixed land cover [6] can further aid landscape connectivity. The habitat diversity provided by river corridors, networks of ponds and other man-made features such as canals and railway embankments may not match the habitat at the core of an ecological network, but these can all increase the permeability of the countryside, helping species to move across the landscape.

Finally, there is a need to reduce the impact on wildlife of our wider land usage. This includes buffering habitats to reduce direct edge effects [7]; and ensuring that land management practices are as benign as possible [8] (for example through targeted use of agro-chemicals and reducing other pollution risks).



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