

Building Connected and Resilient Landscapes at a Farm Scale



CONNECTIVITY TOOLKIT >

The State of Nature

Despite a great deal of positive conservation work over the past century, the UK continues to see widespread declines in biodiversity. The 2019 [State of Nature Report](#) sets out in great detail how nature is faring, and the news is mostly negative. It is clear that the status quo of protecting nature in small areas of nature reserves and designated sites is not sufficient to turn around the declines in nature we have seen.

As far back as 2010 the [Lawton Report](#) provided a template for how nature can be restored at a landscape scale, and these principles are still widely accepted and used today. The mantra of the report is that the recovery of nature requires “more, bigger, better and joined” spaces for wildlife.

Norfolk Wildlife Trust is applying the Lawton principles to help guide landscape-scale conservation work across the county. See: [Delivering conservation at a landscape scale](#).

The issues facing nature today are not just restricted to biodiversity. We need wide-ranging changes to restore a healthy natural environment, including rapid progress to mitigate, and adapt to, climate change. See: [Why landscape scale conservation is important](#).

In order to tackle the scale of the biodiversity crisis we need action at a landscape scale. The Wildlife Trust have a [target that 30% of land and sea is well-managed for nature by 2030](#) – a goal which will require wide-ranging action across all areas of the landscape to achieve. This is something that everyone, whether landowner, farmer, local community or individual can contribute towards.

A Connectivity Toolkit

What should landowners and land managers do to help nature recover? This toolkit has several main aims:

- To assist with making informed decisions at a farm/estate/landscape scale.
- To provide a suggested approach to think through land management choices.
- To help effectively target resources where they can be of most benefit.
- To help deliver ecologically robust landscapes.



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

Existing sites

Sites that are already biodiversity-rich, such as nature reserves, designated sites, or other priority habitats, need to act as reservoirs of biodiversity, and as sources for the re-colonisation of the wider countryside. These sites are the foundations on which we need to build a network to recover nature.

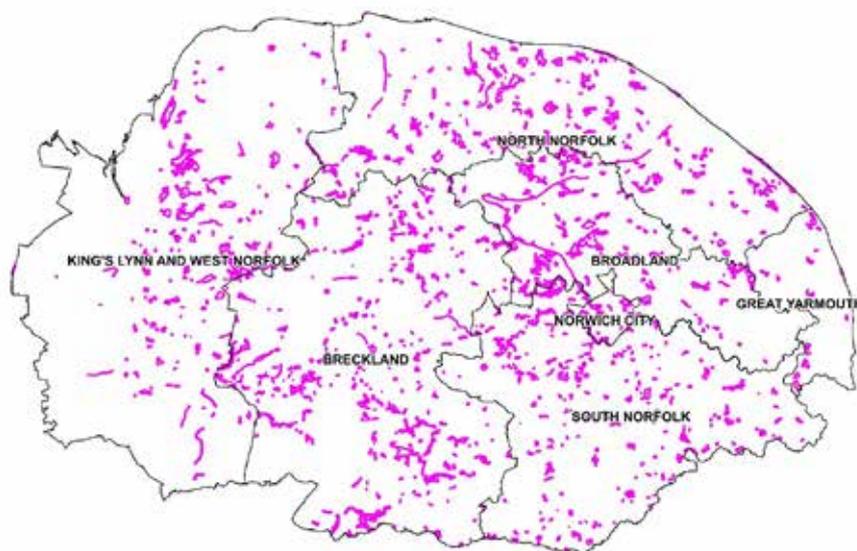
[Protected wildlife sites](#) include a range of statutory and non-statutory sites, including [Sites of Special Scientific Interest \(SSSIs\)](#) and [County Wildlife Sites](#).

Other priority habitats include key areas for biodiversity that are not necessarily designated or assigned as nature reserves. This will include, for example, areas of ancient woodland, relict wetland habitats, or historic commons.

It is important that these sites are effectively managed to maximise their biodiversity value. The value of these sites can also be enhanced by increasing their size and by buffering them from adjacent land uses. This contributes to delivering the 'better' and 'bigger' elements of the Lawton Principles.

Natural England can provide specific guidance on the management of SSSIs upon request. Advice on the management of County Wildlife Sites can be obtained from the Norfolk Wildlife Trust.

General advice on the management of habitats can be found at: [Norfolk Wildlife Trust – Introduction to Habitat Management](#).



The network of over 1,300 biodiversity-rich County Wildlife Sites throughout Norfolk are key existing sites which require good management to underpin the widespread recovery of nature.

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Priority habitats, such as this wet heathland SSSI, lie at the core of resilient landscapes. These are the reservoirs of biodiversity from which the wider countryside will be recolonised. (Image: Matt Jones)

Information and how it can help decision making

A wide range of resources and information are available that can aid the making of informed decisions on where and how to restore and connect the landscape.

Several types of map exist showing the current landscape, including not only protected sites but a range of notable features. These can help with better understanding your land holding. However, it is particularly important to put your land holding into its wider context – consider what lies beyond your boundaries, and what features in the wider countryside may be beneficial to start linking together.

- The [MAGIC website](#) provides free geographic information about the natural environment from across several government agencies. This includes site designation details, stewardship schemes, plus habitat and landscape information.
- Norfolk County Council have a range of digital maps available including maps of trees and hedges: [Norfolk County Council Mapping website](#).
- The [Norfolk Biodiversity Information Service \(NBIS\)](#) website has an overview map of County Wildlife Site locations – if you think your land may contain a County Wildlife Site then please check with Norfolk Wildlife Trust or NBIS.

Norfolk Wildlife Trust has developed a range of information about landscape connectivity, including a **connectivity heat map** which maps how easy or difficult it is for a range of species to move through the landscape. This can provide guidance on high-value areas, or corridors, in which to create or enhance habitats. For details see: [Norfolk Wildlife Trust – Landowner management](#).

Land productivity can be assessed through a combination of local knowledge and [agricultural land classification information](#). This can help identify the areas of land that are the most unproductive or marginal for agricultural production – it is these areas that often present the best opportunities for changes in land use and habitat creation.



Hedgerows are a great habitat in their own right and can form important corridors through the landscape to connect other areas of habitat. (Image: Matt Jones)



There is value in considering land holdings in their wider context. In this case, looking at tree and hedge data, it can be seen that there are a number of woodlands on, adjacent to and near this holding, but that there is scope to strengthen the hedgerow network to significantly improve ecological connectivity.

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Restored ponds can support high numbers of species and provide stepping stones within the landscape. (Image: Ben Newton)

Historic maps and landscape information can provide useful context to assist decision making, and a wide range of historic maps are available. Norfolk Wildlife Trust has produced a document setting out how landscape history can be reviewed and can point towards positive current land management decisions. Refer to: [Norfolk Wildlife Trust – A Living Landscape: Claylands](#).

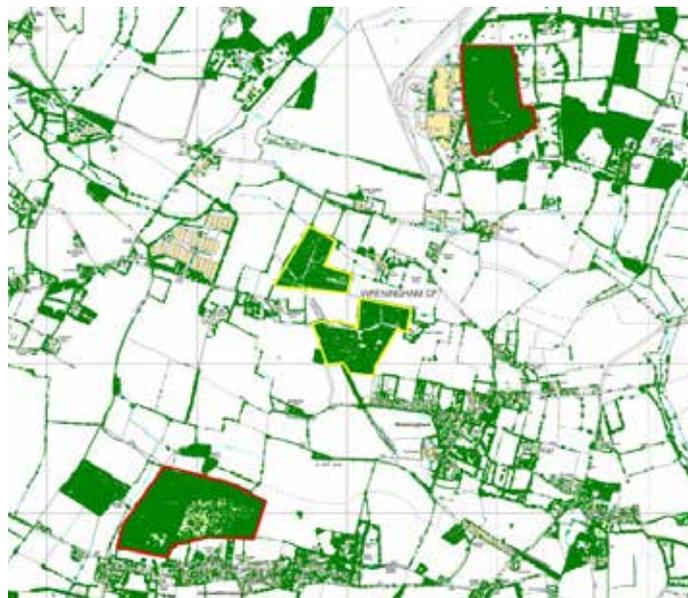
Useful sources for historic maps include:

- 6-inch Ordnance Survey maps from the late nineteenth and early twentieth centuries can be consulted online on the website: [National Library of Scotland](#)
- Many areas have historic tithe maps, surveyed around 1840, available digitally on Norfolk County Council’s ‘Norfolk Historic Maps’ website. This also includes copies of the vertical aerial photographs taken by the RAF in the immediate aftermath of the Second World War. Refer to: [Norfolk Historic Maps](#)
- There may be earlier maps of your area, held at the Norfolk Record Office; their catalogue can be consulted online at: [Norfolk Record Office](#)

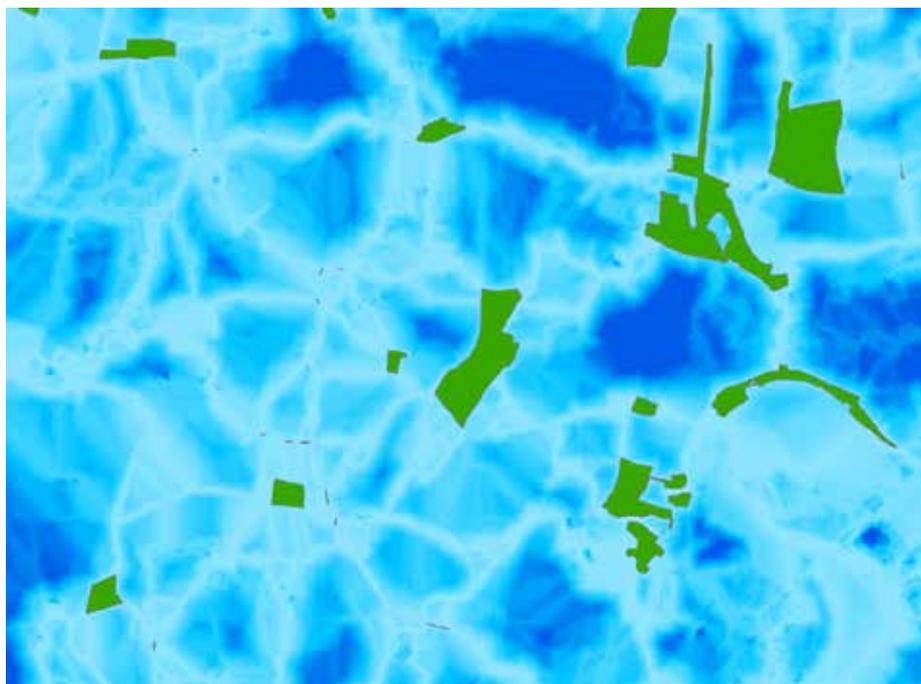
Species data can be important in assessing what is currently present in the local area. The presence of particular species, or groups of species, may influence habitat management, especially if the species are notable or rare. Local knowledge is crucial in understanding which species are using a landholding. In addition, a range of species data is available from the [Norfolk Biodiversity Information Centre](#). Further information on obtaining species records can be found at: Norfolk Wildlife Trust – [Landowner management](#).



New woodlands (yellow outline) provide connecting stepping stone habitat between important woodlands to the north and south (red outlines).
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New hedgerows can be important additions to the landscape.
(Image: Ben Newton)



This map shows an extract from a ‘connectivity heat map’ created by Norfolk Wildlife Trust (in conjunction with Southampton University). The map gives an indication of how well connected habitats are across the countryside, designed as an aid to effective decision making.

Step-By-Step Approach to Creating a Connectivity Management Plan

Below is a suggested approach to considering your landholding, its place in the landscape, and producing a biodiversity connectivity management plan.



Step 1>

Are there areas of land that lend themselves to **larger scale habitat creation or restoration**? These could be areas of particularly unproductive land, areas subject to flooding, areas of peat, or areas that could deliver ecosystem services or nature-based solutions.

Step 2>

Identify **key corridors** in the landscape. Targeting interventions here is likely to give the best value for money. There are two possible approaches: to reinforce existing corridors with wide areas of good quality habitat, or to bridge obvious gaps in the landscape.

Step 3>

Consider what the **historic environment** tells you. Norfolk Wildlife Trust has produced a [toolkit to assist with this process](#). The intention is not to re-create past landscapes, but looking to the past can provide pointers as to opportunities present today. For example, historic land use information can reflect the natural conditions and tendency of the land. Historic information can also point to areas where habitat creation or restoration may be more successful e.g. ghost ponds or lost hedgelines, re-establishment of which may succeed in restoring significant historical plant assemblages.

Step 4>

Consider **unproductive or marginal land**. This could include whole fields, or parts of fields, e.g. damp hollows, awkward corners or shaded margins. These can provide good areas for habitat creation, or can be allowed to naturally become wilder.

Step 5>

Focus on the **'fabric of the countryside'**, the features of the landscape that particularly help link core areas of habitat. These can include:

- Direct links within the landscape, notably hedges or ditches.
- Stepping stones such as ponds, copses or meadows.

Step 6>

Consider **species-specific requirements**. Generally adding diversity and increasing the area of habitat within landscapes will be beneficial to most wildlife. However, certain species or groups of species will have particular requirements which could be built into the network.



Step 7>

Adopt **environmentally friendly farming techniques**. Farming necessarily must continue in the countryside, but the way that farming is undertaken can significantly reduce its impact on wildlife - indeed some farming methods can actively support a recovery of biodiversity.

Best practice methods such as ensuring the effective targeted use of agro-chemicals and nutrients, or the adoption of regenerative farming methods can result in a more positive landscape for biodiversity.

See: [Nature Friendly Framing Network](#)

Ecosystem Services are the benefits provided to humans by a healthy natural environment. These include plant pollination, clean air and water, extreme weather mitigation, plus human health and wellbeing benefits.

Nature-based solutions are where the sustainable use and management of natural features, systems and processes can help achieve societal goals e.g. flood management, food security, human health or climate change mitigation.

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