Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy
April 2026

Foreword

The Shropshire and Telford & Wrekin Local Nature Recovery Strategy sets out a shared vision to restore and enhance the natural environment. Its delivery relies on collective ownership: it will only succeed through the choices, skills and care of local people, organisations, land managers and communities.

We recognise and value the substantial work already underway across Shropshire and Telford & Wrekin. This strategy builds on those strengths and provides a structured framework to enhance biodiversity, strengthen resilience to flooding and extreme heat, and promote sustainable land and water management. Healthy ecosystems are fundamental to prosperous communities, productive businesses and resilient landscapes, and your actions make the difference.

We invite you to play your part. However small or large, every contribution counts. Together, we can turn this strategy into real, measurable improvements for nature and for local communities.

Acknowledgements

The Local Nature Recovery Strategy (LNRS) for Shropshire and Telford & Wrekin is the result of huge collaborative effort, reflecting contributions from people and partners across the county and beyond.

Thanks to everyone who generously shared their time, knowledge and expertise, in particular:

The Shropshire and Telford & Wrekin LNRS Steering Group, who guided the development of the LNRS and worked together to make it as good as it can be.

Staff and Councillors from across Shropshire Council and Telford & Wrekin Council who helped shape the strategy.

Farmer survey respondents and workshop participants as well as farm advisory businesses and farmer groups who helped to develop information materials and events for farm businesses.

Local biological recorders and taxonomy and species experts, many of whom spent hours reviewing the species lists and provided invaluable knowledge into identifying those species that needed special attention, in line with the Defra guidance.

Town and parish councils and the Shropshire Association of Local Councils, who are looking at how they can work together to increase nature in their area.

Shropshire residents who responded to the LNRS survey and/or took part in LNRS workshops.

Oxford University, who contributed expertise and an established methodology to help develop the Nature Recovery Network maps.

Other people and partner organisations who commented on draft documents, contributed photographs and case studies, and shared their priorities for nature recovery in Shropshire and Telford & Wrekin.

The **LNRS Steering Group** is formed of representatives from Shropshire Council (Responsible Authority), Telford and Wrekin Council (Supporting Authority), Natural England (Supporting Authority), Country Land and Business Association, Environment Agency, Forestry Commission, National Farmers Union, Shropshire Hills National Landscape, and Shropshire Wildlife Trust.

Introduction

Shropshire's natural environment is exceptional. Few counties can claim such rare and important species as the Pine Marten, Curlew, Freshwater Pearl Mussel, Noble Chafer, and Twaite Shad.

With its rich and varied landscape, Shropshire has so many special areas – many of which are protected under various national and international designations. But the county's natural environment is under pressure. Habitats are increasingly fragmented and depleted, species are in decline and under threat, and the ecosystems on which we rely are becoming less biodiverse (and less resilient as a result).

The historic environment is also integral to Shropshire and Telford & Wrekin's landscapes. For centuries, human activity has shaped habitats, creating features such as ancient woodlands, hedgerows, ridge-and-furrow fields, and archaeological sites. These contribute to ecological networks and cultural identity. Incorporating these elements into the Local Nature Recovery Strategy ensures that nature recovery enhances, rather than harms, heritage assets.

Climate change adds further challenges. More intense rainfall and flooding threaten homes, businesses, and river water quality, while damaging crops and stripping valuable topsoil. Rising temperatures disrupt species lifecycles, disconnecting food sources and forcing wildlife to move northwards or to higher ground.

Only with urgent and decisive action can we hope to address the dual nature and climate emergencies.

To help drive better coordinated, more practical and focused action and investment in nature recovery, the Environment Act 2021 requires all counties in England to have their own Local Nature Recovery Strategy (LNRS). This document forms one of two parts of the LNRS for Shropshire and Telford & Wrekin. The second part is a map showing where actions would have the most impact for nature recovery.

Natural environment overview

1 Area of Outstanding Natural Beauty (AONB) – the Shropshire Hills National Landscape

6 Special Areas of Conservation (SAC)

34 Ramsar sites (wetlands of international importance)

111 Sites of Special Scientific Interest (SSSI). See Appendix 3 for an overview of SSSI condition

4 National Nature Reserves (NNR)

75 km of canals

6,300 km of rivers

14,479 km of hedgerows

Numerous long-distance walking and cycling routes including Offa's Dyke National Trail

Shropshire and Telford & Wrekin is one of 48 strategy areas assigned by the UK Department for Environment, Food & Rural Affairs (Defra). Together, these 48 strategy areas cover the whole of England, with no gaps or overlaps. Throughout this LNRS 'Shropshire' is used to refer to the historic county of Salop – the administrative areas of Shropshire Council and Telford & Wrekin Council as a whole.

People protect what they feel connected to.

The LNRS for Shropshire is the culmination of an extensive and collaborative effort that has involved a wide range of stakeholders through partnerships, surveys and workshops. From local authorities, environmental organisations, historic-environment stakeholders and community groups to landowners, farmers and technical experts, each has contributed valuable data, insights and practical knowledge.

This collective input has shaped a strategy that reflects both the ecological priorities and the lived realities of the county, helping to make sure the LNRS is grounded in local context, inclusive in its approach and ambitious in its vision for nature recovery. It may not be perfect, but it provides an informed basis for action now. See page 14 for some of the guiding principles that have helped shape the strategy, and which we hope will shape its delivery, too.

Using the interactive map

The interactive Shropshire and Telford & Wrekin LNRS Map allows you to zoom in to your local area and explore mapped actions there.

The actions indicated within the Opportunity Map, for any parcel of land, represent the best options for nature recovery, based on the evidence, should a landowner or land manager wish to take action for nature. The Opportunity Map recognises the areas where nature recovery action should be prioritised.

On land outside the Opportunity Map (shown as white areas), there are significant nature recovery opportunities – including the unmapped actions set out in this document (pages 76–146) – and actions delivering increased connectivity between habitats, which would be of considerable value.

Explore the map online >

What is a local nature recovery strategy?

Local nature recovery strategies aim to restore and enhance the areas surrounding remaining pockets of good-quality habitat. The goal is to create habitats that are larger, more numerous, better connected and more resilient and diverse.[1]

An LNRS isn't a protection for the pockets of good quality nature we have – such protections already exist in planning laws and designations (like SAC and SSSI). Rather, an LNRS establishes and maps priorities and opportunities for nature recovery by identifying where action will have the greatest impact. This will help to better focus and coordinate efforts and to guide resources and funding (such as developer contributions and green finance) to nature recovery activities in the places that will make the most difference. It is expected that future funding schemes will align with LNRS priorities.

Local nature recovery strategies take a spatial approach that looks at the whole ecological network to make sure recovery is coherent and landscape wide.

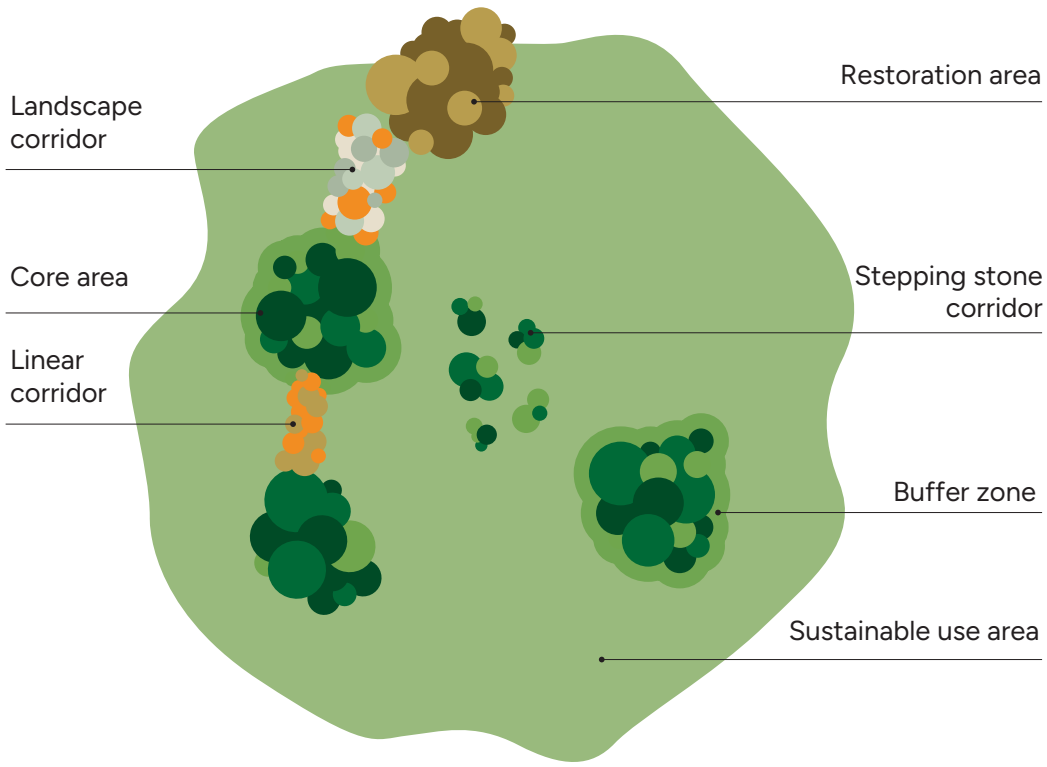
Severn River valley in morning fog

The UK Department for Environment, Food & Agricultural Affairs (Defra) has issued informal guidance setting out how it anticipates local nature recovery strategies will be used. This can be found in the Local Nature Recovery Strategies (LNRS) Delivery – Policy Update December 2024.

The LNRS is non-regulatory:

- It **does not** mandate land use change.
- It **does not** impose restrictions on development.
- It **does not** designate new protected areas.
- It **does not** exclude action outside of mapped priorities.

Figure 1 shows the different components of an ecological network, which informs the 'more, bigger, better, better connected' approach. Source: Adapted from Making Space for Nature: A review of England's wildlife sites and ecological network (2010).



More, bigger, better, better connected

The 'more, bigger, better, better connected' approach comes from recommendations made by the 2010 'Making Space for Nature' expert review. The idea is to expand, or 'buffer', core areas of good nature and to join these and other 'islands' of habitat together. We can connect habitat islands in different ways – by creating corridors that link them directly or 'stepping-stone' habitats that shorten the distances between them. This leads to habitats that are better able to support strong populations of species and more resilient to climate change and other pressures. See Figure 1.

Why is nature recovery important?

Nature has intrinsic worth that goes far beyond its usefulness to humans. But it also provides us with the things we need to survive – clean air, water and food – as well as a whole host of other benefits.

The direct and indirect benefits we get from nature are known as ecosystem services (see Figure 2). Ecosystems are the complex communities of living things (plants, animals and other organisms) and their interaction with the environment (climate, weather, landscapes). By maintaining and enhancing nature, ecosystems become more stable and resilient, helping to secure the services they provide.

Nature recovery delivers wide-ranging ecological, economic and health and wellbeing benefits, which interconnect and overlap. For example, providing green space in urban areas helps to lower temperatures in towns and cities, delivers cleaner air and other human health benefits, has a positive impact on people's mental health, and provides wildlife with an important stepping stone between habitats.

78%

of people are concerned about the current and/or future state of nature in the county

Ecological benefits include:

- Slowing and halting species decline.
- Reducing habitat fragmentation and loss.
- Improving habitat quality and reconnecting habitat islands.
- Facilitating species movement across landscapes.
- Delivering ecosystem services including natural flood management, pollination and urban cooling.
- Balancing natural systems over time.

Economic benefits include:

- Providing products (e.g. timber) and services (e.g. flood alleviation).
- Increasing financial value of houses near to natural or semi-natural habitats. Houses and flats within 100 metres of public green spaces are £2,500 more expensive on average.[2]
- Allowing access to nature which has proven health benefits and can directly reduce costs to the NHS.

Health and wellbeing benefits include:

- Providing communities with access to high-quality green space results in improved mental and physical health.
- Creating views out over natural vegetation from both residential and commercial development has well-evidenced health benefits. Hospital patients with tree views recovered 10% faster than those looking at walls.[3]
- People connected with nature usually feel happier in life and report feeling that their lives are worthwhile.[4]

Many people find solace, inspiration and a sense of connection to something greater when they engage with the natural world

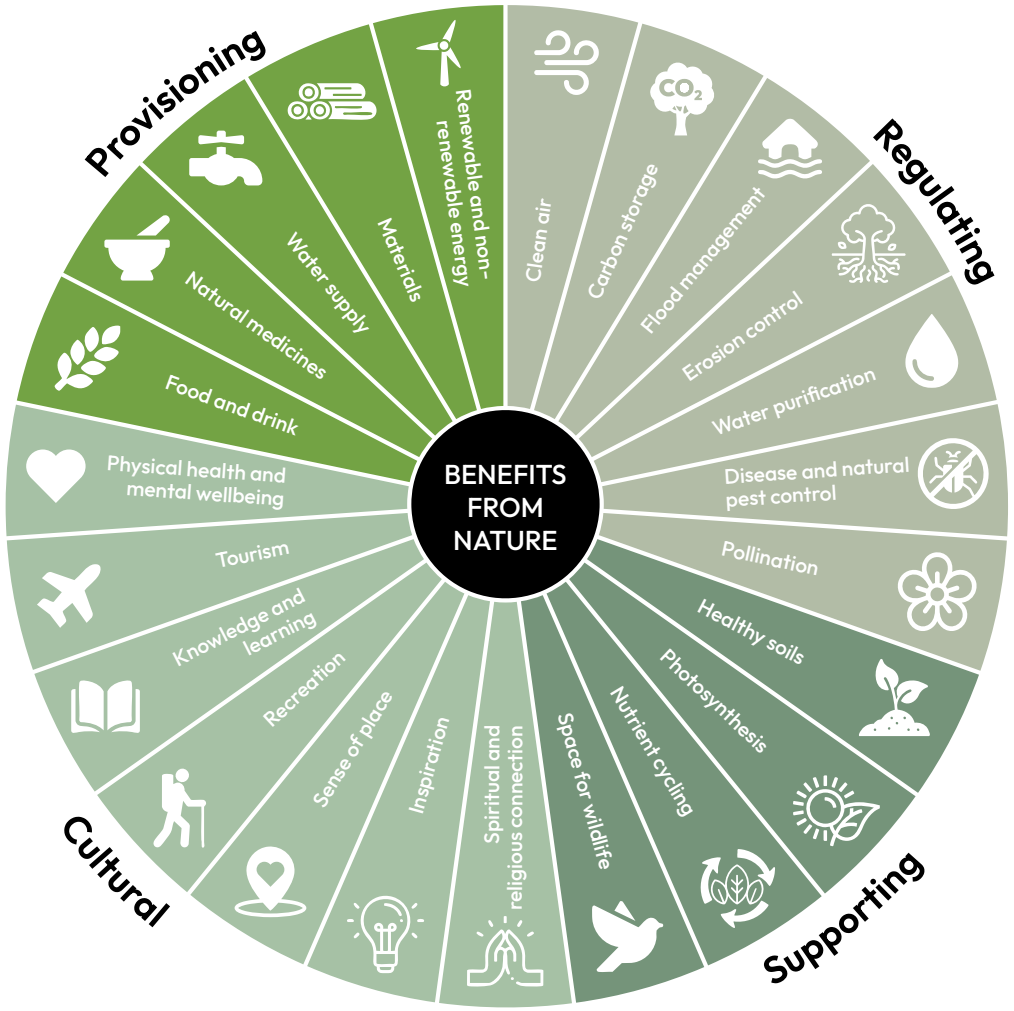


Figure 2 – the 'Ecosystem Land Wheel' – shows the many types of different benefits we get from nature. These benefits are collectively known as ecosystem services. Source: NatureScot.

Who is the LNRS for?

We need to take urgent action to help nature recover, and everyone can do something.

The LNRS doesn't tell you what to do and cannot alone change land management. Instead, it offers options and guidance to make sure that nature recovery efforts are as effective as they can be. By using evidence to identify the best options for nature recovery in particular locations, the LNRS aims to be a tool for people, organisations and communities taking action for nature.

Local people and communities are at the heart of successful nature recovery. They know the land best, they are long-term stewards, and they care.

The LNRS will not require landowners or managers to make any land use changes – this will remain their choice. The LNRS does not place new restrictions on developing land; it will, however, be one source of evidence used to inform the preparation of plans that will determine where development should occur.

Farmers, landowners and land managers are especially important stakeholders in the LNRS for Shropshire, where 84% of the total land area is farmed land.[5] Over the past century, farmers have had to adapt to shifting government policies, as well as changing climates and seasonal patterns. They have a track record of innovation and are already working with nature in mind. This strategy aims to support and build on these efforts, and the efforts of other key delivery partners. See pages 66–72 for more on this.

The LNRS also has direct implications for:

- **Public bodies including local authorities,** town and parish councils, government departments and agencies and organisations managing public infrastructure, who have a legal duty to not only protect but also to enhance nature and must "have regard to any relevant local nature recovery strategy."[6]
- **Local planning authorities,** who are required to "have regard to any relevant local nature recovery strategy"[6] when making decisions. While current local planning policy for Shropshire and Telford & Wrekin do not refer directly to LNRS, future iterations will be required to do so. It is expected that this would include particular consideration for the areas identified as having the highest potential for nature recovery.
- **Developers,** who must comply with existing planning policy that requires them to build with nature in mind and have a legal duty to deliver biodiversity net gain when developing land (see page 64). The planning system is increasingly focused on ensuring that development contributes actively to nature recovery, and not just on offsetting harm. Key proposals can be found in the UK Government's 2025 Planning Reform Working Papers.

How will the LNRS help us?

The Local Nature Recovery Strategy (LNRS) for Shropshire and Telford & Wrekin will play a vital role in supporting nature recovery and delivering wider environmental benefits. Specifically, it will:

- Set clear priorities for nature recovery across Shropshire and Telford & Wrekin, identifying where action will have the greatest impact.
- Highlight opportunities for nature-based solutions that address local challenges and support communities most in need.
- Provide guidance for all stakeholders – including local authorities, community groups, businesses and land managers – on how they can contribute to nature recovery.
- Support farmers, landowners and partnerships in targeting funding and investment towards projects that deliver the biggest benefits for nature and the wider environment.
- Inform planning and development, shaping local plans and policies to embed nature recovery into decision making.
- Encourage action from communities and businesses, helping them understand how they can make a positive difference for nature.
- Enable national agencies and delivery bodies to align their advice and projects with LNRS priorities, ensuring better coordination and impact.
- Provide a framework for investors and buyers of ecosystem services, helping them direct resources to where they will achieve the most value locally.

Looking ahead, the LNRS will also support collaboration and coordination across the area. Shropshire Council will convene partnerships, help secure funding and investment, and monitor progress to ensure that nature recovery ambitions are delivered effectively.

Flock of Lapwings

Using this strategy

The LNRS is a statutory document, as determined by the Environment Act 2021.

Shropshire Council is the Responsible Authority for developing the LNRS for Shopshire and Telford & Wrekin. Telford & Wrekin Council and Natural England act as Supporting Authorities.

As set out in Defra's 2023 guidance:

- "**Priorities**, in terms of habitats and species, for recovering or enhancing biodiversity"; and
- proposals as to the potential measures relating to those priorities" – referred to in this strategy as **Actions**.[7] The LNRS for Shropshire identifies 16 priorities and 51 actions (pages 76–146).
- **Species** of particular importance. The methodology for identifying these species followed a process of longlisting and shortlisting, as set out in the relevant guidance.[8] The LNRS for Shropshire identifies 29 individually named species and 9 species assemblages (pages 147–169).

The LNRS must also map:

- "areas of particular importance for biodiversity" – referred to in this strategy as the **Existing Nature Network** (pages 48–50)
- "areas that could become of particular importance" – referred to collectively in this strategy as the **Opportunity Network** (pages 51–52)

Some actions are mapped, meaning they correspond to specific locations within the Opportunity Network (and in Existing Nature Network areas where permitted). Other actions are less place-specific – for example enhancing soil health and nature on arable land or enabling access to nature-rich sites.

A summary of legislation, policy and government guidance relating to LNRS can be found in Appendix 1. See Appendix 9 for species shortlisting methodology.

Each action within the LNRS includes suggested activities. Different activities will contribute in different ways, shown by the following icons:


Supports change, rather than delivering it directly


Delivers better quality habitat


Delivers more habitat


Delivers better connected habitats


Delivers ecosystem services – the benefits we get from nature


Contributes to water management


Targets species recovery directly


Provides health and wellbeing or access-to-nature benefits

Throughout the strategy are links to **case studies**, which showcase ongoing action for nature taking place around the county.
By sharing what's worked well or less well, these case studies aim to help and inspire others.

You can find further information about the LNRS in the strategy appendices:

Appendix 1:
Legislation and policy

Appendix 2:
Current and ongoing action for nature recovery

Appendix 3:
Habitat condition data

Appendix 4:
Land cover data

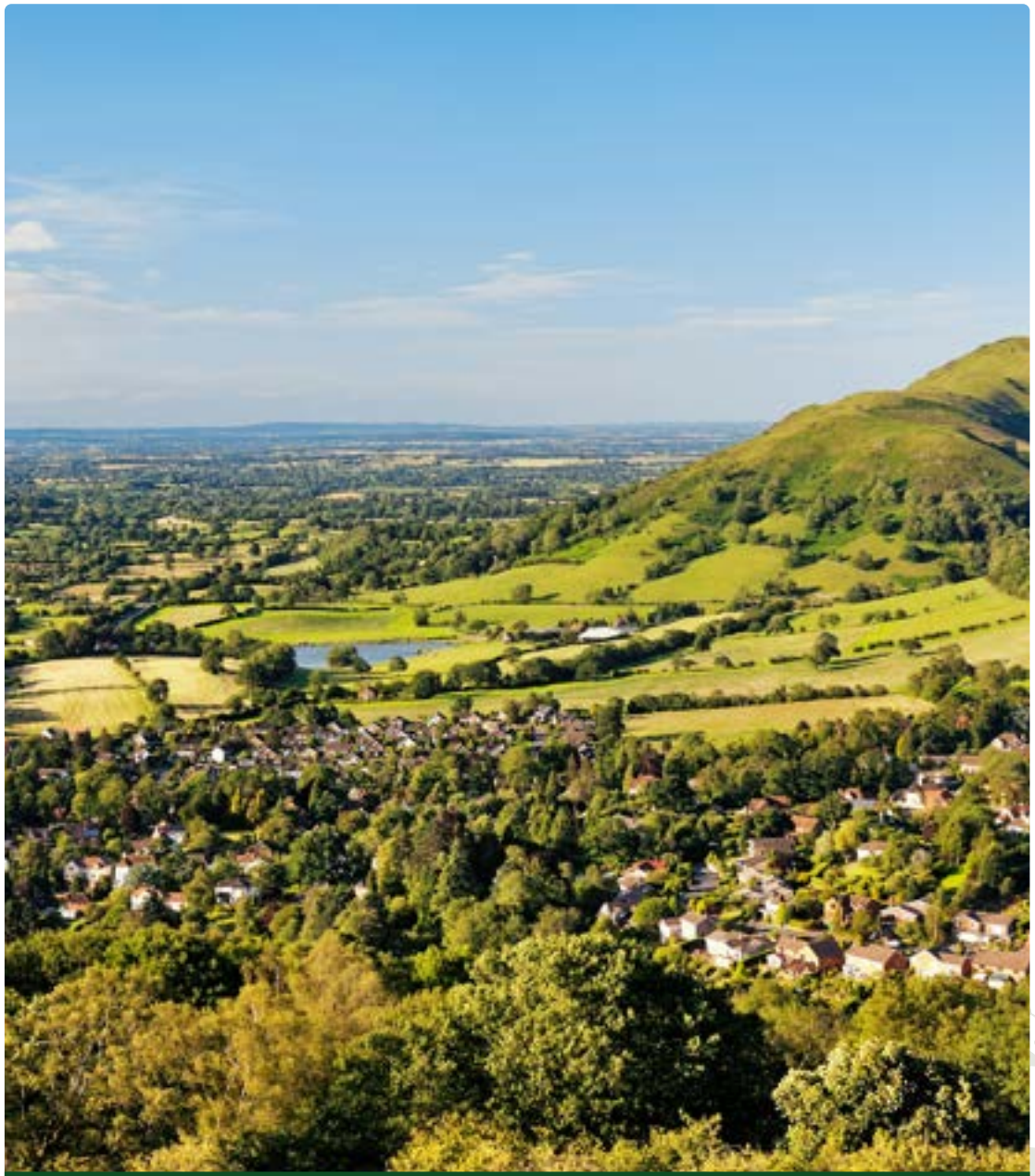
Appendix 5:
Existing Nature Network

Appendix 6:
Mapping methodology

Appendix 7:
Summary of key pressures

Appendix 8:
Species longlist

Appendix 9:
Species shortlisting methodology



North from Ragleth Hill over Church Stretton

Our guiding principles

Action is broad, inclusive and long lasting. Nature recovery takes time, sustained action and long-term funding. The vision is for nature recovery action which makes a noticeable positive difference for all local communities for generations to come.

Build with nature in mind. All development incorporates nature recovery elements including water efficiency measures, well planned and biodiverse green spaces, connecting habitat features, species features, minimal lighting in darker areas and sustainable urban drainage.

Guidance, education and knowledge sharing strengthen the action we take together. Taking strategic, coordinated action is complex and can only succeed on the back of strong stakeholder networks, local knowledge sharing, education and skilled facilitation. These supporting actions are included under each theme, and their importance is widely recognised.

Habitats are diverse. Nature exists in mosaics and action seeks to mimic those natural systems. Habitat areas are diverse in terms of species, structure, age and habitat type. Maintaining and enhancing habitat diversity uses a range of available tools including extensive grazing and is sustainable in the long term.

Land managers are empowered to choose solutions which work for them. Nature recovery options that work for land managers and their businesses are clearly set out, can be easily integrated into business plans, and are clearly linked to available funding.

Multiple benefits are delivered. Through nature recovery action, landscapes serve more than one use, delivering multiple benefits – for example food and nature, timber and flood reduction, public green space and water attenuation, nature and urban cooling. Nature is more accessible and historic features are protected. Action for nature benefits all.

Nature-based solutions lead the way. Nature recovery relies primarily on nature-based solutions. Approaches including slow the flow, natural flood management, naturalisation of watercourses and blocking of artificial drainage features to re-wet land are taken first. Engineered solutions are utilised sparingly and appropriately.

Nature recovery works for everyone. The ecosystems on which we all rely for essential services – including clean air, safe water and food – are more resilient and serving wider health and wellbeing outcomes. Access to high-quality green space, views over trees and walking routes through nature improves our physical and mental health.

Production and nature work together. Nature recovery sits comfortably with food and timber production. Actions focus on integrating connective features, buffering hedgerows and watercourses, using nature-based solutions and taking advantage of less productive land to allow wildlife to move through productive landscapes.

Right habitat in the right place. Habitat creation occurs in appropriate locations, guided by the LNRS map but ultimately determined by people who know the land well. Habitat creation is carefully planned to avoid losing one valuable habitat to create another.

Special species thrive. Shropshire supports a range of iconic species, many of which are rare or threatened. Habitat themes include clear actions to conserve species. Individual species and species assemblages are recognised in the strategy to ensure that appropriate species recovery actions are taken.

Water is key. Shropshire suffers from significant and regular flooding, summer droughts and declining water quality. Slowing the flow, buffering watercourses and reducing sediment and nutrient run-off are vital actions and form a cornerstone of nature recovery in the county.

Summary of LNRS priorities and actions, by theme

We've identified 16 priorities and 51 actions for habitats in Shropshire and Telford & Wrekin, alongside actions for important species and species assemblages. Priorities are broad and relate to the creation, management or restoration of habitat and increasing peoples' access to and connection with nature. Actions are specific and are broken down into activities.

Some actions are mapped to specific locations while other actions are applicable more broadly and would deliver benefits wherever implemented and are therefore not mapped. The right-hand column in the following tables indicates whether the action is mapped or not. Actions on the LNRS map are those that are the most appropriate according to the information we have from both data and landowner feedback. Neither mapped nor unmapped actions are mandatory, nor is action restricted to the marked LNRS opportunity areas; landowners or managers can choose to undertake identified actions if and as they wish.

Farmed land

#	Priority	Action	Code	Map
1	Enhance nature alongside food production	Establish farmer groups	A1.1	
		Enhance soil health and nature on arable land	A1.2	
		Enhance soil health and nature on pastures	A1.3	
		Create, restore and manage nature-rich farmland mosaics	A1.4	

Hedgrows

#	Priority	Action	Code	Map
2	Restore, enhance, expand and appropriately manage the hedgerow network	Restore and manage the existing hedgerow network	A2.1	
		Create more connectivity in the landscape by establishing new hedgerows	A2.2	

Water and wetlands

#	Priority	Action	Code	Map
3	Re-naturalise rivers and stabilise flows	Improve water quality	A3.1	
		Reduce both flood risk and low flows	A3.2	
		Remove physical barriers	A3.3	
		Restore streams and rivers to a more natural state	A3.4	
		Create, enhance and appropriately manage riparian buffers	A3.5	
4	Restore peatland and wetland mosaics	Restore existing areas of high-quality peat, fen and bog habitat	A4.1	
		Restore, connect and expand areas of wetland mosaic habitat	A4.2	
		Restore ability of catchment headwaters to act as a sponge	A4.3	
		Target regularly flooded land for wetland creation and grazing marsh	A4.4	
5	Create, restore and manage ponds, glacial pools and meres	Enhance existing ponds, pools and meres	A5.1	
		Create new ponds	A5.2	
6	Enhance canals for wildlife and people	Enhance canals for wildlife and people	A6.1	

Trees, woodlands and woody habitats

#	Priority	Action	Code	Map
7	Safeguard and enhance veteran trees	Identify, appropriately manage and safeguard the future of veteran trees	A7.1	
		Secure continuity of veteran trees in the landscape	A7.2	
8	Restore and expand nature-rich woodlands	Buffer and connect ancient semi-natural woodland	A8.1	
		Improve condition of deciduous, mixed and wet woodlands	A8.2	
		Restore plantation on ancient woodland sites	A8.3	
		Create new woodlands	A8.4	
9	Restore and expand nature-rich woody habitats	Restore and expand wood pasture	A9.1	
		Restore parkland	A9.2	
		Plant and manage mosaics of scrub	A9.3	
		Establish new, and safeguard traditional, orchards	A9.4	
		Plant more trees in the farmed landscape	A9.5	

Grasslands

#	Priority	Action	Code	Map
10	Restore, connect and expand species-rich grasslands across the county	Set up infrastructure to support grassland restoration and creation	A10.1	
		Safeguard and enhance traditional hay meadows and other existing species-rich grasslands	A10.2	
		Create and restore species-rich grassland	A10.3	
		Restore grassland on roadside verges and alongside paths and tracks	A10.4	

Open habitats

#	Priority	Action	Code	Map
11	Restore, connect and expand heathland sites	Establish effective management regimes for heathland sites	A11.1	
		Restore heathland where geology allows to increase habitat connectivity	A11.2	
12	Increase the area of ffridd habitat	Enhance areas of ffridd habitat	A12.1	
		Create new areas of ffridd habitat to benefit a wide range of species	A12.2	
13	Enhance the wildlife value of open mosaic habitats	Create, enhance and appropriately manage close mosaics of open habitats on former coal, mining and post-industrial sites	A13.1	
		Enhance open mosaic habitats on brownfield sites	A13.2	
		Retain the wildlife value of scree	A13.3	

Built environment and amenity spaces

#	Priority	Action	Code	Map
14	Bring nature into towns, villages and amenity spaces	Integrate nature recovery within new developments	A14.1	
		Create wildlife-friendly gardens at homes and businesses	A14.2	
		Enhance wildlife value of multifunctional green space	A14.3	
		Effective water management in the built environment	A14.4	
		Reduce the adverse impact of light pollution on wildlife	A14.5	
		Increase canopy cover in the built environment	A14.6	

Invasive non-native species

#	Priority	Action	Code	Map
15	Reduce invasive non-native species across whole catchments	Prevent the spread of invasive non-native species	A15.1	
		Implement a targeted programme to reduce invasive non-native species	A15.2	

Public access, health and wellbeing

#	Priority	Action	Code	Map
16	Enable more access to and connection with nature for health and wellbeing	Enable access to nature-rich sites	A16.1	
		Create a more comprehensive network to enable active travel	A16.2	
		Enhance peoples' connection with nature	A16.3	

The state of nature

Nature in Shropshire – as across the rest of the UK and around the world – is under pressure.

The strategy area has seen declines in the abundance and distribution of key animal species. For example, analysis of local records by Shropshire Ornithological Society confirms drastic, county-wide declines in Kestrel, Snipe, Starling and the Tawny Owl, among others.[9] The 2023 Breeding Bird Survey found significant regional declines for nine species on the Shropshire Red List for birds.[10,11]

These declines largely reflect national and international trends. The State of Nature 2023 report, which looked at data for all species across the UK, reports significant declines in species abundance, declines in species range, and ongoing extinctions.[12] According to the report, the percentage of species in long-term decline in the UK is about 40%, and almost one in six species are now threatened with extinction from Great Britain.

A major cause in species decline is habitat loss and degradation, but climate change and other pressures also influence shifts in local biodiversity. Changing weather

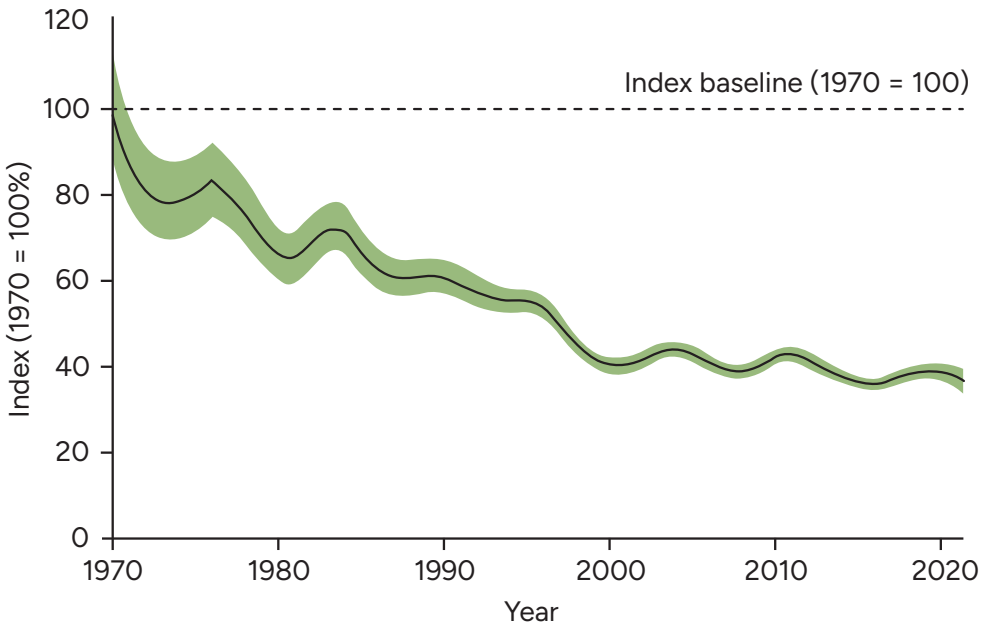


Figure 3 shows the downward trend in the relative abundance of priority species in the UK (UK Biodiversity Indicator C4a) between 1970 and 2021. Source: Defra (2023) UK Biodiversity Indicators, Joint Nature Conservation Committee.

patterns and temperatures may have a negative impact on certain species while creating favourable conditions for others – including non-native species which may be invasive. Additional species recorded in the strategy area in the last ten years, such as 18 additional species of butterfly and moth,[13] may indicate reactions to wider land use and climate changes patterns across Shropshire in recent decades.

Data on Shropshire's birds

Shropshire Ornithological Society, and the British Trust for Ornithology's Breeding Bird Survey, gathers extensive data on the presence, abundance and breeding status of birds in the county. Maps showing breeding distribution and relative abundance of species named in the LNRS, or included in the Farmland Bird Index published by Defra, can be found on the SOS website. This information will be updated annually.

Stewards of Shropshire's local species

Local recording groups and volunteers are key to maintaining evidence on the distribution of key species across Shropshire. Despite possible local extinctions during the previous half-century, records continue to evidence the presence of rare species, such as Curlew, Water Vole and Pine Marten, providing an impetus for habitat restoration and nature recovery across the strategy area. Local conservation groups, farmers and environmental professionals continue efforts to conserve key species by maintaining and expanding nature-rich sites.

Pine Marten

Nature under pressure

Pressures on the natural environment are growing and often interlinked.

Pesticides are widely used to control pests and weeds, but their impact extends far beyond target species; they lead to the decline of invertebrates, which in turn means there is less food for insect-eating birds and mammals, and they disrupt pollination, which is essential for both wild plant reproduction and food crop yields. This is exacerbated by climate change, as warmer temperatures mean land is more often drought-stressed and less resilient to chemical exposure. The loss of pollinators and soil organisms reduces the system's ability to recover, compounding the problem.

Habitat loss, degradation and fragmentation

A major threat to species and a significant cause of decline is the loss and degradation of natural habitat – particularly due to land use changes over time (e.g. urbanisation and the shift to increasingly intensive agricultural systems). Between 1990 and 2015, there were several urban extensions to both Shrewsbury and Telford, and it is likely that trends in urbanisation and development have continued and may even have intensified.

Large habitat areas are also increasingly fragmented – broken up into smaller pockets. This reduces connectivity and species movement, increases local extinctions and isolates populations. Some species have a minimum patch size and habitat quality in which they can maintain a viable population. Fragmentation increases the challenges associated with habitat restoration and species recovery.

Climate change

Like all parts of the world, Shropshire is increasingly experiencing the effects of climate change. The rise in global temperature is predicted to continue, bringing with it increasingly frequent and more extreme weather events and disrupting the seasonal climate patterns on which humans and ecosystems have relied for millennia.

Warmer temperatures change species' geographical range and alter the timing of natural events – such as making hibernators like Dormice wake earlier, depleting their energy reserves before food is available, and causing shrubs to bud early – which exposes them to late frosts and disrupts nectar availability for pollinators.

Changes in rainfall are resulting in warmer, wetter winters and hotter, drier summers, and increasing the risk and severity of flooding and drought. The physical impacts of these changes have wide ranging indirect effects, including the divergence of egg laying and migration cycles, decreased resilience to pests and pathogens, and disruption to carbon sequestration by trees, plants, wetlands and soils.

Flood, drought, water quality and soil erosion

Climate change is, undoubtedly, a significant driver of both flood and drought events in the strategy area, and both these conditions result in potential water quality issues. Significant rainfall events impact water quality and increase run off of nutrients, pesticides and sediments and cause increased incidence of raw sewage entering rivers as combined sewer overflows activate more frequently. Periods of low flow are already increasing in frequency. Licenced water extractions and decreased rainfall combine to cause a significant threat to both aquatic habitats and species. Beyond river drying, with decreased water entering watercourses, ongoing inputs such as outflows from small scale packaged treatment plants serving nearby residences, highways drainage and permitted outflows from waste-water treatment works can have a larger negative impact upon water quality during low-flow periods than would be expected under normal conditions.

Carbon release and reduced sequestration

Maintaining land and associated ecosystems as a net sink of carbon and other greenhouse gases is vital to reducing global emissions. But there is evidence that sequestration rates are falling and that some habitats are beginning or continuing to release carbon. Shocks to the climate system, such as prolonged heat spells and associated drought, can negatively impact natural vegetation cycles and reduce sequestration by plants and soils. Raising the water table within peatlands can provide significant gains in sequestration, but this may become increasingly difficult if prolonged warm spells and drought conditions intensify.

Flooding across Shropshire

Air quality

Aerial emissions of ammonia and the resulting deposition of nutrient nitrogen and acid onto land, along with nitrogen oxides and particulate matter from vehicle exhausts, industrial processes and intensive farming facilities can significantly alter vegetation communities and impact both habitat type and condition. This is particularly the case for nutrient-sensitive habitats and species. Land in the UK – including on designated sites – is exposed to high levels of ammonia and nitrogen deposition, and this is true across most of Shropshire. This favours nutrient-tolerant plant species and, over time, results in the loss of more sensitive species like lichens and bryophytes and leads to less biodiverse ecosystems, which are more susceptible to stresses such as heat, drought and disease.

Afforestation

Woodland creation is a priority action for achieving carbon net-zero targets – but the 'right tree, right place' principle should be applied. Woodland planting – particularly the drive to restore broadleaf woodland – must be balanced with ever-increasing demands on land for food production, timber production and housing. Mixed woodlands, which integrate timber production from conifer on shorter rotations with the biodiversity value provided by native species, could be a significant tool.

Invasive non-native species

Invasive species can displace or out-compete native species for food and resources. Invasive species are one of the biggest drivers of biodiversity loss in the UK and cost the British economy nearly £1.9bn per year.[14] In total there are 3248 non-native species on the UK species register, 303 of which have a negative ecological or human impact.[15] While the list of invasive non-native aquatic plants is long, many have the same effects: they spread rapidly, out-compete native species and block sunlight from our ponds and rivers.

In Shropshire, negative impacts of deer and Grey Squirrel on woodland health are widespread, and American Mink – a particular predator of the Water Vole – continue to proliferate across the strategy area.

Pathogens

Climate change and global trade and travel are promoting the spread of pathogens. Increasingly large numbers of new woodland pathogens have been detected in the UK in recent years, including ash dieback, acute oak decline, phytophthora and red band needle blight. Avian flu affects poultry and wild birds, and the most recent Highly Pathogenic Avian Influenza (HPAI) is the most serious the UK has ever recorded. Latest strains have severely impacted UK wild bird populations, especially seabirds, since summer 2021.

Aerial photograph of an ash tree killed by ash dieback

Light pollution

There is no part of the strategy area that does not receive significant levels of light pollution. Even the relatively dark and rural areas of the county are relatively well-lit at night compared to neighbouring darker-skied areas, particularly into Wales. Light pollution has significant impacts upon nocturnal wildlife. Artificial light can act as a barrier to some species of bats moving through lit landscapes and can change the behaviour of night flying invertebrates on which they feed. Nocturnal bird species and their small mammal prey are also adversely impacted. Nocturnal mammals in urban environments may adapt, to some extent, but are none the less affected.

Development

Both Shropshire and Telford & Wrekin Councils have a duty to provide new homes and associated infrastructure. In December 2024, under the updated National Planning Policy Framework, the assessment of local housing need in Shropshire increased by 924 dwellings per year – the largest numerical increase across the West Midlands and an 86% increase on the county's previous assessment.[16] Requirements for new areas of employment land and infrastructure and changes in agricultural land uses – including diversification and intensive livestock rearing – also drive development.

View of Church Stretton at night

Soil pollution

Soil pollution occurs when harmful substances (such as pesticides, herbicides, veterinary medicines, heavy metals and industrial chemicals) accumulate in soil beyond its natural capacity to neutralise them. This contamination disrupts the physical, chemical and biological properties of soil, threatening biodiversity, food security and ecosystem services.

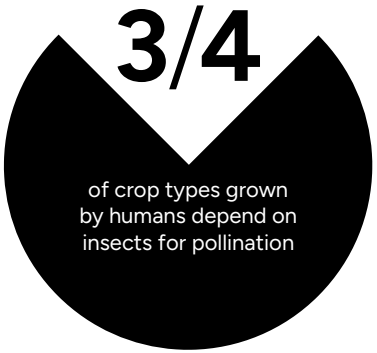
You can find more detail on key pressures in the areas covered by the strategy in Appendix 7.

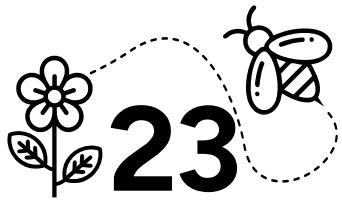
State of nature in numbers

97%

of lowland hay meadows in England lost since the 1930s*

Half of ancient woodland in England cut down in three decades in the middle of the 20th century

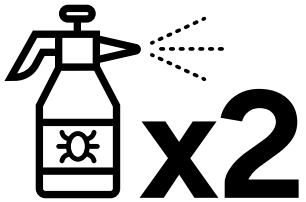




23

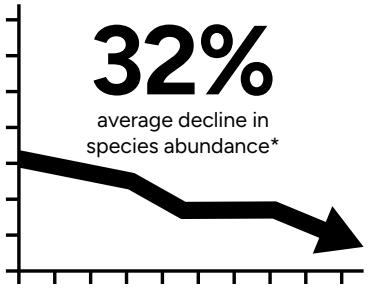
bee and flower-visiting wasp species have become extinct since 1850

In England since 1970:



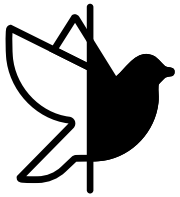
x2

Pesticide applications have doubled over the past 25 years



32%

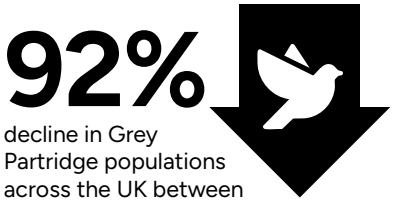
average decline in species abundance*



We have lost half of all farmland birds*

23%

decline in vascular plant distributions*



92%

decline in Grey Partridge populations across the UK between 1967 and 2016

13%

of species in England are threatened with extinction from Great Britain

decline in habitat specialist butterflies**

decline in "wider UK" butterflies**

*In England since 1970. **Across the UK between 1976 and 2017. Sources: Joint Nature Conservation Committee (2008) UK Biodiversity Action Plan: Priority Habitat Descriptions – Lowland Meadows; Hayley Kinsey (2023) A brief history of British Woodland; Defra (2016) DE5 Trends in populations of farmland birds; State of Nature 2023; Dave Goulson (2019) Insect declines and why they matter.

Shropshire's landscape

Shropshire, including Telford & Wrekin, is a varied and diverse, largely rural county in the West Midlands, with historic market towns and key settlements scattered throughout.

The New Town of Telford sits in the east of the county, and the county town of Shrewsbury, roughly central. In the north-west are the Oswestry Hills, a distinctive landscape of calcareous grasslands. To the south lies the Shropshire Hills National Landscape, with the iconic Wrekin at its northern boundary. Land to the north of the county is lower and flatter, with a large plain punctuated by glacial wetland features. Remnant heathlands, wet moorland and sandstone hills are also present in the north and east.

Ironbridge

The county has a rich history. Historic features, archaeological deposits, Scheduled Monuments and early industrial remains are found across the landscape. These features tell us so much about the past and have informed current land uses.

Landscape, land use and habitats vary depending on elevation, geology and underlying soil type. This section provides a detailed description of the area covered by the LNRS, including characterisations of different landscape areas within Shropshire, which inform the strategy's priorities and actions.

Geology and soils

Shropshire is one of the most geologically diverse areas in the England, with exceptional variety in rock age and type. Occupying a frontier position, at former tectonic plate boundaries, its geological history spans almost 700 million years. And, during the past 2.5 million years of geological time, ice, water and wind have further shaped the county's hills, valleys and plains.

Visible examples of Shropshire's rich geological tapestry include volcanic hills (the Wrekin), rugged Pre-Cambrian sediments (the Long Mynd), carboniferous deposits (Coalbrookdale coalfield) and 'kettle-hole' lakes (Shropshire meres).

Coalfields around the New Town of Telford have now largely been exploited and restored, though evidence of former industrial activity – such as pit mounds, spoil heaps and limekilns – remains within the landscape. Quarrying for superficial sands, gravels and building stone is ongoing, and there are also a large number of former quarry sites across Shropshire. Many of these former quarry sites have been restored for their biodiversity – and in some cases, their associated heritage value, such as the World Heritage Site of Ironbridge Gorge.

Shropshire's diverse geology, weather, climate and early human activity have formed a range of different soil types, resulting in the development of ecological niches that support important and diverse habitats. In turn, these habitats govern the longer-term development of agriculture and landscape patterns across the county.

View of The Wrekin from the Lawley Ridge

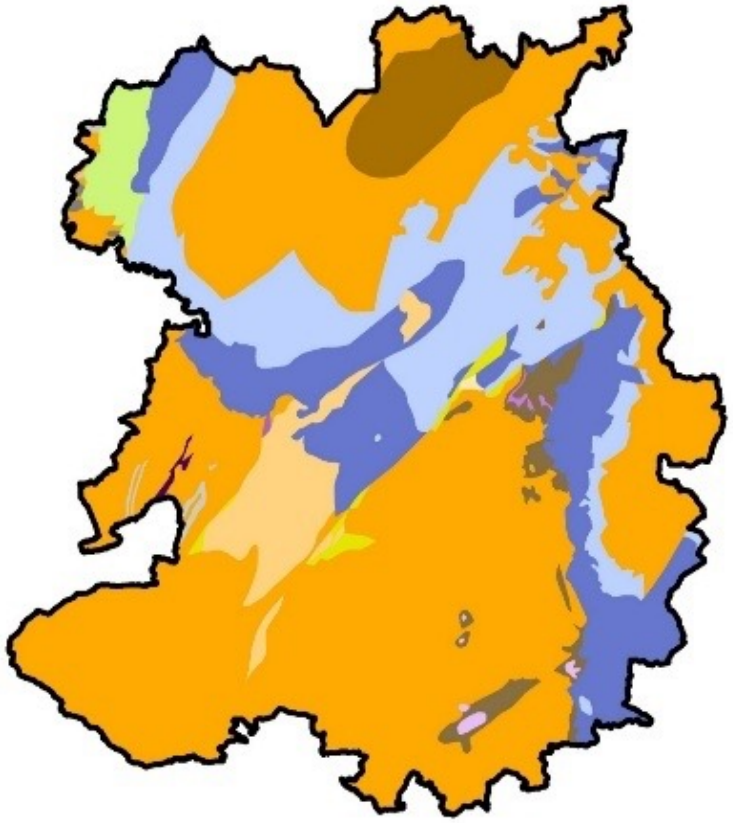


Figure 4 shows the composition of bedrock geology ('lithology') in Shropshire.

For example, mixed and arable farming in Shropshire is largely restricted to the lowland, where there are areas of 'Grade 2' soil (using the Agricultural Land Classification – see box), with livestock farming in the uplands and more intensive rearing (e.g. of dairy cattle and poultry) in lower lying upland areas. Forestry and timber production often uses land such as gentle slopes and edges.

The Agricultural Land Classification grades land from 1 to 5, with Grade 1 being 'Excellent' for farming purposes and Grade 5 being 'Very Poor'. Grade 3 is further divided into 3a (good) and 3b (moderate). The 'Best and Most Versatile' agricultural land includes grades 1, 2 and 3a. Food security needs must be considered for land use interventions on these grades of land.

Archaeological and historic environment

Well-designed nature recovery action works with historic features to offer enhanced public benefits, protect and enhance heritage assets and create resilient change.

Human activity has influenced the landscape we see today – and therefore the on-site conditions for habitat restoration, creation and management. By understanding historical land uses, we can better ensure the suitability of nature recovery actions while protecting and enhancing historic and cultural assets for generations to come.

The historic environment in Shropshire and Telford & Wrekin is rich with heritage assets including listed buildings, Scheduled Monuments, Registered Historic Parks and Gardens, a Registered Historic Battlefield and a UNESCO World Heritage Site as well as large numbers of Conservation Areas and non-statutory undesignated heritage assets recorded on the Historic Environment Record.

Many historic landscapes are recognised habitats in their own right. Historic features support a range of species including: bat roosts in buildings, barns and former mine sites; bird nesting in buildings and on former industrial towers; and reptiles, amphibians and invertebrates thriving on former industrial pit mounds and in disused quarries.

Historic routes, such as Offa's Dyke Path (National Trail), offer habitat connectivity and continuity through the landscape, connect users with history and nature, and are part of Shropshire's strong cultural identity.

Protecting and enhancing historic and cultural features in nature recovery

Habitat creation and restoration projects in Shropshire should consult the Historic Environment Record to identify any known archaeological sites. Projects that involve tree planting or removal, access for machinery, ground investigation, ground disturbance or other physical development should always seek specialist advice to avoiding damaging historic features.

Biodiversity projects should also follow the four core principles set out in Natural England's guidance for nature recovery and the historic environment:

1. Consider the historic environment from the outset.
2. Take an integrated approach to deliver multiple benefits.
3. Follow legal requirements, policy and guidance.
4. Avoid, minimise and mitigate harm.[17]

Landscape areas

To describe Shropshire's wide and varied environment as accurately and briefly as possible, the LNRS characterises landscape areas in the following ways:

- Coalfields
- Hills
- Lowland meres, mosses and moors
- Lowlands
- River meadows and wooded river gorge
- Sandstone hills and heaths
- Urban and settlements
- Main rivers

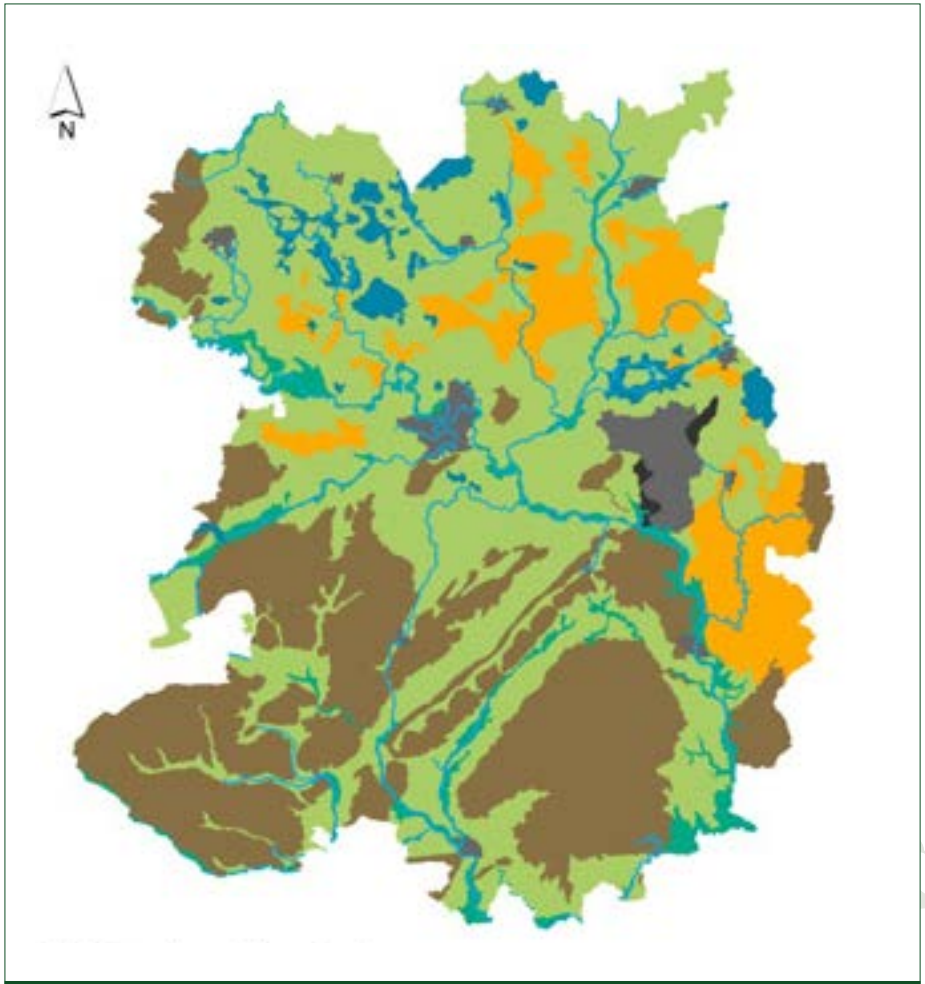


Figure 5 is a map of the LNRS landscape areas in Shropshire, along with main rivers and watercourses.

River meadows and wooded river gorge

Land next to rivers and areas close to freshwater bodies are frequently subject to flooding. This regular inundation contributes to the development of highly fertile soils, which are often used for arable farming due to their productivity. However, this has led to the reduction of priority habitats within floodplains, making such habitats increasingly rare and fragmented. Where arable land floods, run-off (both of sediments and nutrients) can pollute watercourses during and after rainfall.

Woodland situated alongside rivers, streams or other watercourses – known as riparian woodland – lies amongst arable fields. Intensification has often reduced riparian woodland to a single row of trees along the bankside, but in some places – like the Wyre Forest – more extensive tracts remain. Riparian trees provide shade, regulate water temperature, stabilise riverbanks, provide food for river species and create a buffer to diffuse pollution. Regeneration of these wooded river areas can provide vital ecosystem services, enhance the extensive river network and improve interaction between freshwater and land-based habitats. *Phytophthora alni* is an ongoing threat to riverside Alder trees in Shropshire, where the species makes up a significant percentage of riparian tree cover.

Once ubiquitous, traditional riverside meadows provided important sources of hay to feed livestock in winter, with mowing in summer and subsequent grazing of regrowth providing a diverse flower rich sward. Riverside meadows can support a variety of invertebrates and bird life and, with suitable incentives and management programmes, can be restored effectively while being managed for agriculture.

Integrating natural solutions with agricultural uses allows soils to better absorb flood waters, improves water retention, and enables the development of wetland mosaics, which provide a refuge for important species. Effective restoration of meadows, riparian woodlands and other natural riverside habitats can contribute to landscape resilience and enable agriculture to continue along the river network for decades to come.

Lake in the Wyre Forest

Hills and uplands

The hills and uplands landscape area covers almost a third of Shropshire, mainly in the south of the county with significant overlap with the Shropshire Hills National Landscape. This area supports diverse upland regions, which contain many important habitats, geological features and key wildlife populations.

The Long Mynd & Stiperstones is a series of high hills and ridges, rising to 516 metres on the broad plateau of the Long Mynd and 536 metres on the quartzite ridge of the Stiperstones. The area is ecologically important, having the greatest concentration of upland priority habitat in Shropshire, characterised by extensive tracts of heathland, grass moorland and upland flushes. The Clee Hills of Brown Clee and Titterstone Clee are the two highest points in Shropshire. Their tops are a mosaic of fragmented heath, upland heathland, grass moorland, meadows, wet flushes, former quarries and deciduous woodlands. Breeding birds, including Wheatear, are found here.

Many upland regions are associated with areas of often ancient and biodiverse broadleaved woodland, including the Stretton hills, Wrekin Forest, Wenlock Edge and the Clun uplands. Coniferous plantations, and plantation on ancient woodland, disproportionately impact the uplands in the county. Heathland and other habitats – like moorland, wet flushes and pasture – often predominate on ridges and hill tops. The uplands are typically associated with low-quality land for farming, meaning that important pockets of habitat (including scrub and ffridd) have been somewhat protected from highly intensive agricultural practices. Important locally and nationally endangered terrestrial species, such as Pine Marten, Cuckoo and Curlew, find refuge in the good quality habitats within this landscape. Upland waterways, including the Clun, Unk and Redlake rivers, exhibit some degree of naturalness and support rare species including White-clawed Crayfish, Atlantic Salmon and Freshwater Pearl Mussel.

White-clawed Crayfish

Principal habitats provide important core areas from which nature could expand and recover. There is potential for interventions to reduce fragmentation between previously connected and contiguous tracts of upland habitat. Improvements in field drainage technology in the second half of the 20th century led to large-scale land conversion – from extensively managed habitats to highly modified pasture grassland. Enhancing natural features and processes on the tops of hills and ridgelines will therefore not only benefit wildlife but can also aid attenuation of surface water run-off, reducing peak waterflows and down valley flooding during heavy rainfall events. Conifer plantations in the landscape area, which are generally considered to be of low biodiversity value, compared to native deciduous woodland, could transition into more diverse habitats.

Common land is found across Shropshire, in patches of varying size, but the majority of large commons are associated with the hills and upland landscape area and include the commons of the Long Mynd, Stiperstones, Clee Liberty and Catherton. In total, there are 108 registered commons covering 4720 hectares in Shropshire. Commoners' rights associated with the uplands are generally dedicated to grazing. In the Clun Forest there are a number of turbary commons, where peat used to be cut, suggesting the extent of peatland was more extensive than it is now.

77%

Decline in Cuckoo populations across the UK between 1967 and 2016

Cuckoo

Lowland meres, mosses and moors

The meres and mosses are a geographically discrete series of nationally and internationally important sites with open water, peatland and reedbed. Peat – partially decomposed organic matter – plays a vital role in supporting biodiversity, enhancing water quality, managing water resources and storing carbon.

Across Shropshire and Telford & Wrekin, 34 sites are recognised by a Ramsar designation. These include nutrient-rich open water bodies (meres) with fringing habitats of reed swamp, fen, peatlands (mosses) and carr (early successional wet woodland) and damp pasture, which collectively support a range of nationally important plants and animals. Most are also separately recognised through Site of Special Scientific Interest (SSSI) and/or National Nature Reserve (NNR) designations.

Surrounded by low-lying, slightly sloping agricultural land, the meres have, over time, experienced siltation from the run-off of soil, agricultural nutrients, herbicides and pesticides. The mosses have historically been managed to varying extents. This has caused peatlands to dry out and water tables to fall, affecting vegetation communities and causes the release of stored or sequestered carbon.

Blake Mere towards George's Wood, near Ellesmere

The lowland moors, notably the Baggy Moor and the Weald Moors north of Telford, are peatlands that have been managed, and dewatered, over time. Baggy Moor was drained and enclosed following an Act of Parliament in 1777. The expense was considerable, but the result was 519 hectares of peat-rich, productive farmland. The Weald Moors landscape is characterised by rush-filled drainage dykes, wet pasture and slow-flowing rivers and streams known as 'strines'.

The man-made features, including many of the dykes, are part of the way the land was drained, but the land remained damp – mostly suitable only for sheep. On some holdings the drainage features have been, or are currently being, removed or blocked to re-wet the land.

Sandstone hills and heaths

The sandstone hills in the North Shropshire Plain are remnants of the Triassic period. Formed by a series of discrete ridges, these hills are prominent in contrast to the flat landscape both below and between them. The hills form steep-sided features with infertile soils that support broadleaved and mixed woodlands and areas of dry heathland and unimproved grassland.

Historically, the hills have provided strong defensive positions and have been exploited as hill forts through the Iron Age, Saxon Age and the Roman period.

Gentle slopes are used for arable crops. Some former heathlands have been planted with coniferous woodland, and the result over time has been the reduction and fragmentation of heathland habitats. Some sites – including land at Prees Heath Common Reserve – have been restored to heathland from plantation or agricultural uses, and there are further opportunities to restore, expand and connect heathland fragments. Prees Heath is the only remaining West Midlands site that supports Silver-studded Blue Butterfly. Other remnant heathlands provide similar refuges for specialist heathland species including Slow Worm, Grass Snake and Adder.

Silver-studded Blue butterfly resting on Bell Heather

Lowlands

The lowlands of the North Shropshire Plain provide fertile clay soils that support lush pastures for grazing dairy cattle and other livestock. Networks of hedgerows, ponds and agricultural field margins provide connectivity through the landscape. The floodplains of major rivers cross the plain, supporting a range of wetland and wet grassland habitats and providing a significant resource for flood water storage and biodiversity. Peatlands are also present, providing water storage capacity and potential for significant carbon sequestration.

In the Shropshire Hills, the lowlands comprise dales and valleys between upland expanses. The rivers – which run through a tranquil, small-scale lowland landscape of agricultural grasslands, arable fields and remnant traditional hay meadows – still support populations of Freshwater Pearl Mussel and White-clawed Crayfish. There is a strong link between lines of trees, including Alder, and rivers and streams.

In the east, the Mid-Severn Plateau is a national watershed between the north-easterly flowing River Trent and the south-westerly flowing River Severn. The plateau is predominantly rural and important regionally for food production. Arable fields are larger particularly in the central and eastern areas. The plateau provides important water storage capacity underpinned by a significant aquifer. Lowlands extend to, and around, large woodlands associated with the Wrekin, Wenlock Edge and the Wyre Forest. Historic parklands at Attingham, Dudmaston and other estates contribute to the open estate farmland landscape. The plateau has an undulating typography, with large, open arable fields punctuated by areas of lowland heathland, acid grassland and small wooded streamside dells, known as dingles.

Wildflower margin next to cereal crop

Former industrial landscapes, coalfields and quarries

Shropshire was central to the Industrial Revolution in the late 1700s, and extensive industrial and extraction activities were widespread here until the mid-20th century. This industrial heritage has left a rich legacy of industrial evidence – including mines, factories and works, spoil heaps and quarries – which continue to influence the local environment today.

Coalfields

Telford New Town was designated in the 1960s to regenerate the declining mining economy and associated settlements. Subsequent redevelopment has transformed the local area, but extensive remnants of coalfield activity remain on the fringes of the town, forming a landscape unique within the county.

Typical to this area are former pit mounds consisting of spoil from mining works. Many of these mounds, and the former working areas, have provided suitable material for natural and planned regeneration, and they have evolved into rich and varied environments featuring mosaics of woodland, scrub, grassland, marsh, pools and streams.

Local nature reserves including Lightmoor, Granville Country Park, Telford Town Park, and Dawley Hamlets are prime examples of this transformative process and continue to provide local hotspots of biodiversity amid ongoing urban expansion on the edge of the town. The mounds also provide valuable recreational opportunities for visitors and local people to engage with nature. Away from more recent urban developments the pit mounds are interspersed among small farms and wayside cottages, resulting in a landscape that's characteristic of an upstanding rolling plateau.

In the Minsterley area, old lead mines are a notable feature. While these can be a pollution source, they provide opportunities for some species (the spoil is a habitat for invertebrates and mineshafts offer a roost site for bat species).

Lightmoor Local Nature Reserve near Telford. Credit: Shropshire Wildlife Trust.

Quarries

Alongside coal, Shropshire has rich deposits of sands, gravels and rock, which have been exploited for building materials in both local and national developments. Quarrying activity transforms the local topography, usually creating deep depressions and artificially exposed rock faces that are difficult to develop into alternative productive land uses post-extraction. Numerous disused quarries remain, providing unique opportunities for nature to thrive.

Like the pit mounds, some of these areas have been left to naturally re-vegetate. Others have undergone deliberate intervention works to develop rich vestiges of plants and wildlife. Llanymynech Rocks, Pam's Pools and Dolgoch Quarry are examples of former quarry sites managed explicitly for nature. Former sites, including small former quarries along Wenlock Edge and non-operational areas of active quarries, provide potential sites for nature recovery.

Canals

Originally built to support industrial development and the movement of goods across the county, Shropshire's canals wind through the landscape, bringing the countryside into towns and villages. Longer stretches of canal provide important open water habitats and associated canal banks support a habitat mosaic of marginal freshwaters, adjacent hedgerows, grassland and scrub. Four canals in Shropshire are designated SSSIs: the unnavigable Newport Canal and the Montgomery Canal, both of which are excellent sites for aquatic plants, the Prees Branch Canal and the Llangollen Canal at Whixall Moss. The Montgomery Canal now provides a refuge for species once present in the meres.

75 km

of canals in Shropshire

Shropshire Union canal

Urban areas

The majority of Shropshire's population live in urban landscapes, and nature recovery in these areas is vital to improving resident wellbeing and access to ecosystem services.

Urban landscapes are highly developed clusters of buildings and artificial infrastructure that support human settlement and economic activity. Urban development in general has a negative effect on the environment, as rural and natural ecosystems are damaged or replaced by artificial surfaces, affecting the habitats that support local wildlife and ecosystem services. It's worth noting that development, when carried out with nature in mind and depending on the land being built on, can present opportunities to increase the overall benefit for nature.

Urban areas in Shropshire, however, are not nature deserts. Green and blue spaces such as private gardens, golf courses, roadside and railway verges, cemeteries and religious grounds, brownfield and protected sites, parks, playing fields, rivers and woods provide much needed refuges for nature and important opportunities for nature recovery. Outside of industrial estates and immediate town centres, urban development in Shropshire is generally low density, characterised by residential housing with gardens and other private outdoor space that form irregular networks of open space through built-up neighbourhoods.

Telford centre

Telford, the largest settlement in the strategy area with around 150,000 residents,[18] has significant areas of planned green and blue infrastructure including large zones of urban forest, created through tree planting on remnant coalfields. Local people have good access to parks and other types of accessible natural space, including large local nature reserves. Along with other designated nature sites, these reserves cover approximately 7% of the urban landscape – a uniquely high figure for built-up areas in Shropshire and four times the area recommended by Natural England. These local nature reserves comprise a variety of habitats, including broadleaf woodland, lowland heathland, wildflower meadow and wet woodland, and are right on peoples' doorsteps.

Shrewsbury, the next largest settlement with 76,000 residents, is more characteristic of other urban landscapes in Shropshire. The town served as a market centre in the pre-industrial era, and its green and grey infrastructure reflects patterns of development in the centuries since. Despite less formal planning of open space, Shrewsbury incorporates many areas of nature. The floodplains of the River Severn and the Bagley and Rea Brook tributaries, which cross through the town, constrict urban development, resulting in extensive blue-green corridors of riparian, park and agricultural habitats.

Shrewsbury

Cross-cutting features

Rivers, streams, lakes and ponds

Shropshire supports a wide variety of water body habitats, including more than 6300 km of rivers and streams, and around 740 hectares of lakes and ponds.

Rivers

Main rivers in the strategy area include the Severn, Dee, Ceiriog and Teme fed by numerous tributaries. Despite extensive modification (e.g. channel straightening, deepening) over centuries, around 4% remain in priority condition, exhibiting a high degree of naturalness. The River Clun is a Special Area of Conservation (SAC), and a Natural England Protected Site Strategy Pilot Area, and supports critically endangered species including Freshwater Pearl Mussel and European Eel. Other parts of the network support the endangered White-clawed Crayfish. The Eurasian Otter is also recovering from the brink of local extinction, showing that appropriate protection and management can allow wildlife to flourish once more across the river network.

Residents across Shropshire are familiar with flooding, and the LNRS presents an opportunity to help manage this risk through the use of nature-based solutions to enable the land to hold more water during times of high rainfall. What may be less well-known is that many of Shropshire's rivers also have low flow issues. Low flows in watercourses not only affect the supply of drinking water and water for irrigation but also biodiversity, both within the river and beyond the channel, through habitat loss, which impacts species and subsequent food chains. The Shropshire Groundwater Scheme is used to augment the river at times of low flow, alongside large reservoir releases.

Lakes

Ten of Shropshire's lakes are designated SSSIs, some of which are also designated Ramsar sites, and one of which forms part of the Brown Moss SAC. These lakes have potential to be important sites for nature recovery but are currently fragmented within intensively managed landscapes and are generally in unfavourable condition. Other lakes make up the remaining 98% of lake water area in Shropshire.

You can find more detail on the condition of water bodies in Shropshire in Appendix 3.

Ponds

Despite their small size, ponds can be exceptionally rich in wildlife, supporting two-thirds of all freshwater species found in Britain.[19] While the number of ponds in Shropshire has fallen during the past century, recent surveys identify 283 priority ponds across the strategy area, with potentially more ponds still unrecorded. Priority ponds are those of high ecological and conservation value for habitats and species. Degraded ponds, which provide established seed banks that can be regenerated to support important local freshwater species, are an ideal feature for habitat restoration and important stepping stones for wider nature connectivity and recovery.

Many freshwater plants and animals need unpolluted water, so small freshwaters often provide important refuges for pollution-sensitive freshwater plants and animals. Often, the easiest way to bring clean water back to the landscape is to create new small freshwaters, particularly ponds, that are located within small catchments protected from pollution. Taking this approach, rather than focusing efforts on attempts to reduce the pollution of existing habitats, can bring about rapid recovery at a landscape scale.

New ponds can be made almost anywhere that there are impermeable substrates (e.g. clay-rich geology) or permeable substrates with high groundwater levels. Small freshwaters are relatively cheap, quick and easy to create, restore and manage. If situated in catchments that produce clean water, they will be rapidly colonised by aquatic plants and animals, including rare and sensitive species that cannot persist in polluted habitats.

Broad-bodied Chaser. Credit: Sarah Jameson

Wooded landscapes

Shropshire's woodlands are diverse and include significant tracts of natural and semi-natural broadleaved woodland, broadleaved plantation, oak, yew and ash woodlands, ancient semi-natural woodlands and conifer plantation on ancient woodland sites.

Woodland is found in most landscape areas across the county and across most of the LNRS landscape areas. Small patches of woodland are present in agricultural landscapes and associated with hills on and around the northern plain. Some landscape areas are dominated by woodland, particularly associated with the arc from Wyre Forest up the Severn Gorge and south again down Wenlock Edge. This, almost continuous, 80 km woodland contains significant tracts of ancient woodland and shelters, on the associated slopes, former quarries, high quality grasslands and agricultural land.

You can find more detail on the condition of woodland in Shropshire in Appendix 3.

Oak tree

Wyre Forest

Managed by Forestry England in partnership with Natural England, Wyre Forest is the largest National Nature Reserve in England and sits on the Shropshire–Worcestershire border. Wyre Forest has been wooded since at least 900 AD and was historically used for hunting, producing timber for ship building, oak bark for tanning and, as a coppice woodland, charcoal for iron working, and fruit growing. What remains is a remnant of woodland that once covered much of South Shropshire, North Worcestershire and South Staffordshire. At over 300 hectares, it is a site of high wildlife value and one of the largest areas of ancient woodland – and one of the largest ancient lowland oak woods – in England. Extending to the woodlands of the Severn Valley, the forest is part of semi-continuous woodland habitat that links to the Severn Gorge woodlands.

In the early 20th century, many oak woodlands were cleared and turned to conifer plantation, resulting in reduced biodiversity and increased timber production. Modern forest management is focusing on increasing coverage of broadleaved tree species, though some areas are still used for timber production and areas of conifer remain.

Beyond its large size Wyre Forest is ecologically significant due to its mosaic of habitats including ancient woodland, conifer forest, open grassland, remnant orchards and steep-sided valleys. Home to almost half of England's macro-moth species, 33 species of butterfly (including both species of Pearl-Bordered Fritillary) and the Wood Ant, it is considered one of the country's most important sites for invertebrates. Plants include Wood Cranesbill, Lily of the Valley, Marsh Fragrant Orchid and Green-winged Orchid.[20] Streams in the forest support dragonfly and Demoiselle and the endangered White-clawed Crayfish. The American Signal Crayfish is also present in nearby streams and represents a significant threat to native crayfish.[21]

Male Banded Demoiselle

Wenlock Edge

Wenlock Edge is a narrow limestone escarpment feature, running from Craven Arms to Much Wenlock. Continuously wooded along its length, much of the woodland on Wenlock Edge is ancient woodland, with intervening areas of conifers. The landscape shows historical use, including evidence of quarrying, remnants of lime production, and ancient yew and lime trees marking ages-old holloways (sunken tracks) that criss-cross the Edge. Ancient and veteran trees are frequent on Wenlock Edge, a number of which are located within areas of plantation on ancient woodland sites (PAWS). These areas have many ancient woodland remnants and have huge potential for restoration. The ancient woodlands are floristically rich and include the Wild Service Tree, Herb-paris and Broad-leaved Helleborine. Frequent mature hazel coppice supports dormouse.

Fragments of calcareous grassland are present in the scallops formed by the sharp Edge. Near the village of Rushbury is Marked Ash Meadows SSSI, the largest and most species-diverse neutral grassland in the Shropshire Hills.[22] Much of Wenlock Edge is characterised by mixed ash woodland and, like other ash woodlands, ash dieback is taking its toll on habitat and landscape quality.

Severn Gorge

At the end of the last Ice Age, the River Severn carved its way through the landscape to create the steep-sided slopes of the Severn Gorge. Along significant parts of the Gorge, rising from the riverbanks, are ancient woodland slopes which support rare tree species, including the Wild Service Tree and Large-leaved Lime. Veteran and ancient trees are found throughout the area. These woodlands have persisted in part due to topography of the Gorge and were worked over centuries to provide timber, charcoal and wood fuel for industry as evidenced by numerous ancient coppice stools and charcoal hearths within the woodland. Until 1709, Abraham Darby's first furnace at Coalbrookdale was fuelled by charcoal. The demise of industry led to large areas of coppice being abandoned.

The Gorge's wooded character is further enhanced by connecting areas of priority deciduous woodland. Moving south, the woodlands are closely associated with the river valley, particularly on its eastern bank, and vary in size depending on local typography and land use.

Upland oak woodlands

Upland oak woodlands in Shropshire are a vital part of the county's ecological fabric – particularly within the upland landscapes of the Shropshire Hills. Upland oakwoods are typically dominated by Sessile Oak and are a type of semi-natural broadleaved woodland found primarily in the hillier, western parts of Shropshire, especially the Clun Valley. They support a wide range of species, including lichens, bryophytes, fungi, invertebrates and woodland birds. The upland oak woodlands are particularly valuable due to their structural complexity and continuity and their role in carbon storage and water regulation. These woodlands are often remnants of historic land use and are integral to the character of the Shropshire Hills National Landscape.

Nature Recovery Network maps

The LNRS includes Nature Recovery Network maps, which should be used alongside this written document to guide action for nature.

The county-wide Nature Recovery Network maps have been put together to assist decision making for those who know the land best. They are not a replacement for site surveys or individual project planning but have been produced to steer and guide action at a county level.

The Nature Recovery Network is made up of three areas:

1. Areas that are currently being protected for nature.
2. Areas which are already providing good quality habitats but are not protected.
3. Areas that have the best potential to provide greater benefits for nature.

Shropshire Hills. Credit: Sarah Jameson

For more information on the practicalities of delivering nature recovery action, project planning and intersecting consent regimes, see page 73.

See Appendix 6 for the mapping methodology.

Existing Nature Network

Shropshire and Telford & Wrekin is home to a range of high-quality habitats recognised through international, national and local designations. Along with ancient woodland and veteran trees, these designated sites form the LNRS for Shropshire's Existing Nature Network (known "areas of particular importance for biodiversity") and are an important part of the LNRS baseline. Many of these sites are already considered in the planning system through existing legislation and policies.

Mapping the Existing Nature Network

The local nature recovery strategy statutory guidance specifies what land should be included in the Existing Nature Network.[23] These are:

- Ramsar sites (internationally important wetlands)
- Special Areas of Conservation (SAC)
- Sites of Special Scientific Interest (SSSI)
- National Nature Reserves (NNR)
- Local Nature Reserves (LNR)
- Local Wildlife Sites and Local Geological Sites
- Irreplaceable habitat – in Shropshire and Telford & Wrekin this includes ancient woodland, plantation on ancient woodland sites (PAWS) and veteran trees

Appendix 5 provides an overview of these areas.

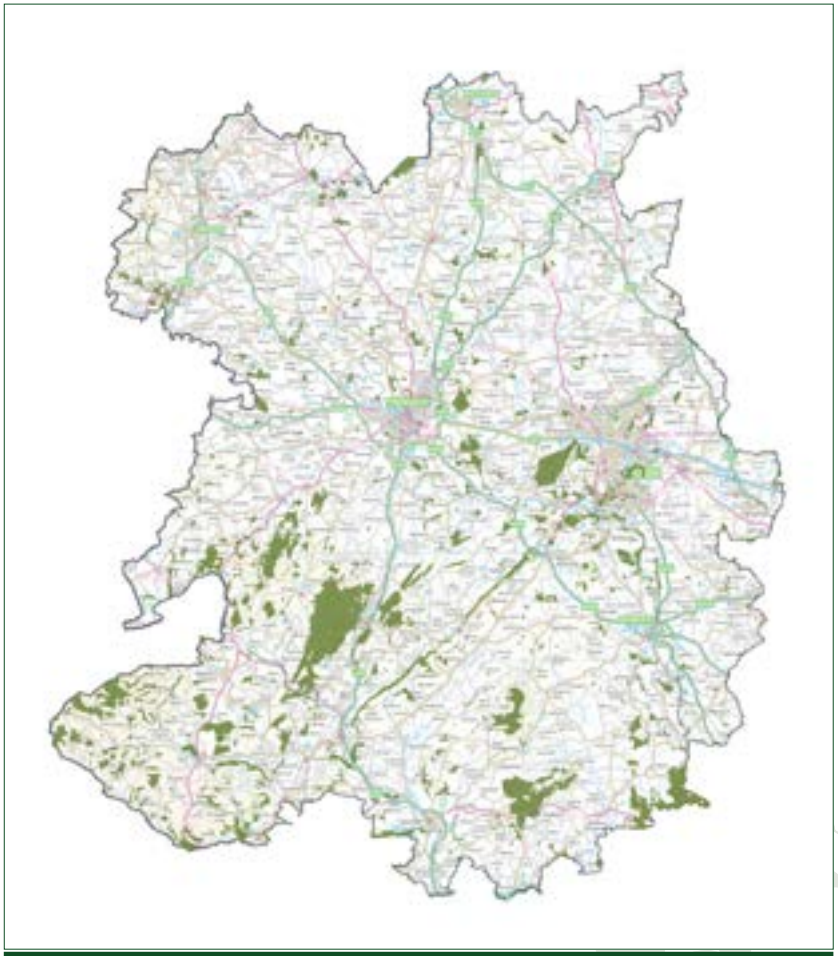


Figure 6 shows Shropshire's Existing Nature Network – "areas of particular importance for biodiversity".

One function of the LNRS is to recognise the vital role these sites continue to play in nature recovery. While ownership, management and condition vary across designated sites, they remain an important resource around which nature recovery can be focused and, in the longer term, expand beyond. The landowners and land managers of these important sites need access to professional support and sustainable funding to guarantee future wildlife benefit.

The Existing Nature Network needs active protection, active management to enhance sites and in some cases significant restoration to reach a more favourable condition. Within these areas, many sites will be subject to environmental designations, which means any activity within them must adhere to existing national and/or local policies and legislation.

Those sites that already have statutory mechanisms in place to protect and enhance the nature value (Ramsar sites, SAC, SSSI, NNR) are not the focus of the LNRS, and we are not generally permitted to map LNRS actions in these locations. The primary function of the LNRS is to identify opportunities for creating and restoring habitats beyond these existing hotspots and look at how the county can be best connected for nature.

Oil Beetle

Opportunity Network

The Opportunity Network is intended as a guide for where best to take action for nature. It is not a prescription, nor does it replace good site surveys, landowner and farmer input, or project planning.

The Opportunity Network is made up of:

- Priority habitats,[24] that are not currently designated and should be retained and restored as part of any project or development.
- Areas of existing habitat that can be restored and enhanced to better benefit wildlife.
- Areas which could be suitable for new habitat creation, informed by the Historic Landscape Character, The Shropshire Landscape Typology and numerous other data sets.

It is worth noting that, during LNRS engagement workshops, farmers and landowners were keen that the LNRS recognise the work that many had been carrying out for years through agri-environment schemes. The Opportunity Network therefore also includes Higher-Level Stewardship, Organic Higher-Level Stewardship and some of the more "permanent", habitat-focused countryside stewardship options.

See Appendix 4 for land coverage of priority habitats in Shropshire and Appendix 6 for the mapping methodology.

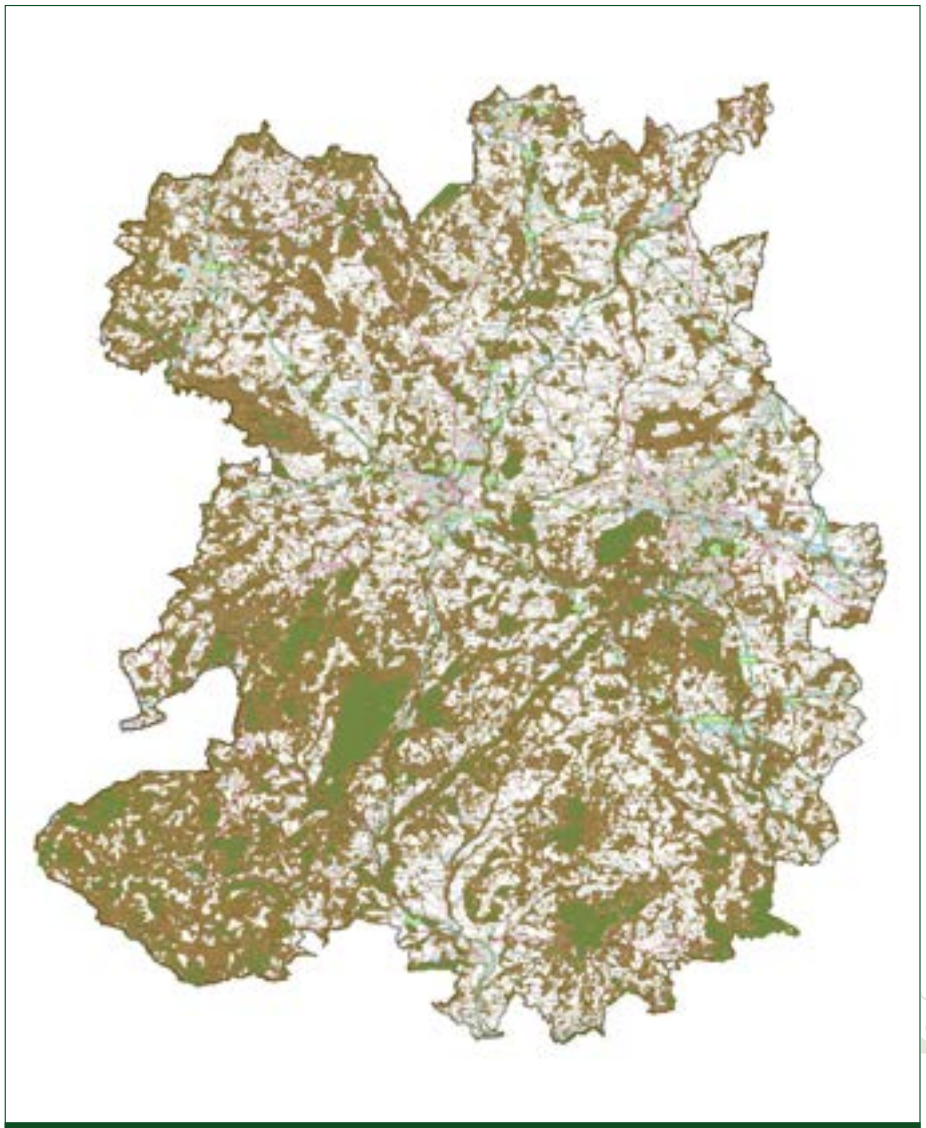


Figure 7 shows Shropshire's Opportunity Network – "areas that could become of particular importance for biodiversity" in the county.

The Opportunity Network mapping drew on significant amount of data, and while the data used was the best available, it is important to acknowledge that all datasets contain flaws.

49% of the county is covered by the LNRS mapping:

- **8% is Zone 1** – the Existing Nature Network, which is "area of particular importance for biodiversity"
- **41% is Zone 2** – the Opportunity Network, which is "area that could be of particular importance for biodiversity"

The LNRS identifies suggested actions for specific locations within the Opportunity Network and areas within the Existing Nature Network where actions are appropriate and are permitted (that is, ancient woodland and Local Wildlife Sites). These actions are habitat-based – for example, restore species rich grassland or establish riparian buffers. Not all actions under the LNRS priorities can be mapped, as they are less place-specific (for example, enhancing soil health and nature on arable land or enabling access to nature-rich sites). It is therefore important to also refer to the priorities and actions section in this document.

Links across borders

The government intends that the 48 strategies join up at administrative boundaries, with no overlap and no gaps. Maps should relate well to each other at those boundaries, ensuring that where a particular habitat, designated site or land use type continues either side of the border it should generally be recognised as the same level of priority, or that the same, or similar, actions are desirable.

Shropshire Council is engaged with neighbouring authorities in Herefordshire, Worcestershire, Staffordshire and Stoke-on-Trent, and Cheshire. Conversations with neighbouring Welsh authorities are also ongoing, particularly with the upper tributaries of the Severn, as activities outside of the county can have significant impact in Shropshire.

Stakeholders in the county have a long history of working across borders and administrative boundaries, especially where our designated sites and valued landscapes are large scale or are widely dispersed. This cross-border approach is particularly valuable in the meres and mosses, which spread across three counties: at Wyre Forest between Shropshire and Worcestershire and along the River Teme SSSI, which follows the Shropshire–Powys boundary before crossing into Herefordshire.

View from the summit of Titterstone Clee looking towards the Welsh border

Key opportunities

Approaches to nature recovery must take account of existing land uses and functional ecological networks. The approach should always be to target the right habitat, or action, in the best location, where soil conditions and management regimes are suitable and where existing habitats are taken into account. For example, the creation of woodland, even where this is a priority, should avoid high-quality grasslands and other existing habitats, which are providing considerable biodiversity value and ecosystem services in their own right.

Fundamentally, opportunities to take action for nature exist only where this action aligns with the interest of the landowner or land manager. Local nature recovery strategies must reflect local priorities while also contributing to national environmental targets. This section outlines some of the key opportunities for Shropshire.

Headline nature opportunities for Shropshire

Safeguarding insects as a food source: Arguably the biggest impact that we can have is to reduce the pesticides in the environment, which would result in more insects benefitting everything that relies on them for food.

Making connections: Creating corridors in the landscape through existing linear connections such as establishing a network of tall and wide hedgerows and adapting the management of road verges to create more species rich grassland.

Managing water: There are problems with both flooding and drought in the county. Nature-based solutions can help reduce these issues and have benefits for nature.

Working together: There are well established networks of organisations, individuals and groups coming together to take action for nature. Collaborative working combines knowledge, skills and resources to the benefit of all. See pages 60, 65–72.

Newly planted hedge

Natural flood management and water quality improvements

There are problems with both flooding and drought in the county. Nature-based solutions can help reduce the issue and have benefits for nature. The Severn Valley Water Management Scheme is already established and is investigating options for nature-based solutions upstream of Shrewsbury, with the intention of holding back flood waters and reducing flooding in the town. There are also ongoing cross-industry catchment partnerships and catchment-sensitive farming schemes, which are supporting actions to address both flooding and drought issues throughout the county.

Many actions for nature also have potential to deliver either natural flood management or water quality improvements, or both. The evidence is clear: the condition of water bodies and catchments is generally poor, and this impacts the biodiversity they support. While the causes of water quality issues are complex and involve different regulatory regimes, there are natural approaches supported by evidence that can certainly form part of the potential solution. New innovations such as biochar could play a role in removal of contaminants in Shropshire's water. It will also be important to engage with and further educate the public on their role in maintaining and improving water quality – raising awareness about misconnections, proper management of septic tanks and cesspits, and everyday habits that can make a difference.

Actions including reinstatement of hedgerows and creation of riparian buffer strips on farmland close to watercourses would perform multiple functions including limiting soil erosion and nutrient run-off during heavy rain. Well-designed and maintained rural highways drainage also plays a part in managing soil and sediment run-off. Creating areas of wet woodland or other natural habitat close to watercourses would, again, deliver multiple benefits: storing flood water and intercepting pollution and sediments.

Action to build on

- River Severn Partnership brings together local authorities, environmental agencies, water companies, academic institutions and community organisations across England and Wales to address shared challenges and opportunities related to water, nature and climate resilience across the whole Severn River basin.
- The Severn Valley Water Management Scheme is a River Severn Partnership scheme looking at a climate resilient approach for the upper reaches of the Severn, including exploring how nature-based solutions can help water management and flooding issues.
- Cross-industry catchment-based partnerships.
- Catchment-sensitive farming schemes.

Habitat connectivity and resilience

The need for nature recovery across large, connected areas (rather than isolated sites) has long been recognised across Shropshire. Habitat fragmentation, including the shrinking size of habitat, and increasing distance between patches are a collective challenge for species. As the space between fragments grows, with hard-to-cross land uses in between, species populations become isolated, increasing the potential for inbreeding and the risk that each patch eventually becomes so small it cannot support viable population clusters at all.

Area fragmentation affects species differently depending upon ecological needs. Some species favour interiors, and so as woodlands become fragmented, the area of habitat providing the correct ecological niche for these species shrinks even further. Other species that favour edge habitats and interfaces between habitat types and structures may benefit locally from some fragmentation – as long as blocks remain reasonably close to one another.

The solution to fragmentation, then, is not simply that large homogenous blocks of one particular habitat type or another should always be created. A better approach for biodiversity might be the creation of mosaics of habitat patches, each of sufficient size to support viable species populations, relatively close together and well connected within the landscape by hedgerows, lines of trees, vegetated ditches, grassland margins and stretches of scrub. By adopting this method, nature recovery can sit comfortably within landscapes used for food or timber production and urban development. Hedgerow creation, in particular, offers an excellent opportunity to connect the landscape and is relatively easy to incorporate into current land uses.

Action to build on

- Restoring Shropshire's Verges Project is working with communities and the highways department to create long linear meadows along roadside verges.
- Middle Marches Community Land Trust is acquiring land with public donations to create stepping stones for nature and working with landowners and communities to create connectivity and habitats.
- CPRE's Hedgerow Heroes is a project that brings together volunteers and landowners to plant new hedgerows.
- Caring for God's Acre has local volunteers out doing conservation tasks in churchyards and cemeteries several times a week.
- Farmer groups are looking across shared landholdings at opportunities to connect areas for nature.

Restoration of plantation on ancient woodland sites

Plantation on ancient woodland sites (PAWS) are ancient woodlands that were historically cleared and planted with non-native tree species including conifers but retain complex soils, seed banks and microhabitats developed over centuries. These characteristics make them ideal candidates for restoration to semi-natural woodland. Restoring PAWS is a high-impact, cost-effective and policy-aligned action that can significantly advance local nature recovery objectives. Alongside benefits for nature, restoring PAWS can also have the practical benefit of income generation from the sale of timber.

Oak tree and bluebells

Action to build on

- Forestry England is meeting its long-term commitment to keep restoring plantations on ancient woodland sites.
- Shropshire Hills Ancient Woodland Restoration Project is a partnership with Woodland Trust and Forestry Commission providing landowner advice to improve the condition of PAWS in the Shropshire Hills.

Ecosystem services and natural capital

Nature recovery through the LNRS is focused on habitats, but each form of habitat creation, restoration or management has the potential to provide ecosystem services or natural capital (financial value from these services). Habitats are generally multifunctional, meaning nature recovery delivers multiple benefits.

Raising the water table within areas of peat soil, for example, provides new bog and fen habitat and supports the species that rely on them. Restored peat also provides significant carbon sequestration and stores water, which may contribute to local flood management and could secure future production by building more soil or provide new income-generation opportunities for landowners, such as wetter farming. Quality grassland creation provides a nectar source for invertebrates, which in turn provide food sources for small birds and foraging bats; permanent grassland sequesters carbon, especially where there is high diversity of plant species and, if created on formerly bare or ploughed land, will reduce soil erosion. Planting trees and scrub will increase carbon storage and can also support passive cooling, water retention and improvements in air quality.

Flooding on the River Severn

Action to build on

Marches Environmental Investment Platform (MEIP) is a pioneering green finance initiative that aims to attract private sector investment into environmental projects that can deliver measurable ecosystem services (such as water quality and climate resilience) across the Marches region. The platform is being developed under the Marches Forward Partnership, in conjunction with projects such as the Severn Valley Water Management Scheme, to test the concept through delivery. It aims to provide a structured, place-based green finance model that could be used to scale up environmental investment across the region.

Tree planting

Trees are an important part of the UK Government's Environmental Improvement Plan (EIP) and woodland and tree targets have been set out in the EIP and associated regulations.[25] To achieve these targets, England needs to increase tree cover to 16.5% by 2050.[26] If Shropshire is to proportionately meet tree cover targets, it could need to provide between 4882 and 11,510 hectares of additional tree cover based on the estimates outlined earlier in the document. This is a significant area and would mean creating between 195 and 460 hectares of woodland every year between 2025 and 2050. Ash dieback is likely to impact canopy cover targets, especially in the wider countryside where lone trees may not be replaced, and to influence nature recovery by shifting the species composition of ash-dominated woodlands such as those on Wenlock Edge and Ironbridge Gorge.

Newly planted agroforestry

Open land of low biodiversity value presents the best opportunity for increases in canopy cover. This need not be closed canopy cover, and other tree planting options may be possible alongside food production. Most recent estimates, published in 2017, suggest that of the 72% of UK land area used for agriculture, just 3.3% can be categorised as agroforestry (this excludes hedgerows).[27] Tree canopy cover in the Shropshire strategy area is estimated between 13% and 15%, slightly above the national average of 13%. Telford & Wrekin has a borough-wide average of 15%, with some wards reaching 22%, positioning it well to exceed the UK Government's aspiration of 16.5% tree cover by 2050.

There is significant potential to increase canopy cover by integrating more trees into farmed landscapes. There are numerous agroforestry options within the Environmental

Land Management Scheme, which could present opportunities for businesses to incorporate more trees into their grazed or cropped land areas – providing income and increased resilience to climate changes. There are also grants for natural regeneration of woodland, whereby woodland is established simply by installing fencing to exclude grazing near adjacent sources of tree seed; this can work well in less productive areas. Urban areas are prioritised for increased canopy cover to address heat stress, air pollution, and health inequalities. The concept of tree equity – ensuring fair access to the benefits of trees regardless of postcode – is being explored through mapping tools and canopy audits.

There are also opportunities to use planting strategically to improve the air quality near sensitive habitats such as ancient woodlands. Pollutants arising from agriculture and transport can be reduced helping populations of nitrogen-sensitive plant, lichen and bryophyte species.

Sheep sheltering in shade provided by trees

Action to build on

The England Woodland Creation Offer is a government grant encouraging investment in the creation and long-term management of woodland, on areas as small as one hectare.

Agroforestry is a land management approach that integrates trees and shrubs into farming systems and rural landscapes. It blends agriculture and forestry in a way that supports both productive land use and nature recovery. Common types of agroforestry include silvopasture, whereby trees are planted in grazing areas to provide shade, shelter and fodder for livestock, and silvoarable – trees grown alongside arable crops, improving microclimates and reducing wind erosion. Riparian buffers, hedgerows and field trees are other aspects often included within the agroforestry term.

Planning for land use change

The development planning system brings an opportunity for land use change and, if thoughtfully implemented, can result in a diverse mosaic of habitats to benefit people and nature. Long-term restoration plans for minerals extraction present particular opportunities, and there are many examples across the country of rich wildlife being created and long-term agreements being set up to fund the ongoing management of sites. Development to mitigate and manage the risks we face from climate change – like the installation of solar panels and wind turbines – can be implemented alongside nature enhancements. Renewable energy sources are an important aspect of addressing our reliance on fossil fuels and can provide an opportunity for communities to become more self-sufficient with their energy production.

For nature benefits to be realised, long-term outcomes need to be agreed and planned for from the outset of any development project or change in land use. Thinking about nature as an afterthought will not mean decisions are any quicker or easier and won't maximise benefits for nature or communities.

The next section, 'Delivering local nature recovery' (pages 61–64), explains what the LNRS means for planning.

Working together

Across the county there are well established networks of organisations, individuals and groups coming together to take action for nature. There are huge potential benefits from partnership working and collaboration – particularly when exploring different concepts and trialling approaches to test what works.

Shropshire's rich and varied natural landscape reflects the care and commitment of its people. Farmers who have invaluable local knowledge and work with nature in mind, community groups who give their time to local green spaces, historic-environment specialists, ecological recorders who track vital trends, strategic partners who collaborate on large-scale landscape projects, and individuals who spark action and inspire others.

We all have a part to play. And if we work together, we can make a lasting difference.

Credit: Caring for God's Acre

Delivering local nature recovery

The LNRS isn't, by itself, a mechanism for changing land management – but the strategy is designed with delivery in mind, so that it can be a useful tool for those wanting to undertake nature recovery activities and in securing funding to do so. This section provides an overview of how the LNRS can be delivered, including key delivery partners.

Funding

It is critical that there is funding for carrying out the identified actions as well as for data gathering to monitor our impact. Important resources include agri-environment schemes, biodiversity net gain (BNG), lottery funding, green finance and developer contributions. Funding for action needs to be incentivised and sustained, and long-term, reliable funding to support all aspects of delivery will be crucial. Small amounts of seed corn funding spent with communities can lead to significant outcomes.

Farmers, landowners, foresters and land managers are indispensable to any effort to restore local nature and are particularly important stakeholders in this LNRS for Shropshire. But while many are interested and willing to take action for nature, the vast majority also have businesses to run. If the objectives of this strategy are to be realised, it is essential that there is sustained funding to support the implementation of the identified actions and that we work to integrate nature recovery with viable farming businesses.

Political support

Embedding LNRS in local plans and policies helps to align nature recovery with broader agendas such as climate adaptation, flood resilience and public health. Local politicians are instrumental in achieving this integration and unlocking funding. Cross-party political support is also needed, alongside individual champions, to help scale successful pilots, sustain momentum across election cycles and ensure nature recovery remains a priority amid competing demands.

Barn Owl

Marches Forward Partnership is a strategic cross-border collaboration between the local authorities of Herefordshire, Shropshire, Powys, and Monmouthshire. Launched in November 2023, its purpose is to unlock new investment, and one key area of focus is on harnessing the region's rural assets to drive a programme of green growth, thereby helping to tackle environmental resilience, biodiversity and climate adaptation.

Policy and planning

Local nature recovery strategies must be considered in the preparation of Local Plans, Neighbourhood Plans, and other spatial policies. In particular, the Environment Act 2021 introduced two mechanisms for planning to support the delivery of LNRS:

- Strengthened Biodiversity Duty on public authorities
- Mandatory biodiversity net gain (BNG) for developments

Building housing and infrastructure offers an opportunity to enhance nature – but this means making choices early on about where, what and how to build. The LNRS is not a planning designation but does influence planning system processes and policies, and it can guide developers and decision-makers in making better spaces for nature and for people.

The LNRS is not a planning designation. The LNRS opportunity mapping does not exclude development, but incentivises nature-friendly design. In many locations, it will be development that brings about positive change.

Existing planning policy requires development to build with nature in mind, which includes integrating biodiverse green infrastructure, sustainable urban drainage systems (SuDS), water efficiency measures, habitat connectivity and low-light zones for nocturnal wildlife. These design principles are not just ecological – they also support health, wellbeing and climate resilience and can be integrated into local and neighbourhood plans and design codes.

The LNRS interacts with the planning process in three important ways:

- Public authorities must use LNRS maps and priorities to inform site allocations and planning decisions.
- Planning policies can require LNRS-aligned outcomes in landscape planning.
- Developers may qualify for a 15% 'strategic significance' uplift in biodiversity net gain units if they create or enhance habitat in line with LNRS priorities, within LNRS priority areas (referred to as 'Opportunity Areas' in the LNRS for Shropshire and Telford & Wrekin). See page 64 for more detail on developers' statutory BNG duties and biodiversity units, or visit www.gov.uk/guidance/biodiversity-net-gain.

Case studies

Exploring how the LNRS might be used:

- When a landowner wants to build a grain store. Read the study >
- To help landscape design at master planning stage. Read the study >

Nature recovery through development planning delivers multiple benefits, such as increased property values near green space and reduced NHS costs through improved mental and physical health. It will also help with broader environmental services such as flood management and help towns from getting too hot in our rapidly changing climate – a major public health risk. (One recent 4-day heatwave in June 2025 was predicted to cause 570 deaths due to heat-related effects in England and Wales.[28])

These benefits make a strong case for integrating LNRS into planning viability assessments and infrastructure funding strategies. The LNRS mapping tools can guide site-specific plans and be used in local plans and neighbourhood plans, including parish nature recovery plans.

The future direction of the planning system supports the approach of development actively contributing to nature recovery, not just offsetting harm. Key proposals in the UK Government's 2025 Planning Reform Working Paper include:

- Pooling developer contributions to fund strategic nature recovery.
- Streamlining environmental obligations to accelerate housing delivery.
- Using the Planning and Infrastructure Bill to embed these reforms.

Green infrastructure must be included in all new developments. And because of the biodiversity net gain requirement (page 64), the green infrastructure being proposed by developers is increasingly biodiverse. Within urban areas, green infrastructure planning and high-quality development design should prioritise on-site delivery of biodiversity net gain, as close as possible to biodiversity losses, and integrate nature into developed areas at every opportunity. Natural England's Green Infrastructure Framework provides helpful guidance.

Biodiversity net gain

Biodiversity net gain (BNG) refers to the statutory framework, introduced into Schedule 7A of the Town and Country Planning Act 1990 by the Environment Act 2021, that requires developments in England to have a positive, measurable impact ('net gain') on biodiversity.

Under BNG, and subject to certain conditions, developers must deliver at least a 10% increase in biodiversity value compared relative to the pre-development value of the on-site habitat. Specialist expertise is normally required to ensure compliance with the rules before embarking on any proposed scheme.

BNG is calculated using a statutory biodiversity metric, which uses habitat information (including size, type, distinctiveness, condition and location) to quantify 'biodiversity units' – a proxy measure for biodiversity value. Developers can deliver biodiversity units in three ways. They can combine more than one approach but must go through the options in order:

1. **On-site:** Deliver BNG on the development site.
2. **Off-site:** Where developers cannot achieve BNG on-site, they can do this off-site either by creating biodiversity units on land they own elsewhere or by purchasing off-site biodiversity units on the market.
3. **Biodiversity credits:** As a last resort, where developers cannot achieve on-site or off-site BNG, they can buy statutory biodiversity credits from the government.

Local nature recovery strategies – like this one for Shropshire and Telford & Wrekin – play a key role in BNG as they determine a 'strategic significance' multiplier within the biodiversity metric. This can help incentivise the right actions in the right places; by delivering proposed actions set out in the LNRS within the Nature Recovery Network area, landowners would benefit from a 15% uplift in biodiversity units. This will benefit both individual developments and land managers looking to diversify their incomes.

Building on current action

Taking coordinated and strategic action for biodiversity in Shropshire is not a new concept, and the LNRS aims to build on the past projects and initiatives and to complement the array of ongoing activities taking place across the county.

Examples include:

The Shropshire Hills National Landscape Management Plan.[29]

Marches Meadow Group, which is leading on meadow creation across the county.

Catchment-based partnerships working to achieve vibrant, healthy and resilient river systems.

Partnership efforts such as Sandscapes, Stepping Stones and Back to Purple, which are working to restore, create and reconnect areas of heathland and grassland habitat within the wider landscape.

Biodiversity hotspot mapping, a method of recognising where biodiversity and/or species recording is focused. Maps for a range of species groups can be found on the Shropshire Council website.[30]

Buglife's B-lines project, a national scheme that maps and runs nature recovery projects along the 'insect pathways' that run through our countryside and towns.

Caring for God's Acre, a national charity offering advice, volunteering opportunities and recording species across a range of burial grounds in the county.

Appendix 2 provides a summary of some of the ongoing work across the county, much of which is also referenced throughout the strategy along with links to case studies.

It is hoped that the LNRS provides some additional data, insight and collaborative working to help focus efforts where they will result in the greatest benefit.

Planting out Marsh Violets. Credit: National Trust

Key delivery partners

Delivery of the LNRS will involve many different groups of stakeholders, including farmers, local residents, communities and volunteers. Collaboration between these stakeholder groups – our 'delivery partners' – can help individual efforts deliver more than the sum of their parts. While secure, ongoing funding for LNRS delivery remains unclear, there is a necessary role for an LNRS Steering Group and partnership to drive delivery and monitor success.

Farmers, landowners and land managers

84% of Shropshire is farmland,[31] making farmers, landowners and land managers the most important stakeholders in this strategy. Farmers and landowners are experienced land managers, and many have been taking action for nature for decades. The LNRS – which is designed to align environmental goals with practical land use – offers a supportive framework to guide coordinated action towards nature recovery.

Until recently, policies and rural payments encouraged intensification, as the focus after the end of the Second World War was on producing as much food as possible. Government policy has shifted, and payments are now being made to landowners for carrying out land management actions that benefit nature and wider society. From a nature perspective, this change is welcome. But for these policies to work, farmers need a period of stability to have confidence in the new system and be able to adapt their businesses accordingly. Farm advisors and representative bodies provide crucial advice, guidance and support, particularly in the current context of rapidly changing policy and funding.

Landowners are eligible for several funding streams, including Environmental Land Management (ELM) schemes and biodiversity net gain (BNG). These financing mechanisms reward landowners for biodiversity-positive actions, to help make participation in local nature recovery both environmentally beneficial and economically viable.

Curlew

Development in line with the actions proposed by the LNRS, taken within the Nature Recovery Network area, could give landowners a 15% uplift in biodiversity net gain (BNG) units.

Planting hedgerows can benefit livestock and arable production, while not taking up significant amounts of productive land.

Public authorities

By law, all public authorities – including **local authorities and town and parish councils** – have a duty to conserve and enhance biodiversity in exercising their functions. They must "have regard to any relevant local nature recovery strategy".[32] With the exception of parish councils, public authorities must also "report on actions taken to meet this duty".[33]

Local authorities

Local authorities are uniquely positioned to coordinate activities and at scale. And, by integrating LNRS priorities in local plans and development agendas (e.g. housing and transport) and in all parts of local governance (from planning and procurement to community engagement), they can help realise the wider environmental and social benefits of nature recovery. Nature recovery needs to be embedded in contract changes within the local authorities.

Some local authority functions, such as planning and land management, have more obvious links to, or a more direct impact on, nature recovery. But it's possible to mainstream biodiversity within a range of council functions. For example:

- Flood resilience, drought management and water quality
- Mental health, physical health and wellbeing, and green social prescribing
- Green infrastructure and energy efficiency
- Healthy soil for sustainable production of nutritious foods
- Wildlife across the council estate
- Attracting people to the county
- A healthy local economy and local livelihoods
- Place-making in partnership with town and parish councils
- Climate adaptation strategies
- Monitoring and managing invasive species
- School curriculums and outdoor learning

Town and parish councils

Government guidance published in May 2023 outlines three key responsibilities for town and parish councils:

1. Consider biodiversity in their area.
2. Agree policies and objectives to support it.
3. Act to deliver those objectives.[34]

Town and parish councils are embedded in their communities and understand land use and community priorities. This means they are ideally placed to identify local biodiversity opportunities and threats, mobilise community action, and act as trusted intermediaries between residents and higher-tier authorities. Where town and parish councils don't have ecological expertise, they can partner with local wildlife groups. The LNRS team is working with Shropshire Association of Local Councils (SALC), Middle Marches Community Land Trust and other partners to encourage and support town and parish councils to develop their own tailored nature recovery plans and work together in local clusters. The SALC network provides a ready-made infrastructure for town and parish councils throughout the county to share knowledge and coordinate action on local nature recovery.

Many town and parish councils are already taking practical action for biodiversity – such as planting trees and hedgerows, creating ponds and wildflower meadows, protecting watercourses and redesigning parks and recreational spaces. These actions align directly with LNRS priorities. This Nature Recovery Workbook will help councillors and others take action.

Shropshire's town and parish councils are also increasingly involved in shaping LNRS policy, including at the national scale.[35]

Developers

The LNRS identifies areas of opportunity for nature recovery and suggests potential actions. Developers can use the LNRS map and suggested actions to embed nature into projects and meet biodiversity net gain (BNG) and green infrastructure requirements.

Developers should be aware that LNRS mapping and actions may influence local plans and could be a material consideration in planning decisions.

Case studies

How Oswestry Town Council has been making its area more nature rich.

Read the case study >

Edgton Parish Council Nature Recovery Plan.

Read the case study >

Community wildlife groups and local recorders

Community groups and local recorders are passionate nature enthusiasts, with exceptional ecological knowledge of their area. Biological recorders often have decades of experience observing local ecosystems; they know their patch well, and their long-term monitoring of species and habitats provides the evidence base for identifying priorities for species recovery, mapping locally important sites and tracking change over time.

Community wildlife groups are embedded in their communities and are trusted voices for nature. They play a vital role in raising awareness of biodiversity issues and mobilising volunteers for habitat restoration. Many also volunteer their time to engage in practical action to enhance nature in their area – for example planting out Marsh Violets on the Stiperstones or scrub bashing with the Friends of Rough Park. Community wildlife groups often have established volunteer networks, local credibility and the agility to implement small-scale, high-impact projects. By partnering with community groups, other organisations can extend their reach and build delivery capacity.

Conservation and other environmental organisations

Conservation organisations bring a breadth of ecological expertise and long-standing experience in habitat restoration, species monitoring, and biodiversity planning. Their input is critical in designing interventions that are ecologically sound and locally appropriate. These organisations are often directly involved in implementing nature recovery projects and have well-developed partnerships and established track records of delivering positive change for nature. Their ability to mobilise volunteers, secure funding and deliver practical outcomes makes them essential to the delivery of the LNRS. Conservation organisations often have strong local roots and trusted relationships with communities making them effective at engaging residents, landowners, and local groups in nature recovery efforts.

Local recorders and species experts have been invaluable in developing the LNRS, helping to make sure that it reflects real-world conditions rather than abstract models. They have played an especially important role in identifying species that need targeted action for their recovery – beyond more, bigger, better and/or better-connected habitat.

Hedgelaying at Admaston.
Credit: Sarah Jameson/CPRE

Case study

Making the most for nature from a 11-acre field.

Read the case study >

Government agencies

Natural England, Environment Agency and Forestry Commission provide statutory guidance and technical support to the LNRS process to ensure consistency with broader environmental policy frameworks. These agencies also facilitate data, knowledge and resource sharing between responsible authorities, which helps to build local capacity, and enable integration with national datasets and mapping tools. Support from government agencies reassures stakeholders that the LNRS is robust, fair, and aligned with national priorities. This is particularly important when seeking funding and/or political support.

Research institutions

The involvement of research institutes, which contribute analytical approach and tools to delivery and monitoring methodologies, ensures that the LNRS benefits from scientific and academic insight as well as reflecting practical land management realities. Research institutes are well-positioned to lead or support funding bids for nature recovery projects, and their involvement can strengthen applications. Universities often spear-head cross sector-engagement, acting as a bridge between academia, local authorities, landowners and conservation groups. They are also particularly important in raising awareness among young people, who are the future of action for nature.

Children and schools

Developing a nature-literate generation is important for achieving long-term, sustainable change. Early exposure to nature recovery principles helps young people understand biodiversity, climate resilience and sustainable land use. And integrating nature into the school day improves academic achievement, attendance and wellbeing.[36] This aligns with the Environmental Improvement Plan's goal to ensure learning in and about nature at every level of education (with initiatives to be led by the Department of Education). Children often act as conduits between schools and families.

Practical actions schools can take:

- **Nature recovery in the curriculum:** Integrate LNRS themes – such as mapping local habitats, studying pollinators or designing wildlife corridors – into lesson plans.
- **School grounds as habitats:** Create wildflower meadows, ponds or hedgerows in line with LNRS habitat priorities.
- **Student-led monitoring:** Engage students in tracking local species or habitat changes, contributing to LNRS monitoring goals.
- **Community partnerships:** Collaborate with families, conservation charities, youth groups and farmers to co-deliver workshops and field trips.

Non-agricultural businesses

Businesses bring resources, technical expertise and delivery capacity that can accelerate implementation. Partnering with business can enhance communication, credibility, and delivery readiness. Many businesses are already aligning with environmental, social and governance (ESG) frameworks and biodiversity net gain (BNG) requirements. The LNRS provides a spatial and strategic framework that helps businesses identify where their investments in nature recovery will have the greatest impact and regulatory alignment.

Along with enhancing nature, local nature recovery strategies are also about creating resilient, attractive places to live and work. The LNRS has potential to positively impact businesses by guiding decisions on land use that support both biodiversity and economic sustainability, such as sustainable tourism. Engaged businesses can act as ambassadors, helping to build public trust and momentum and integrating LNRS into broader economic and spatial strategies.

Health sector partners

Local nature recovery strategies are not just about biodiversity: they are also about improving the wider environment, including public health. The LNRS includes actions that can help to improve health and wellbeing through increased connection and access to nature.

There is growing evidence that access to green space reduces stress, improves mental health and supports physical activity.

The health sector is already developing its own environmental strategies, such as NHS Green Plans. There is a shared recognition that nature-based solutions like tree planting, wetland creation and green corridors can contribute to both ecological and health outcomes.

Nature recovery contributes to climate adaptation by mitigating flood risk, improving air and water quality and reducing urban heat. These benefits are especially important for vulnerable populations, making local nature recovery strategies an important tool for addressing health inequalities.

Health sector partners such as Integrated Care Systems, NHS Trusts and public health teams are well-positioned to engage communities and support place-based delivery of LNRS actions. Their involvement in delivery would ensure that local nature recovery is integrated into wider wellbeing strategies.

Residents and local communities

Local people are not just passive beneficiaries of nature recovery; they can and should be active agents of change and must be supported in nature recovery activities – from planting trees and restoring ponds to managing community gardens and monitoring wildlife.

Local people are our greatest asset in turning this strategy into a secure future nature. People protect what they feel connected to, and many draw a deep sense of pride, identity and responsibility from making a difference to their land, their community or their local green space. When people are well educated about the value of nature and understand its value to them, in their own lives, they change the way they act, value, advocate and vote for nature. In this way nature recovery becomes something we all strive for, together.

Across the county there is a wealth of good will, knowledge and expertise that communities – if effectively encouraged, supported and acknowledged – can bring to nature recovery work. Residents have invaluable insight into the condition of local habitats, the pressures they face, and the opportunities for improvement. And nature recovery can help build healthier, happier, more resilient communities.

Unlike short-term projects, LNRSs are designed to guide action over decades. Residents provide the continuity and local commitment needed to sustain momentum. Their involvement helps ensure that nature recovery is embedded in the fabric of everyday life – from school playgrounds and allotments to neighbourhood parks and verges.

Children, in particular, bring clarity and enthusiasm. Their energy often ripples outward, encouraging parents, schools and communities to engage with local nature recovery.

Case study

Elsie and her friends have been taking action for nature.

Read the study >

The practicalities

Nature recovery cannot be delivered in isolation. Many of the land management changes on which nature recovery action relies are subject to other regulation.

The LNRS suggests priorities and opportunities, but it is always necessary to fully investigate physical on-site constraints (e.g. soil types, water levels, historic features and designated sites) and to secure the permissions before commencing work.

Anyone undertaking nature recovery projects should seek expert advice and undertake baseline surveys at the earliest design stage – and always include costs for ongoing habitat maintenance and monitoring in project planning. Doing so will help to ensure the long-term, measurable success of nature recovery actions while protecting, maintaining and enhancing existing special features and shared value.

Nature recovery action may need one or more of the following approvals:

- Environmental Impact Assessment (EIA) Regulations Consent
- Ordinary Watercourse Consent
- Environment Agency Permitting
- Planning Permission
- Listed Building Consent
- Conservation Area Consent
- Scheduled Monument Consent
- SSSI Assent
- Rights of Way Consent
- Felling Licences
- Protected Species Licences
- Licencing around invasive non-native plant species
- Network Rail or Highways Authority Consent

A suitably qualified person may be required to assess site-specific management or improvement activities, as other key or protected habitats and species may be present.

Pipistrelle Bat

Monitoring progress

The LNRS aims to guide and inspire action, and it is hoped that funds can be secured through various mechanisms to deliver the proposed actions in the priority areas. The LNRS Steering Group will continue to support and guide the delivery of the LNRS. All local nature recovery strategies must be reviewed and republished every 3–10 years as determined by the Secretary of State. At that point, we will need to take stock of what progress has been made.

Data

To better understand how more of our species are doing, we need better-structured monitoring and well-supported monitoring schemes across Shropshire and Telford & Wrekin. The Shropshire and Telford Environmental Records Centre is currently being established. This will replace the data functions currently carried out by the Shropshire Environmental Data Network. The Association of Environmental Record Centres is providing independent advice and expertise to help guide the establishment of this new Record Centre, which it is hoped will provide a broad range of functions to benefit nature across the county.

Indicators of success

Successful delivery of the Shropshire LNRS will be underpinned by a set of key performance indicators (KPIs) that can be monitored and evidenced. Currently 8% of the county is included in the Existing Nature Network. Areas that could be included in this network were determined by Defra (see page 48). The aim of the LNRS is to expand the existing area for nature, but coming up with an appropriate methodology do so is complex and would ideally be standardised across England.

National indicators

Measurement of national indicators (which are integral to the Environment Act 2021 and the associated UK Government's 25-year Environmental Improvement Plan) are a significant part of monitoring LNRS success. The Environmental Improvement Plan sets out 10 goals, which include: increasing tree canopy and woodland cover to 16.5% in England by 2050; and having 50% of SSSIs on track for favourable condition by 2028.

In the Shropshire Hills National Landscape, a designated Area of Outstanding Natural Beauty (AONB), the Protected Landscapes Targets and Outcomes Framework will apply and will drive nature recovery in this part of the county.

Local indicators

A full set of local KPIs is being developed and will include measures such as:

- Measuring changes in % tree cover per ward
- Recording hectares of land secured for delivery of biodiversity net gain
- Monitoring numbers and area (hectares, ha) of locally designated land in favourable condition or appropriate management
- Recording hectares of new land managed for nature through environmental grant funding
- Species data where consistency of ata is reliable to inform trends
- Of the 12 specialist farmland birds included in the national Farmland Bird Index, published annually by Defra, six (Goldfinch, Skylark, Stock Dove, Starling, Whitethroat and Yellowhammer) occur in sufficient survey squares in Shropshire for the British Trust for Ornithology to produce statistically reliable annual population trends at the county level. These trend graphs will be updated annually for the life of the LNRS, and can be found at www.shropshirebirds.com/LNRS.

30 by 30 monitoring

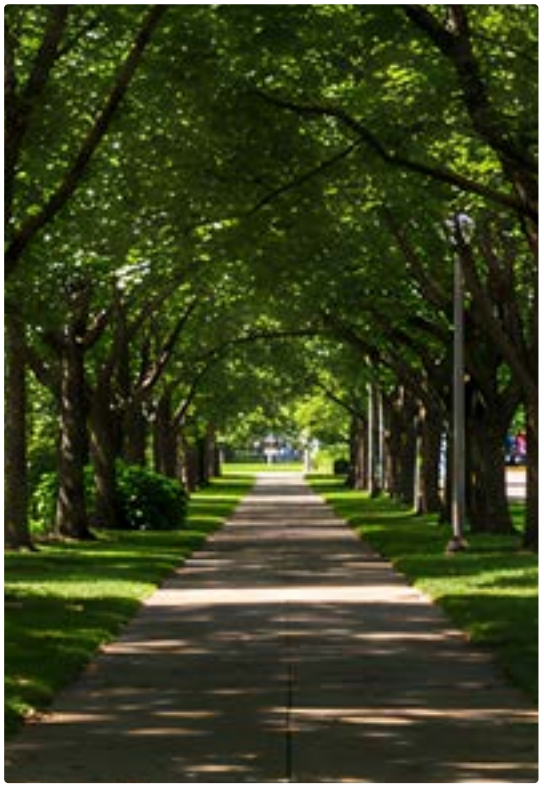
The UK has committed to protecting and conserving 30% of land and sea for nature by 2030 as part of the global 30 by 30 target agreed in 2022 at the 15th Conference of the Parties to the United Nations Convention on Biological Diversity (COP15). National delivery of 30 by 30 is embedded within the UK Government's Environmental Improvement Plan.

The 30 by 30 methodology for the UK is still in development.

Initially for the purposes of 30 by 30, land in Shropshire considered to be protected includes:

- Sites of Special Scientific Interest
- National Nature Reserves
- Ramsar sites
- Special Areas of Conservation

The lack of a standardised methodology has led to considerable variation in the baselines developed across the country up to this point. In Shropshire, setting out, evidencing and publishing a 30 by 30 baseline report will be an early priority for LNRS delivery. This is to ensure the national



methodology can be followed, and that the methodology is repeatable over years to allow meaningful measurement of local progress towards the 30 by 30 target.

Local priorities and actions

We've identified 16 priorities and 51 actions for Shropshire and Telford & Wrekin, as well as important species and species assemblages. The LNRS priorities and actions aim to align local needs with national environmental and biodiversity targets.

The priorities and actions are organised by theme, which you can explore using the menu on the left-hand side of this document.

Priorities

These are the results we want to achieve. There are 16 priorities in this strategy, which refer to either habitat creation, management or restoration and will support species recovery. For each priority, we outline what success would look like.

Actions

These set out how we can achieve each priority. There are 51 actions in this strategy, each of which is broken down into suggested activities. Every action has a unique identifying code.

Some actions are **'mapped'**, meaning they correspond to specific locations in Shropshire and Telford & Wrekin. You can look at these on the interactive map. Other actions are **'unmapped'**, meaning they are relevant to or can happen in lots of different places across the county.

Many of the actions in this LNRS state what we want to happen, without prescribing exactly how that change might be made. This is for several reasons. First, the activity steered by the LNRS will be funded through a range of different mechanisms, which may each have their own delivery criteria; and second, for much of this work there is already a body of evolving best practice. Given this, setting restrictive criteria within this LNRS – such as how wide a habitat buffer should be, how many species should be in a new hedgerow, or how a wetland should be designed – is likely to be unhelpful and make delivery more complex.

Using the interactive map

The interactive Shropshire and Telford & Wrekin LNRS Map allows you to zoom in to your local area and explore mapped actions there.

Explore the map online >

See Appendix 9 for the species shortlisting methodology.

Species

Alongside broader habitat improvement, the strategy identifies opportunities and potential actions for the recovery and enhancement of particular species and habitat-based assemblages in Shropshire.

The species and assemblages prioritised in the LNRS are those that, using the best available data and local knowledge, local and national experts have identified as being important to the county **and** in need of additional specific actions to halt and reverse their decline beyond what is covered by the 51 habitat-focused actions.

There are 29 individually named species and 9 species assemblages.

Activities

These offer practical suggestions of changes or next steps under each action. Different activities will contribute in different ways, shown by the following icons:

Supports change, rather than delivering it directly

Delivers ecosystem services – the benefits we get from nature

Delivers better quality habitat

Contributes to water management

Delivers more habitat

Targets species recovery directly – all activities should help species recovery

Delivers better connected habitats

Provides health and wellbeing or access-to-nature benefits

National environmental and biodiversity commitments and targets

The UK has reaffirmed its commitment to halting and reversing biodiversity loss by 2030 with the publication of its National Biodiversity Strategy and Action Plan (NBSAP), which aligns with the agreements made at the 15th Conference of the Parties to the United Nations Convention on Biological Diversity. The NBSAP outlines 23 global targets, including expanding protected areas to cover at least 30% of land and seas, reducing pollution to non-harmful levels, enhancing biodiversity in agriculture and forestry, and ensuring sustainable trade of wild species. These commitments are included in the Environment Act 2021 and the Environmental Improvement Plan, which set statutory targets such as restoring over 500,000 hectares of wildlife-rich habitat by 2042 and halting the decline in species abundance by 2030.

A summary of legislation, policy and government guidance relating to LNRS can be found in Appendix 1.

Farmed land

Shropshire is a rural county, with farmland making up 84% of its land area.[37]

The county has a traditional rural economy and is home to many different types of farming and sizes of holding.

In the north Shropshire plain, lowland farmed landscapes are relatively free from woodland and agricultural activity is characterised by mixed farming including livestock, dairy, combinable crops and potatoes. Salad production and the growing of other tender crops is widespread. More intensive land uses – including the covering of crops with plastic sheeting or temporary polytunnels and diversification into intensive poultry production – have emerged in recent years.

Wetter grasslands, like those on the Weald Moors, support extensive grazing with heritage breeds well suited to local conditions. In the Shropshire Hills, livestock farms are most common, often in small fields. Here, small-scale cropping and management of grassland for haylage is balanced with upland grazing of sheep and cattle.

Larger woodlands, including those associated with the Wrekin and Wenlock Edge, produce commercial timber crops.

Case studies

Two farmers in Shropshire explain how changing systems and reducing inputs are bringing benefits for both nature and business.

Chris, Long Mynd. Read the case study >

Duncan, Shropshire Hills National Landscape. Read the case study >

Key species

- **Farmland birds,** including Linnet, Tree Sparrow, Whitethroat and Yellowhammer
- **Ground-nesting birds,** including Curlew, Grey Partridge, Lapwing, Skylark and Snipe
- Brown Hare
- Hazel Dormouse
- Plants of arable field margins
- A range of notable terrestrial invertebrates
- Mosses

Yellowhammer

Challenges

- The stocking rate is key to the benefit for nature.
- Maximising crop growth and return on investment for farmers while reducing environmental impact.
- Enabling wildlife to pass through farmed landscapes and increasing connectivity.
- Retaining valuable land for food production.
- Protecting sensitive environmental assets, including rivers and streams, from pollution.
- Using land to hold back water during flood events and as a source of water for irrigation during dry periods.

Threats

- Intensification of agricultural practices.
- Loss of field ponds, field margins, and field and hedgerow trees.
- Removal and intensive management of hedgerows.
- Over, or poorly timed, fertilisation.
- Soil erosion during rainfall events.
- Soil compaction.
- Lack of cover crops.
- A monoculture approach to food production driven by food prices and previous government policies.

Ecosystem services are the direct and indirect benefits provided by habitats – like the pollination of crops or shelter and cooling.

Natural capital refers specifically to the financial value of these services.

Lapwing

Opportunities

- Integrating nature recovery with viable farming businesses delivers effective land use along with benefits for nature, water management and quality and carbon sequestration in addition to food production.
- Farmers have invaluable local knowledge and a track record of innovation.
- Historic routeways, which mark the movement of people across Shropshire's landscape, offer enormous, interconnected habitat networks through the farmed environment.
- Small changes can have a big impact if widely adopted. For example, if all land managers reduced wormer use, this would be a massive win for wildlife.
- The varied growth patterns of species in herbal leys provide forage over a longer season, reducing the need for supplementary feeding.

Eurasian Skylark

- Certain species in herbal leys (e.g. Chicory and Plantain) have been shown to reduce worm burdens in livestock, lowering reliance on chemical wormers and supporting dung fauna diversity.
- Herbal leys can help address mineral deficiencies common in UK pastures (e.g. selenium, iodine and cobalt), reducing the need for costly mineral supplements.
- Changes in management can benefit wildlife and be cost-neutral – or even cost-positive.
- Creating a network of thick, tall and wide hedgerows would connect the landscape for nature to thrive.
- Agri-environment grant schemes are increasingly tailored to environmental outcomes.

There's growing appetite among land managers for habitat banking, natural flood management and other natural capital approaches; provided there is flexible funding alongside other land uses and income streams, these can help farm businesses to be viable, flourishing and sustainable in the long term.

Priority 1: Enhance nature alongside food production

Code: P1 | Actions: A1.1 – A1.4

What would success look like

There is a network of active farmer groups across the county providing peer support and guidance, which supports the delivery of local nature recovery and sustainable farming practices. More farms are adopting nature-friendly and organic farming practices that are boosting biodiversity; improving food quality, soil health and water attenuation; increasing carbon sequestration; reducing the need for pesticides and synthetic fertilisers; and mitigating flood risk. Farmland is nature-rich and incorporates resilient wildlife connections across our landscapes. Traditional and diverse farm habitats, such as hedgerows, ponds, orchards, arable field margins, wood pasture and scrub, have been created, extended and restored.

Cattle grazing

Actions

A1.1 Establish farmer groups – unmapped

Farmer-led groups are established and supported where there is local demand.

Encourage and support the development of farming groups, linking these together to enable members to share knowledge and resources, to connect land managers with available funding and to create corridors for wildlife.

Organic farming is a method of agriculture that works with nature. It avoids the use of synthetic fertilisers, pesticides and genetically modified organisms (GMOs), relying instead on natural processes and materials to maintain soil health, control pests and support biodiversity. Organic farming aims to produce food in a way that is better for people, animals and the planet. There is on average 30% more wildlife on organic farms. It is governed by a set of standards that are legally defined and independently inspected and verified. Visit the Soil Association website to learn more.

Actions

A1.2 Enhance soil health and nature on arable land – unmapped

Monitor soil health to establish soil characteristics and health and inform management practices.

Encourage best practice, including reduced inputs, reduced cultivation (particularly in winter), no/minimum tillage, deeper rooting/stronger rooted swards, over wintering stubble, cover crops, minimising compaction and integrating livestock with crop production where appropriate. Support will be needed in areas where there is no longer any livestock infrastructure.

Create and expand headlands, wide margins and buffers around arable fields, particularly against watercourses and ditches, and incorporate scrub, ponds, trees etc. in appropriate areas that work for businesses. Providing unharvested, fertiliser-free conservation headlands, focused on well-connected areas, will support a broad range of species and is particularly important for the Necklace Ground Beetle.

Use pesticides and herbicides as part of an integrated pest management approach (already underway on many farms), using alternatives wherever possible.

Use environmental options – such as cover crops and other non-permanent habitats – on longer rotations and strategically within the landscape and on a whole-farm basis. This boosts biodiversity, improves the quality of food produced, improves soil structure and reduces reliance on pesticides and artificial fertilisers, mitigates flooding and muddy run-off, and increases carbon sequestration and water attenuation.

Build up organic matter in soils through the addition of organic manures and rotational grazing on arable land.

Helpful guides

Nature Friendly Farming Network: A practical guide to integrated pest management

Minimise soil disturbance, especially near watercourses and during winter, when rainfall is heaviest.

Identify risks of increased run-off resulting from changes in crops and from more intense rainfall periods caused by climate change and put in place appropriate mitigation measures.

Support overwintering birds by establishing winter bird mixes and retaining wildflower seedheads and winter stubble on arable fields for farmland birds such as finches, Tree Sparrow, Skylark and Yellowhammer and for arable bryophytes.

Establish and maintain field margins around arable fields leaving areas of longer tussocky grass and wildflowers, managed on rotation, to benefit small mammals and pollinators.

Actions

A1.3 Enhance soil health and nature on pastures – unmapped

Monitor soil health to establish soil characteristics and health and inform management practices.

Encourage best practice including reduced inputs, deeper rooting/ stronger rooted swards, minimising compaction and the incorporation of more trees into the farmed landscape. Links to: A9.5 Plant more trees in the farmed landscape.

Manage livestock through regenerative or organic grazing techniques such as establishing herbal leys, riparian buffer strips, rotational grazing and adaptive multi-paddock grazing with long rests to restore soil health. Incorporate a range of deep-rooted plants to enhance drought resilience.

Manage stock that have high worm egg counts through rotation and monitoring of worm status to reduce the need for routine worming. This encourages greater diversity of dung flora and fauna, including Dung Beetles and other insects that bird populations rely on.

Reduce the use of artificial fertilisers and herbicides.

Create more hay meadows by converting silage production fields, where feasible, to encourage flowers to complete their annual cycle, which benefits small mammals and pollinators.

Minimise soil disturbance, especially near watercourses and exclude livestock from watercourses while allowing effectively managed access where grazing may be periodically desirable for vegetation management.

Establish and maintain field margins around silage fields leaving areas of longer tussocky grass and wildflowers, managed on rotation, to benefit small mammals and pollinators.

Where appropriate, adapt grazing and mowing regimes, stock numbers and timings help to create conditions that support ground-nesting birds such as Curlew and Lapwing.

Actions to create hedgerows, diversify field margins, reduce pesticide and herbicide use and reduce stocking rates support recovery of an assemblage of farmland bird species.

Helpful guides

Farmers Weekly: 8 steps to get started with regenerative grassland management

Actions

A1.4 Create, restore and manage nature-rich farmland mosaics – unmapped

Manage existing areas of high quality semi-natural habitat within farmland, such as species rich grasslands, scrub, wetlands and veteran trees.

Create a mosaic of habitats by extending and buffering existing habitats. Focus on areas adjoining existing habitats and on unproductive areas of land such as steep slopes for natural regeneration or tree planting, wet areas for wetland and pond creation, and floodplains for riparian buffers and wetlands.

Where feasible, reinstate smaller fields with hedgerows, grass margin buffers, scrub, cover crops, arable weeds and/or wildflowers, and ponds.

Create scrub with diverse age structure to provide connectivity between woodland habitat blocks, to buffer hedgerows, to minimise silt, nutrient and soil run-off into ditches and watercourses.

Reduce inputs and chemicals to help invertebrates thrive, providing food for a range of bird species.

Caer Caradoc Hillfort. Credit: Sarah Jameson

Hedgerows

Human activity in Shropshire over thousands of years has resulted in an extensive network of hedgerows that can provide important links between ecosystems.

Hedgerows and lines of trees are a quintessential feature of the Shropshire countryside. Originally planted to enclose land, control livestock and mark property boundaries, these features can serve as bastions of plants and wildlife, enabling connectivity between species population clusters. Hedgerows connect woodlands and enable woodland species to move between larger blocks of habitat.

Like the rest of the UK, Shropshire has suffered notable declines in the condition and quantity of hedgerows. Despite this, these features remain abundant in the county, covering 14,479 km.[38] Ancient hedgerows, which support a wide range of plant species (e.g. hawthorn, hazel, beech, elderflower) and incorporate fully mature and ancient trees, remain in some locations.[39]

Linear blocks of trees and tall standing shrubs can help reduce soil erosion by acting as windbreaks, provide carbon sequestration and storage in soil and woody material, and filter nearby noise and air pollution via leaf material in canopies.

14,479 km

of hedgerows in Shropshire and Telford & Wrekin

Key species

- Alder Buckthorn
- Bluebell
- Buckthorn
- Primrose
- Midland Hawthorn
- Violets
- White Bryony
- Wild Strawberry
- Wood Sorrel
- Wood Anemone
- Meadow Foxtail
- Orchid species
- Bee species
- White Letter Hairstreak
- Holly Blue
- Comma
- Orange Tip
- Linnet
- Tree Sparrow
- Yellowhammer
- Hedgehog
- Hazel Dormouse
- Bat species
- Shrews
- Mice

Alder Buckthorn.

Challenges

- Recreating diverse age and species structure within hedgerow resources locally.
- Securing coherent management of networks of linear features often in multiple ownerships and abutting a variety of land uses.
- Reconstructing connectivity lost to physical development and preventing further connectivity loss.

Threats

- Loss of hedgerows and hedgerow sections, structure and function. Ash dieback is major threat, given that ash makes up more than a third of hedgerow trees in the UK.[40]
- Traditional management techniques being abandoned.
- Poor hedgerow management resulting in over trimmed or over mature, leggy hedges that lack dense lower growth, develop gaps, and ultimately lose the healthy structure needed to support wildlife and long term resilience.
- New infrastructure severing connectivity.

Opportunities

- Significant biodiversity value can be achieved through re-integrating hedgerows into agricultural systems both as habitats in their own right and as a means of providing connectivity between other habitat patches.
- Planting hedgerows can have benefits for livestock and arable production and provides connectivity between habitat blocks without taking up significant amounts of productive land.
- Planting hedgerows within and around new developments can have significant connectivity benefits.
- Generous grants are available to encourage hedgerow planting.
- Managing road verges and railway embankments for biodiversity has the potential to create a significant resource of well-connected habitats with considerable value for wildlife.
- The preservation and restoration of historic hedgerows maintain the character and integrity of historic landscapes.

Case study

In the last couple of years, CPRE's Hedgerow Heroes project has planted over 18 km of new hedgerow in a project that brings together volunteers and landowners.

Read the case study >

Large hedgerow in South Shropshire.
Credit: Sarah Jameson

Priority 2: Restore, enhance, expand and appropriately manage the hedgerow network

Code: P2 | Actions: A2.1 – A2.2

What would success look like

Hedgerows are tall, wide, well buffered and alive with wildlife, providing food, shelter and commuting opportunities for many different species. Planting along historic boundaries and well-planned new hedgerows, using a range of plants and trees, is increasing connectivity within the landscape, and hedgerows are well managed and climate resilient.

Actions

A2.1 Restore and manage the existing hedgerow network – unmapped

Maintain hedgerows that are tall and wide. Retain mature hedge trees.

Manage hedgerows to encourage an annual cycle of flowering and fruiting by varying trimming cycles – alternating hedge sides and faces annually – and leaving berries over winter for birds. Protect standard trees and consider hedgelaying. Retain dead plant stems as habitats for overwintering invertebrates including solitary bees and crop pest predators.

Use fencing and other measures to prevent over-browsing and protect from cultivation.

Safeguard, buffer and connect older, well-established hedgerows, particularly those linked to other priority habitats (e.g. at the edge of an ancient woodland).

Enhance existing gappy hedges by hedgelaying, coppicing and planting.

Helpful guides

Nature Friendly Farming Network: Hedgerow masterclass webinar

Actions

A2.2 Create more connectivity in the landscape by establishing new hedgerows – unmapped

Create new species-rich hedgerows with tree standards to support healthy soil systems and reduce erosion, buffer watercourses, and slow the flow of water, nutrient and soil over land (e.g. cross-slope planting). Linking areas of woodland provides connectivity for wildlife and benefits a range of farmland bird species. Target action to address functional gaps in ecological network.

Establish hedgerows to include at least five different species and include a mixture of trees, shrubs, creepers and ramblers that flower between early spring to late autumn to support pollinators.

Establish buffer strips so hedgerows are wide and are associated with grassland and other buffering habitats.

Encourage the use of hedgerows to border new developments, particularly where they are at the edge of settlements or offer connectivity opportunities.

Water and wetlands

Water bodies, watercourses and their margins are biodiversity hotspots. Shropshire supports a wide variety of water body habitats – from freshwater streams and rivers, to canals, lakes and ponds, to peatlands, flushes and fens. Some of these habitats, like the meres, are designated sites while others receive little protection.

Water and wetlands are intrinsically linked to each other. Water bodies – and the condition of freshwater and wetland habitats – depend on the catchments in the surrounding land, which determine the quality and quantity of water they receive. Wetlands, and headwaters for rivers and streams, are fed by rainfall on hills and mountains, groundwater springs and/or seepage from saturated soils; rivers and streams flow down into seas and lakes. Except for a small number of streams in the north-west of the county, all Shropshire's rivers eventually flow into the River Severn, the UK's longest river.

Clean water is fundamental to the health of aquatic and semi-aquatic ecosystems. Rivers, wetlands, ponds, and ditches are home to a wide range of species and poor water quality, often caused by nutrient run-off, sedimentation, or pollutants like forever chemicals (**PFAS**), degrades these habitats and reduces biodiversity.

River Severn Arley

Forever chemicals in our water

PFAS are key pollutant. In the UK, PFAS have been detected in rivers, estuaries and groundwater.

Rivers, streams and lakes in the strategy area are generally not in good ecological condition, and threats include declining water quality, changing flows and sedimentation. Nature-based solutions such as reedbeds and wetlands act as natural filters, capturing sediments, nutrients and some PFAS compounds. Biochar can also help filter out nutrients, microplastics and some PFAS.

Ponds, which are generally small and sit across farmed, semi-natural and urban landscapes have been lost in high numbers over the past 40 years or more due to changes in agricultural practices and development. Meres, which were originally formed in ice age kettle holes are particularly vulnerable to surrounding land uses since their hydrological catchments are largely farmed and they have limited outflow in many cases.

By area, rivers and other freshwaters (ponds and lakes) are a tiny part of Shropshire's natural environment, but they are vital in terms of the wildlife they support and for the connectivity they provide. Most of the land in the strategy area is no more than 1 km from freshwater.

Shropshire's wetlands are influenced by the great diversity of its landscape. In North Shropshire, with origins in shallow glacial lakes and wet hollows, are the extensive wetlands of Fenn's, Whixall, Bettisfield, Cadney and Wem Mosses. Collectively these sites are the third-largest area of lowland raised peatbog in the UK and are recognised as an irreplaceable habitat which has undergone significant degradation.

Less extensive and highly fragmented are areas of lowland fen, such as the paleochannel of the Old Riverbed SSSI in Shrewsbury. This area of sedge fen was cut off from the River Severn at the last glaciation. Differing in origin but related, are the fens of North Shropshire the most notable of which can be found fringing the meres including Oss Mere and Crose Mere.

Occurring throughout the uplands are numerous springs, flushes and fens – small wetlands that can be surface or groundwater fed or fed by rainfall. Often occurring as valley mires at the headwaters, soils may be peaty and achieve some depth. Often located in grazed moorland or heathland these wetlands can be far more species-rich than the habitats in which they occur.

Common frog

Key features and habitats

Rivers and streams are bodies of water that flow. Streams are narrower than rivers (usually less than 8.25 metres wide) and may occasionally dry out.

The source or uppermost part of a river or stream, where the water begins to flow, is the **headwater**. Headwaters typically form in upland areas, fed by springs, rainfall or seepage. They act like a sponge – holding water in vegetation and soils, slowing run-off and allowing groundwater recharge – which is especially important in upland areas, where steep slopes and artificial drainage can otherwise accelerate water loss. Restoring headwaters is often more cost effective than focusing restoration efforts on larger downstream water bodies.

Headwater areas also support unique habitats like mires (broad, shallow lakes or wetlands), spring-fed wetlands and wet flushes. They are home to species such as Common Sandpiper, Dipper and rare plants like Marsh Violet.

Canals are man-made waterways that were originally used for transportation and recreation. Some remain in use, while others are disused or exist as remnant sections.

Lakes are large bodies of standing water, natural or man-made, usually at least 2 hectares in size, which can be fed by rivers or rainfall. **Meres** are lakes that are shallow relative to their breadth.

Ponds are small bodies of standing water usually between 1 square metre and 2 hectares. Ponds should contain water for at least four months of the year.

Springs, flushes and **fens** are small wetlands.

A **spring** is a point at which groundwater naturally reaches the surface, often at the base of slopes or where impermeable rock layers force water upwards. They are typically localised, often forming the headwaters of streams.

A **flush** is a diffuse, downslope flow of water from a spring or seepage point. It spreads laterally across the land surface, creating saturated soils that support sedges, rushes and mosses.

A **fen** is a peat-forming wetland that is fed by groundwater or surface water, making it nutrient-rich. Peat is partially decomposed organic matter that is fundamentally important for supporting nature and for water quality and management.

Fens often have peaty soils more than 0.5 metres deep, a high water table (often at or just below the surface) and rich plant communities. In Shropshire, fens are found in both lowland areas and uplands, often as part of a mosaic with springs and flushes.

One hectare of peat only 30 cm deep holds as much carbon as 1 hectare of primary rainforest.[41]

Peatland is a general term for any ecosystem in which peat accumulates over time in waterlogged conditions. Peatlands include several types of wetlands, such as bogs, fens, mires and peat-forming swamps and marshes (if they accumulate peat). Peatlands are defined by their peat-forming processes, not their vegetation or location. They can be active (still forming peat) or degraded (no longer accumulating peat but still ecologically valuable).

Key species

- Atlantic Salmon
- European Eel
- White-clawed Crayfish
- Freshwater Pearl Mussel
- Mayfly
- Beautiful Demoiselle
- Common Sandpiper
- Kingfisher
- Grey Wagtail
- Dipper
- Native Black Poplar
- Snake's-head Fritillary
- Floating Water Plantain
- Water Vole
- Grass Snake
- Marsh Flapwort

Snake's-head Fritillary

Challenges

- Addressing agricultural intensification.
- Ensuring sustained and appropriate management, including management of water levels.
- Ensuring species movement between isolated wetland patches.
- Educating public and anglers to reduce release of non-native fish.
- Educating public and anglers using the Check Clean Dry initiative to prevent accidental introduction of invasive non-native plants, animals and diseases.

Threats

- Nutrient enrichment.
- Extreme flood events and depleted flows.
- Loss of riverbank shade.
- Spread of invasive non-native species and the introduction of pathogens.
- Channel modification – dredging, culverting etc.
- Changing water levels.
- Heat stress and drying.
- Succession to scrub and woodland in the long term.
- Some sites not legally protected.

Opportunities

- Environmental incentives to increase wetland areas.
- Engaging land managers to raise water tables in appropriate locations.
- Maintaining wetlands as effective carbon sinks.
- Implement innovative solutions to improve habitat resilience and address climate change.
- Financial and social benefits of taking positive action to reduce flooding, drought and improve water quality.
- Historic routeways and watercourses offer interconnected habitat network opportunities

Priority 3: Re-naturalise rivers and stabilise flows

Code: P3 | Actions: A3.1 – A3.5

What would success look like

Rivers are reconnected to floodplains and mosaics of wetland habitat, banks are re-naturalised, and watercourses encouraged to meander wherever possible, buffered by climate-resilient wet grassland and wet woodland. Slow the flow measures and land use changes are preferred over engineered solutions and are used in appropriate locations. Barriers have been removed (or circumvented) to allow wildlife to pass. Flows are more stable, communities are experiencing less flooding, and reservoirs and water storage lakes are in place or being planned to manage dry spells. More rivers achieve good ecological status and good chemical status under the Water Framework Directive, stretches of priority river habitat are expanding, and wildlife is thriving. Farmers and land managers are empowered to manage water well on a whole-farm basis and support each other through established farmer groups.

Kingfisher

Case study

Learn how landowners and organisations have been working together to slow the flow in the Corvedale.

Read the case study >

Actions

A3.1 Improve water quality – unmapped

Work with farmers and farm advisors (e.g. the Catchment Sensitive Farming project) to address water on a whole-farm basis and in the context of the catchment.

Engage with the public and make them aware of how **everyday activities** affect water quality and explain how changing habits can benefit water quality and biodiversity.

Use pesticides and herbicides as part of an integrated pest management approach, using alternatives wherever possible, and reduce inputs to help invertebrates to thrive, which in turn provides food for a range of bird species.

Helpful guides

Nature Friendly Farming Network: A practical guide to integrated pest management

Create reedbeds to slow water flow, improve water quality, and/or to act as an additional filter system for effluent from sewage treatment plants and integrate them with the wider landscape to connect sites.

Create seasonal ponds, scrapes, swales and silt traps on farms to help capture nutrients before they enter wider wetland systems.

Create wide buffers and margins adjacent to ditches, rivers, streams and canals to reduce run-off from neighbouring land to hold and clean water.

Implement sustainable drainage systems in locations where they can reduce the impact of road run-off on rivers and streams and provide clean groundwater recharge.

Manage banks of streams and rivers rotationally, where necessary, and leave unmanaged sections retaining healthy riverside trees, submerged roots and submerged timber for the benefit of fish and aquatic invertebrate species.

How everyday activities can affect water quality

Everyday activities with the potential to negatively impact water quality include the improper disposal of household waste, including chemicals, oils, and non-biodegradable materials; the use of veterinary flea and worm treatments on domestic pets, which can affect aquatic invertebrates if washed into water bodies; overuse of fertilisers and pesticides on lawns can lead to run-off that contaminates local water sources; poor maintenance of septic systems can result in leaks or overflows, releasing harmful bacteria and nutrients into groundwater and surface water; inappropriate disposal of medications; misconnections within waste water treatment systems; and disposal of inappropriate liquids via highways drains.

Actions

A3.2 Reduce both flood risk and low flows – unmapped

Use vegetation to slow surface water flow through increased vegetation diversity and height.

Retain more water in upper catchment enabling groundwater recharge and regulating flow. Links to: A4.3.

Install leaky dams and debris to slow the flow of water and re-wet riparian habitats.

Manage ditches by following natural cycles and dredging sensitively.

Design permanent lakes and ponds to have additional capacity to hold extra water during storm events, and with sediment management in mind to minimise the need for desilting. This will increase resilience to drought and reduce the need for abstraction providing flood risk benefits, water resources benefits and biodiversity opportunities.

Employ land use changes and **natural flood management** upstream of communities at risk of flooding including tree and woodland planting, water attenuation features, large woody debris dams, passive/offline floodplain storage, grip blocking and gully stuffing. Such actions will mitigate flood risk, climate change impacts and drought.

De-pave the built environment in settlements to increase natural infiltration of rainwater.

Natural flood management uses natural processes to reduce the risk of flooding. These processes protect, restore, and mimic the natural function of catchments, floodplains and the coast to store water and slow the flow.

Reintroduce beavers where appropriate to create wetland mosaics of high structural diversity. Beavers are effective at creating and enhancing varied and dynamic habitats for a wide range of wildlife, increasing water storage and drought resilience, slowing flows and helping flood prevention. Sectors to work together to effectively manage local impact and direct activities where necessary.

Use slow the flow measures to provide varied flow conditions within watercourses suitable for a range of fish and aquatic invertebrate species.

Provide coarse, wet deadwood in watercourses and water bodies to benefit a range of species.

Actions

A3.3 Remove physical barriers – unmapped

Map artificial modifications and barriers across catchments to allow prioritisation of action to maximise benefit.

Remove physical barriers wherever possible to allow free movement of fish between areas of good quality habitat. Provide technical fish passes and other wildlife-friendly features. Note that barrier removal should be considered carefully, as existing barriers may be preventing American Signal Crayfish mixing with native White-clawed Crayfish.

Restore and connect high-quality rivers, streams, ditches and other water bodies, together and with other wetland habitats.

Avoid putting watercourses underground and de-culvert existing watercourses to maximise wildlife benefits and make access for management easier.

A3.4 Restore streams and rivers to a more natural state – mapped

Where possible, re-naturalise streams and ditches by introducing meanders, oxbows, backwaters and ponds and reconnecting paleochannels.

Enhance wetlands for a range of wildlife including plant diversity, breeding waders and invertebrates. This can be achieved by maintaining water levels, creating mosaics of wet and dry areas as well as additional beneficial habitats like reedbeds, ponds, scrub, wet grasslands, wet woodland and woodland edges. Low-intensity grazing can be used where appropriate. Remove invasive species.

Introduce gravels and riparian trees for spawning and shading. Maintain suitable spawning sites providing shallow gravelly areas adjacent to deep pools.

Provide coarse, wet deadwood in watercourses and water bodies to benefit a range of species.

Dipper

Actions

A3.5 Create, enhance and appropriately manage riparian buffers – mapped

Manage bankside trees through coppicing and pollarding. Manage for structural diversity to increase invertebrate levels for the benefit of an assemblage of woodland birds.

Effectively manage livestock access to watercourses to prevent issues such as riverbank erosion or eutrophication (excessive amounts of plant and algae in waterways which reduces light and can harm other wildlife). Limited flash grazing (short periods of intense grazing by livestock) can be used to help manage the mosaic of open habitats in riparian zones as well as to manage invasive species.

Adopt an integrated pest management approach if cropped areas are located close to waterways.

Remove drainage features in traditionally wet woodlands to restore wet woodland function and appropriately manage for the benefit of an assemblage of woodland birds.

Create wide riparian buffers next to rivers, streams and canals through planting and natural regeneration of woodland, grassland and wetland to provide shade, reduce silt, sediment and nutrient run off, hold back water and provide habitat for a range of species. Any woodland establishment and management should follow principles laid out in the UK Forestry Standard for creating and managing riparian woodland.

Use riparian buffer creation as part of programmes to reconnect rivers to their historic floodplains, to improve resilience to climate change, provide water storage and to intercept nutrient and sediment run-off from adjacent land. Target grazing marsh restoration to areas that most benefit wading birds.

Emperor Dragonfly

Priority 4: Restore peatland and wetland mosaics

Code: P4 | Actions: A4.1 – A4.4

What would success look like

Large wetland sites are in improved condition as a result of actions both within and beyond their boundaries. Peat remnants are being restored, complemented by paludiculture and other regenerative or organic agricultural techniques where appropriate. Upland headwaters hold water well, maximising opportunities for groundwater aquifer recharge and delivering both environmental and financial benefits. Headwater watercourses have more stable flows and are less prone to flooding and drought. Targeted management actions are well underway to expand and restore flush habitats and previously wet riverside fields now incorporate wetland habitats and floodplain grassland for a diverse range of wildlife. Mosaics of wetland habitats outside the floodplain are increasing in size and resilience, connected via natural watercourses and ditches, and providing habitat for a range of species. The landscape is providing nature-based solutions including stepping stones for wildlife, on-farm water management, healthy soil retention, and protection for watercourses from run-off of nutrients, silt and sediment. Actions are integrated into viable whole-farm businesses – and are benefitting both farmers and nature.

Snipe

Actions

A4.1 Restore existing areas of high-quality peat, fen and bog habitat – mapped

Restore existing areas of peat, bogs and fens, which are nature-rich habitats and provide important water management, water quality and carbon capture services.

Enhance semi-natural habitats surrounding remaining lowland raised bogs, peat, fens and wetlands to improve resilience and reduce nutrient inputs.

Reduce land drainage on adjacent land to support habitat restoration. Block, break and reverse artificial drainage in appropriate locations. Ensure re-wetting measures consider surrounding land uses and avoid negative impacts on neighbouring land.

Establish sustained management to periodic cutting of fen vegetation and scrub removal and appropriate levels of grazing to enhance the biodiversity of these important sites.

Maintain natural variability in water levels in fen habitat, with some permanently wet areas and some occasionally wet areas to support transitional vegetation and specialist invertebrate species.

Address sources of pollution, silt and sedimentation and air pollution impacting upon pools and meres and associated buffer habitats.

Implement low-input farming systems in peatland catchments to reduce eutrophication. Incorporate wetter farming practices such as **paludiculture** into farm businesses as appropriate.

Provide coarse, wet deadwood in watercourses and water bodies to benefit a range of species.

A4.2 Restore, connect and expand areas of wetland mosaic habitat – mapped

Create and restore wetland habitat at appropriate sites by raising water levels, creating ponds and incorporating scrapes to provide foraging areas for breeding birds. Block, break and reverse artificial drainage in appropriate locations.

Reintroduce beavers where appropriate to create wetland mosaics of high structural diversity. Beavers are effective at creating and enhancing varied and dynamic habitats for a wide range of wildlife, increasing water storage and drought resilience, slowing flows and helping flood prevention. Sectors should work together to effectively manage local impact and direct activities where necessary.

Case study

Trialling wetter farming (paludiculture) on peatlands in North Shropshire.

Read the case study >

Actions

A4.3 Restore ability of catchment headwaters to act as a sponge – mapped

Identify and take action to safeguard peaty soils and associated vegetation, and re-wet where appropriate.

Reduce the impacts of intensive grazing, eutrophication and poaching by livestock on wet-flush features and headwater streams by reducing livestock stocking rates in sensitive areas and using exclusion fencing where appropriate. Manage scrub encroachment into wet flushes to prevent loss of ground flora.

Re-engineer drainage to provide wetland opportunities and support vibrant farm businesses. Actions could include installing leaky woody dams, creating scrapes and pools, planting cross-slope hedges and ditch blocking.

Restore and establish wet woodland (including in steep valleys) and wet grassland habitats with associated ponds in headwater areas and around natural springs.

Restore and establish wet and dry heathland habitats in headwater areas. The diversity of vegetation in these habitats slow run-off down and hold water in their structures, helping headwaters to act like a sponge.

Block artificial drainage channels associated with conifer plantations and particularly at the edge of blocks to slow the flow of water.

Prevent agricultural pollution and road run-off entering headwater streams by altering land management practices, creating buffer strips and/or installing interception features.

Reduce the impacts of abstraction (which impact headwaters disproportionately) by installing water storage infrastructure on farm where possible.

Reintroduce beavers where appropriate to create wetland mosaics of high structural diversity. Beavers are effective at creating and enhancing varied and dynamic habitats for a wide range of wildlife, increasing water storage and drought resilience, slowing flows and helping flood prevention. Sectors should work together to effectively manage local impact and direct activities where necessary.

Reduce flash flows by managing upland headwaters to act as natural sponges for the benefit of a number of bird species including Common Sandpiper, Dipper and Kingfisher.

Plant Marsh Violets and other key plant species as part of restoring wet flush habitats.

Target the removal of Himalayan Balsam, beginning at headwaters and moving down through catchments.

Actions

A4.4 Target regularly flooded land for wetland creation and grazing marsh – mapped

Empower farmers to deliver well-designed projects in areas that are subject to regular flooding as part of viable whole-farm businesses that work for the land and the landowner. Incorporate features such as ponds, buffer strips, hedgerows, rough and species-rich grassland, swales and bunds on farms, which provide benefits for biodiversity, water management, soil management and climate change adaptation.

Flooding on the River Severn

Priority 5: Create, restore and manage ponds, glacial pools and meres

Code: P5 | Actions: A5.1 – A5.2

What would success look like

Existing ponds, pools and meres have been identified and are being managed to prevent loss and to improve condition. Waterbodies are surrounded by buffers of semi-natural habitat. Networks of new ponds have been created across rural and built environments and appropriate pond management is well understood. Water quality and ecological condition of water bodies is improving. Issues such as nutrient run-off, sedimentation, drying through artificial drainage and invasive non-native species (INNS) are well understood and being actively addressed. The presence of more, better quality ponds – which are hotspots for uncommon species – is increasing the populations of many Red-listed species, with the potential to substantially reduce the extinction risk for many freshwater species.

Actions

A5.1 Enhance existing ponds, pools and meres – mapped

Provide education on pond management, to protect ponds from a range of issues including access by dogs, wildfowl feeding, invasive non-native species and species release. Educate the public on the importance of keeping wildlife ponds fish-free, refraining from releasing fish or moving fish from one pool to another.

Identify, map and manage existing ponds, pools and meres to prevent loss and improve condition. Manage vegetation by mechanical operations or livestock trampling.

Create buffers of low-intensity land use to help eliminate or minimise fertiliser and pesticide use within pond, pool and mere catchments.

Provide coarse, wet deadwood in watercourses and water bodies to benefit a range of species.

Actions

A5.2 Create new ponds – mapped

Create and restore ponds (including reinstatement of ghost ponds and glacial ponds), focusing on areas of low-intensity land use that provide a clean water source and are ideally close to existing ponds.

Encourage creation and restoration of ponds within 250 metres of known populations based on Natural England's Great Crested Newts modelling for district-level licensing.

Create and restore ponds in the habitat matrix of new habitat creation schemes ideally where minimal intervention will be required (e.g. for small field ponds, ensure livestock are present to control vegetation succession).

Encourage wildlife gardening and the creation of small, fish-free, wildlife ponds in gardens, school grounds and forest school areas, and businesses.

Connect ponds through associated habitats and ensure connectivity in the landscape as part of a mosaic. Reduce distance between water bodies.

Pond in South Shropshire. Credit: Sarah Jameson

Helpful guides

Freshwater Habitats Trust:
Pond Creation Toolkit

The Wildlife Trusts:
How to build a pond and
How to grow a wild patch or mini meadow

Priority 6: Enhance canals to benefit nature and people

Code: P6 | Actions: A6.1

What would success look like

Canals are wildlife rich, provide strong linear connectivity through a range of landscapes and are excellent for recreation and active travel. Action is being taken to remove hard canal edges in favour of natural banks and to create quiet, dark areas and buffers of vegetation to allow species to flourish. Land management adjacent to the canal protects water quality and enhances the canal corridor

Actions

A6.1 Enhance canals for wildlife and people – mapped

Remove hard edges in favour of natural banks where possible.

Manage bankside vegetation on a rotational basis, balancing the needs of canal users with biodiversity benefits.

Minimise light and noise disturbance along canals through careful design both within the canal corridor and on adjacent developments.

Reduce boat speed in areas where species sensitive to wash, noise or disturbance are present.

Manage land adjacent to the canal corridor to form a buffer of appropriate, protective habitats.

Install fish passes and other wildlife-friendly features. where appropriate within the canal network and/or install fish screens to prevent migratory fish entering the canal network.

Carry out sensitive canal restoration where this can be achieved alongside enhancing and protecting the biodiversity present in remnant canal sections.

Integrate habitats associated with canals with wider networks of habitat and green space.

Water vole

Trees, woodlands and woody habitats

Woodland of all types can be found in Shropshire – from the planted woodlands around Telford New Town to the ancient woodlands of Wenlock Edge and Wyre Forest, from conifer plantations to small patches of broadleaved woodland in farmed landscapes. The county is also home to thousands of veteran and ancient trees, hedgerow trees, field trees and scattered trees.

By broad habitat, woodlands comprise the largest area of semi-natural habitats in the county. The National Forest Inventory records 33,026 hectares of woodland in Shropshire, which includes wood pasture and parkland, ancient, dingle, riparian and wet woodland. Some 19,087 hectares of the county's woodland is priority deciduous woodland habitat.

Woodland size can vary from small copses to large forests. Larger woodlands are often a mosaic of habitats, with areas of high forest, regenerating coppice and new planting, woodland rides and glades, heathland, grassland, streams and wetlands. When managed well, they are extremely rich in wildlife.

In Shropshire, native woodlands with varied age structure, biodiverse understory and a range of edge, ride and glade features have high value for biodiversity. Surviving ancient woodlands support a wide range of plant and animal species. Large blocks of continuous woodland, such as Wenlock Edge, provide critical connectivity for wildlife, so they can move through the landscape. Smaller patches – like those within urban areas and farmed landscapes – provide valuable stepping stones.

No county data is available for the ecological condition of priority woodland; however, according to national data from 2020, just 7% of native woodland was in good ecological condition overall.[42]

9%

Woodland habitat accounts for more than 9% of Shropshire's land area

Lesser Spotted Woodpecker

Ancient woodland is an area that has been wooded continuously since at least the start of the 17th century.

Wyre Forest has been wooded since at least 900 AD.

Plantations on ancient woodland sites (PAWS) are areas where former ancient semi-natural woodlands have been cleared and replanted with either native or non-native tree species.

Broadleaved woodland is characterised by trees with broad, flat leaves (not needles) that are usually deciduous, meaning they shed in the autumn. Common examples of broadleaf trees include oak, beech, ash and birch.

Coniferous woodland is composed of cone-bearing trees, often with needle-like leaves. These trees – like spruce, pine and fir – are typically evergreen, meaning they keep their leaves year-round. Shropshire's conifer plantations are often located in the uplands and are sometimes contiguous with areas of broadleaf woodland, especially PAWS. Their primary purpose is to produce timber. And although their wildlife value is much lower than that of broadleaf woodland, they provide habitat for species including Crossbill and Goshawk.

Mixed woodland refers to forest or woodland in which there are both coniferous and broadleaved trees growing alongside one another.

Wet woodland is characterised by trees that thrive in poorly drained or seasonally waterlogged soils. Wet woodland is typically found in areas like floodplains, along rivers and streams, and around the edges of lakes, fens, bogs and mires. Key tree species include willow, alder and birch.

Secondary woodland is woodland that has developed through natural regeneration processes on land previously cleared of trees. It can be species-poor compared to ancient woodland but provides connectivity and shelter for a range of species.

Shropshire is also home to 2246 **veteran and ancient trees** – which are of biological, cultural or aesthetic interest because of their age size or condition – as well as other hedgerow trees, field trees and scattered trees. Often these trees are the last vestiges of long-since removed hedgerows surrounding historically smaller field parcels or wood pasture, which act as stepping stones between semi-natural habitats. Some trees are instantly recognisable as veterans, but many are less obvious.

Despite providing many ecosystem services (such as carbon storage and biodiversity support for rare species) many ancient trees in Shropshire remain unprotected. Ash dieback represents a major threat to many remaining ancient specimens of this species.

The clearance of ancient semi-natural woodland (ASNW) had a greater impact on Shropshire than it did in other parts of England, with significantly more PAWS (58%) created compared to the national average (39%).

By area, ASNW in the Clun Catchment is 1602 ha of which 1345 ha is PAWS (84%).

Other woody habitats in Shropshire include scrub, orchards and orchard remnants, parkland and wood pasture.

Where woodland starts or ends, or in places where woodland might develop (like abandoned fields), there are often areas of scrub – a valuable habitat that many species depend on for survival. Scrub mostly comprises bushes and woody shrubs, such as hawthorn and gorse, and small trees. Scrub can reach a height of between 12 and 15 feet.

Wood pasture is a traditional land management system that combines trees with grassland managed by grazing animals on the same land. It's a land management technique that has been practised in the UK for centuries and is valued for its rich biodiversity and cultural heritage.

Wooded parkland is a distinctive type of habitat found within designed landscapes that were originally created for aesthetic, recreational, or cultural purposes – often surrounding country houses or estates. While these landscapes were shaped by human design, they have developed significant ecological value over time. They are important for veteran and ancient trees and are traditionally grazed with livestock. Many parklands have been managed for centuries, allowing complex ecosystems to develop.

Apple orchard

Orchards are areas of land in which fruit or nut trees are grown for commercial purposes or conservation. They can vary in size from small traditional plots with widely spaced trees and grassland beneath, to intensive modern systems with closely planted rows and minimal undergrowth. Orchards not only provide food but also valuable habitats for wildlife – especially when managed with biodiversity in mind, such as through traditional practices like grazing, wildflower margins and minimal pesticide use. Once much more numerous and widespread, many orchards have been lost from the landscape.

Right tree, right place

Planting the right tree in the right place is critical. Use the following principles as a guide:

1. Check existing environmental interest and for non-woodland habitat restoration potential.
2. Use as diverse a range of native tree and shrub species as possible. Use varied planting densities, allowing plenty of open space, to maximise horizontal variation in structure. Use intimate mixes of high canopy, understorey and shrub species to maximise vertical variation. Connect areas of existing woodland cover where possible.
3. Go large: make new woodlands as big as possible.
4. Get edgy: maximise the edge to area ratio of new woodlands.
5. Restore natural processes, blocking drains and ditches to restore natural hydrology of wet woodland and using natural colonisation instead of planting where seed sources are available.

Planting Wild Service sapling. Credit Sarah Jameson

To learn more about planting trees and woodland, see the UK Forestry Standard guidance. or the Woodland Trust's Woodland Creation Guide.

Woodland planting should use UK and Ireland Sourced and Grown (UKISG) or similarly traceable plants and whips.

Key species

- Ash
- Beech
- Bluebell
- Herb-Paris
- Large-leaved Lime
- Oak sp.
- Ramsons
- Wild Service Tree
- Wood Anemone
- Pine Marten
- Hazel Dormouse
- Yellow-necked Mouse
- Wood White Butterfly
- Northern Yellow Splinter Cranefly
- Wood Ant

Wood White Butterfly.
Credit: Dave Green.

Challenges

- Most large ash trees are likely to be felled between now and 2050 due to ash dieback.
- Identifying woodland planting that could withstand even the low-end (1.5° C) global temperature rise scenario.
- Fragmentation.
- Lack of woodland infrastructure to access and manage woodlands, and future unmanaged woodlands.
- Lack of traditional skills to utilise coppice products.

Threats

- Water stress (wetter winters and drier summers) and temperature extremes.
- Trees more susceptible to disease including *Phytophthora alni*.
- Ongoing ash dieback.
- Unsustainable grazing pressure from large herbivores, like deer.
- Undermanagement and neglect, sale of woodland, and the division of larger woodlands into smaller lots – leading to inconsistent management and fragmentation.

Opportunities

- Agroforestry – the integration of trees into the farming system – can deliver more trees on farms (e.g. nuts, fruit, etc.) while maintaining or enhancing the farm's main agricultural output. Trees can be incorporated into the farm at the density that works best with the business objectives.
- Wooded farm landscapes provide shade for livestock and safeguard vulnerable soils.
- Local markets for timber and coppice products could replace some plastic uses.
- Woodland creation using seed stock from southerly provenances could play a role in climate adaptation and woodland resilience.
- Designing trees into urban areas could offset heat-island effects and filter particulates.
- Attractive funding opportunities (e.g. the England Woodland Creation Offer).
- Potential identification of disease resistant ash trees.

Priority 7: Safeguard and enhance veteran trees

Code: P7 | Actions: A7.1 – A7.2

What would success look like

Veteran trees and mature, over-mature and aged trees – the veterans of the future – have been identified and are being protected from development, disturbance and exposure. Standing and lying deadwood, rot holes, cracks and other features are retained, providing high-value habitats for a range of species. In urban areas, potential veterans are managed to the highest standard in order to ensure their future while also keeping users of surrounding land safe.

Oak tree

Norbury's ancient Yew

Many examples of ancient trees can be found within churchyards – including one ancient Yew in Norbury that's more than 1000 years old.

Ancient Yew in Norbury. Credit: Rob Rowe

Actions

A7.1 Identify, appropriately manage and safeguard the future of veteran trees – mapped

Identify, record and safeguard veteran trees for both cultural and conservation interest, including through Tree Preservation Orders where appropriate.

Safeguard and appropriately manage veteran trees and mature trees that could become future veteran trees, protecting them from changes in land use, development and disturbance (e.g. from cable runs and lighting in urban areas).

Protect the root systems of future veteran trees (e.g. from soil compaction, browsing, close ploughing and hard standing in urban areas) through good land management practices like the use of root protection zones within farmed land and close to infrastructure.

Manage veteran trees within existing woodland by gradual halo thinning to protect from increased light and wind.

Where safe to do so, retain standing and lying deadwood and limbs with cracks, hollows and other features to provide ongoing deadwood resource for deadwood invertebrates, bat species, lichen and tree hollow-nesting bird species.

If ancient trees are to be affected by development, qualified specialists should carry out surveys of epiphyte communities so their importance can be taken into account in planning decisions. Visit GOV.UK for advice on planning decisions with respect to ancient woodland, ancient trees and veteran trees.

Avoid storing and spreading manure and fertiliser near to lichen-rich trees.

A7.2 Secure continuity of veteran trees in the landscape – unmapped

Ensure continuity of veteran trees and associated habitats through identifying notable mature trees within the landscape, developing individual management plans and undertaking veteranisation.

Establish new veteran trees within 250 metres of existing veteran trees to ensure connectivity within the landscape.

Lumpy bracket fungus on tree trunk

Priority 8: Restore and expand nature-rich woodlands

Code: P8 | Actions: A8.1 - A8.4

What would success look like

More ancient woodland is under favourable management and restoration is taking place gradually, resulting in higher percentages of native and ancient woodland indicator species. The creation of well-balanced and climate-resilient woodland is increasing the percentage of canopy cover and helping to connect existing woodland. More broadleaved woodland than mixed woodland is being created. All woodlands are well protected by habitats at their edges, are increasing in structural diversity, and are delivering high value to wildlife. Disease (including ash dieback) is being carefully monitored and managed using appropriate replanting and natural succession approaches. Local timber markets are sustainable and well supported. Pests and invasive non-native species are controlled and having less of an impact.

Actions

A8.1 Buffer and connect ancient semi-natural woodland – mapped

Improve ecological condition of woodland through management practices such as thinning, coppicing, pollarding, open space, glade, ride and edge management to create structural habitat matrixes.

Recognise and protect remnants of ancient woodland, buffering small fragments with newer woodland planting.

Increase the volume of deadwood habitat in woodlands – both standing and fallen – as a resource for deadwood invertebrates, bat species and tree-nesting birds. Remove ash dieback trees only when there is a safety or perceived future safety risk.

Undertake landscape scale management of deer and Grey Squirrel populations to improve ecological condition and natural regeneration. Develop and implement deer management plans, working collaboratively across woodland complexes and the farmed environment.

Control invasive non-native species (INNS) such as Rhododendron, Cherry Laurel, Himalayan Balsam and Japanese Knotweed.

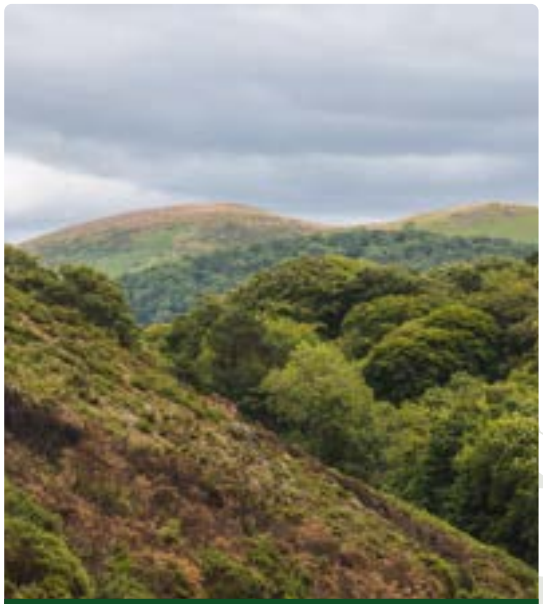
Connect and buffer woodlands – particularly small blocks and remnants of ancient woodland – through natural regeneration, new planting and active management of mixed habitats (e.g. wood pasture, silvopasture), transitional edges (e.g. **ffridd**, scrub, grassland) and habitat features (e.g. hedgerows, tree lines).

Any woodland establishment and management should follow the UK Forestry Standard principles for creating and managing woodland.

Ffridd is an upland fringe habitat mosaic, mostly present on the England–Wales border. See the 'Open habitats' theme for more information.

Reduce numbers of pheasants raised and released in ancient woodland to avoid detrimental impacts on woodland ecology following the Game and Wildlife Conservation Trust guidance.

Manage ancient woodland in a way that preserves dead wood, leaf litter and natural soil to support important fungi organisms.



Shropshire Hills

Actions

A8.2 Improve condition of deciduous, mixed and wet woodlands – mapped

Undertake landscape-scale management of deer and Grey Squirrel populations to improve ecological condition and natural regeneration. Develop and implement deer management plans, working collaboratively across woodland complexes and the farmed environment.

Increase the volume of standing and fallen deadwood habitat as resource for deadwood invertebrates, bat species and tree-nesting birds. Removing ash dieback trees only when there is a safety or perceived future safety risk.

A range of management techniques, including continuous cover forestry, are used in appropriate locations.

Control invasive non-native species (INNS) such as Rhododendron, Cherry Laurel, Himalayan Balsam and Japanese Knotweed.

Improve physical access to support the restoration and management of harder-to-reach sites.

Create, manage and maintain wide rides and glades within woodland for the benefit of a range of woodland species.

Increase volume of standing deadwood in woodlands, diversify scrub on steep slopes and at woodland edges and leave lone trees at woodland edges for the benefit of an assemblage of woodland bird species.

A8.3 Restore plantation on ancient woodland sites – mapped

Restore plantation on ancient woodland sites (PAWS) through the gradual removal of non-native tree species, by forestry operations such as thinning and harvesting. Priority is given to restoring PAWS adjacent to ancient and long-established woodlands.

Improve physical access to support the restoration and management of harder-to-reach sites.

Retain veteran trees to act as seed source and to provide ecological value.

Bee Chafer

Actions

A8.4 Create new woodlands – mapped

Create a strategic vision for woodland creation. Increase partnership and cross-border cohesion in planning, planting and funding new woodlands. Invest in local community involvement in woodland creation to increase education and give people a sense of ownership.

Create new woodland to increase carbon capture, increase soil condition, increase water retention and benefit biodiversity. Prioritise the creation of broadleaved woodland; where mixed woodland is proposed, prioritise high percentages of broadleaved species and high-quality, location-appropriate design.

New planting should focus on buffering and connecting existing woodlands. Where possible, use natural regeneration to expand existing wooded areas.

Any woodland establishment and management should take care to avoid adversely impacting on other biodiverse habitats (e.g. grasslands and heathlands), avoid hotspots for ground nesting birds, and provide high-quality, well-integrated access for future management activities. Diverse mixes of tree species that suit the soil type and conditions should be used to create woodlands resilient to climate change. Design should follow the UK Forestry Standard or the Woodland Trust's Woodland Creation Guide principles depending on the size and type of woodland.

Integrate opportunities for public access into new woodlands.

New woodland, South Shropshire. Credit: Sarah Jameson

Priority 9: Restore and expand nature-rich woody habitats

Code: P9 | Actions: A9.1 - A9.5

What would success look like

Trees, burial grounds, orchards and grassland associated with wood pasture and parkland are well managed, climate resilient and providing a range of ecosystem services including water storage, shade and soil retention. Ongoing tree planting is ensuring the next generations of specimen trees and – along with new wood pasture – is enhancing landscape connectivity and providing a range of species with habitat, foraging and commuting opportunities. Actively managed scrub bordering grassland habitat is providing basking opportunities for reptiles, refuge for bird species and sheltered flying opportunities for invertebrate species. Agroforestry, small copses and field trees are more common, and orchards are being restored, replanted and newly created to provide bountiful harvests and bring communities together. Disease (including ash dieback) is being carefully monitored and managed using appropriate replanting and natural succession approaches. Pests and invasive non-native species are controlled and having less of an impact.

Actions

A9.1 Restore and expand wood pasture – mapped

Manage existing wood pasture to increase resilience and ensure continued survival of mature and veteran trees. Allow natural regeneration and provide space for open crowns to develop. Retain and increase both standing and fallen deadwood to support invertebrates, bat species and tree nesting birds.

Enhance the open, dynamic, mosaic habitats under trees by flexible use of grazing animals. Monitor stocking density and prevent damage to bark and roots.

Manage stock that have high worm egg counts through rotation and monitoring of worm status to reduce the need for routine worming. This encourages greater diversity of dung flora and fauna.

Avoid the use of artificial fertilisers and insecticides and limit the use of herbicides to spot-spraying only.

Create new wood pasture on poorer quality grazing land, especially to buffer or link existing sites.

Diversify age and structure of scrub on steep slopes in woodland for the benefit of Wood Warbler.

Actions

A9.2 Restore parkland – mapped

Manage existing parkland to increase resilience and ensure continued survival of mature and veteran trees and the establishment and recruitment of trees to perpetuate specialised veteran tree habitats. Allow natural regeneration and provide space for open crowns to develop.

Create and deliver management plans for parkland to maintain niches and micro habitats (e.g. rot pockets, cavities, bark dysfunction, deadwood) and to enhance open and dynamic mosaic habitats under trees using appropriate species and density of herbivores. Prevent damage to bark, roots and soils.

Retain and increase both standing and fallen deadwood to provide ongoing resource for deadwood invertebrates, bat species and tree-nesting birds.

Manage stock that have high worm egg counts through rotation and monitoring of worm status to reduce the need for routine worming. This encourages greater diversity of dung flora and fauna.

Reduce the use of artificial fertilisers and herbicides.

Cattle grazing at Attingham Park.
Credit: National Trust/John Miller.

A9.3 Plant and manage mosaics of scrub – mapped

Create scrub through natural regeneration or by planting to provide habitat connectivity between woodland habitat blocks, to buffer hedgerows, to minimise silt, nutrient and soil run-off and to protect ditches and watercourses.

Balance the value of scrub to nesting birds, with the value of scrub edges and rides to reptiles and invertebrates and the value of open habitats to a range of species as part of habitat mosaics. Educate on the importance of scrub for a wide range of species.

Manage age structure within scrub to ensure diversity and create scallop edges to maximise shelter to benefit a wide range of species.

Actions

A9.4 Establish new, and safeguard traditional, orchards – mapped

Identify and map traditional orchard remnants, and older, veteran and aged orchard trees.

Work with land managers and specialist arboriculturists to manage orchard habitats using traditional and specialised techniques with little or no chemical input.

Plant next-generation trees of appropriate local heritage varieties and varieties resilient to climate change at aging traditional orchards. Use shelter planting to protect trees from prevailing winds.

Retain standing and fallen deadwood and some mistletoe to support specialist invertebrate species.

Manage grassland under orchard trees using low intensity grazing and traditional management techniques.

Create new orchards in locations where historical records indicate land previously supported orchard habitat and/or close to settlements, where they can become an important shared community space and resource.

A9.5 Plant more trees in the farmed landscape – unmapped

Establish agroforestry systems, as appropriate for the farm business. This can enhance productivity and landscape resilience and protect livestock and crops from the sun and wind.

Create field corner copses and small farm woodlands providing stepping stones for woodland species.

Create shelterbelts to help increase production, improve stock welfare and provide habitat for wildlife.

Grasslands

Species-rich grasslands are a threatened and declining habitat. They include traditionally managed hay meadows, old pastures and other undisturbed areas of grassland such as churchyards and roadside verges.

These grasslands occur on neutral, acid and calcareous soils and are most valuable when they have not been improved by re-seeding, ploughing or the application of fertilisers or herbicides.

Unimproved neutral grassland typically contains a range of grasses such as Crested Dog's Tail, Sweet Vernal Grass and Meadow Foxtail, often with a colourful array of wildflowers like Yellow Rattle, Oxeye Daisy, Betony, Devil's-bit Scabious and Black Knapweed. In Shropshire, unimproved neutral grasslands are scattered and tend to be fragmented. There are some concentrations of these grasslands in areas around the Clee Hills, the Wyre Forest and along Wenlock Edge. Other examples persist on roadside verges, in churchyards or smallholdings, or in isolated, sometimes inaccessible fields where they have escaped agricultural improvement.

Calcareous grassland occurs over limestone or other base-rich rocks. While soils in these areas are typically thin and nutrient poor, calcareous grasslands can be extremely species rich. The sward typically comprises a wide range of grasses, including Quaking Grass, Glaucous Sedge, orchid species, Fairy Flax, Yellow-wort, Small Scabious and Rock-rose. Calcareous grasslands are particularly associated with the limestone areas around Oswestry and Wenlock Edge.

Harebell. Credit: Sarah Jameson

The county also supports a range of upland grasslands that have been subject to some degree of agricultural use and intensification. These include upland rough grasslands associated with hill tops – particularly in the Shropshire Hills. These rough grasslands are often wet and provide a key breeding resource for many different wading birds, such as Curlew, Snipe and Lapwing. While these upland grasslands are comparatively species-poor, their extent and the uneven sward height (achieved by extensive grazing) create valuable sites for upland-nesting birds.

The Long Mynd SSSI on the upland plateau to the west of Church Stretton supports extensive areas of **acid grassland** – including Mountain Pansy, a localised and declining species in Shropshire. Acid grasslands are often species poor due to acidic soils. Grasses include fescues, bents and Wavy Hair Grass; flora include Heath Bedstraw and Tormentil. They can often form mosaics with dry heathland.

Areas of species-rich grassland can be found on roadside verges, where the established mowing regime has supported the establishment of a varied mix of wildflowers. Creating and managing species-rich grassland can both improve the biodiversity value of road verges and reduce long-term management costs. As linear networks, they can provide important wildlife corridors.

Common Blue butterfly. Credit: Sarah Jameson

Key species

- Specialist grassland plants including orchid species
- Yellow Rattle
- Grass Snake
- Common Lizard
- Slow Worm
- Meadow Pipit
- Skylark
- Lapwing
- Curlew
- Snipe
- Brown Hare
- Badger
- Dingy Skipper
- Green Hairstreak
- Grassland fungi species including waxcaps

Slow Worm

Challenges

- Access to small remnant hay meadows can be difficult and sufficiently small groups of animals for grazing for short periods may not be locally available.
- Management of hay meadows – and the funding available for this – is determined by volume of hay rather than plant diversity, as it is driven by animal feed prices and current agricultural systems.

Wildflower meadow

Threats

- Fertilisation reducing diversity by favouring coarse grasses over flowering plants.
- Inappropriate management including cutting hay before the seed has set, failure to remove cut hay, and failure to sufficiently graze (or harrow) at the right times of year in order to create and maintain areas of open ground.
- Under-grazing and over-grazing, which reduces grassland quality.
- Use of wormers and other veterinary drugs.
- Ploughing and planting to crops.
- Turning to scrub or planting with woodland.
- Repeated mowing of road verges.

Opportunities

- Appropriate management can be used to restore species-rich grasslands and hay meadows.
- Cessation of fertilisation inputs and strewing of arisings from established sites is a well-established and well-evidenced restoration practice.
- Permanent grasslands with complex below-ground root systems could contribute significantly to ongoing carbon sequestration efforts and plans.
- Deep-rooted species improve water uptake and maintain forage availability during dry periods.
- The varied growth patterns of grasslands containing a diverse range of species provide forage over a longer season, reducing the need for supplementary feeding.
- Certain plant species (e.g. Chicory, Plantain) have been shown to reduce worm burdens in livestock, lowering reliance on chemical wormers and supporting dung fauna diversity.
- Diverse grasslands can help address mineral deficiencies common in UK pastures (e.g. selenium, iodine, cobalt), reducing the need for costly mineral supplements.

Priority 10: Restore, connect and expand species-rich grasslands

Code: P10 | Actions: A10.1 - A10.4

What would success look like

An active grazier network is providing grazing services to a range of sites around the county and there is a well-resourced green hay donor register to identify species-rich grassland for creating and restoring sites around the county. Existing good-quality grassland sites are providing a range of ecosystem services. Grasslands form a mosaic with other semi-natural habitats like scrub, ffridd and woodland, allowing diverse wildlife to thrive and move. Species-rich grassland in particular is better connected. Where possible, habitat expansion activities are taking place around historic remnants. Modified grasslands close to species-rich grasslands are increasing in diversity thanks to targeted enhancement and management efforts. Cutting, mowing and collecting regimes have been established for roadside verges, tracks and paths, which is improving plant diversity and providing considerable value to wildlife. The public are well informed about the value of species-rich verges.

Actions

A10.1 Set up infrastructure to support grassland restoration and creation – unmapped

Develop and support grazier networks to provide grazing services to a range of sites around the county. Encourage the use of native breeds of livestock.

Create a green hay doner site register, supported by the right resources, skills and equipment, to successfully restore and create species-rich grassland sites around the county.

Long Horn Cattle grazing wood pasture

Actions

A10.2 Safeguard and enhance traditional hay meadows and other existing species-rich grasslands – mapped

Actively manage and enhance remnant traditional hay meadows and species rich-neutral grasslands, which are particularly important for many wildflower plants, invertebrates and bird species.

Conserve and expand the current extent of species-rich grassland habitats through the prevention of succession into woodland, the management of scrub, use of appropriate mowing and grazing regimes, and the avoidance of artificial fertilisers. This will benefit a broad range of species including Frog Orchid.

Where managed by cutting, use appropriate mowing regimes to support plant seeding and invertebrate life cycles and manage the growth of coarse grasses and scrub. Where cutting is required before late summer, stagger cutting times and leave some areas in flower each year to create varied structural diversity. Leave field margins uncut and integrate bare patches or banks within grassland sites where possible.

Where managed by livestock, use appropriate grazing regimes to support plants setting seed and invertebrate life cycles, whilst managing the growth of coarse grasses and scrub. Make use of appropriate and flexible grazing and conservation-led stocking densities, avoiding poaching and under-grazing.

Manage stock that have high worm egg counts through rotation and monitoring of worm status to reduce the need for routine worming. This encourages greater diversity of dung flora and fauna.

Increase connectivity of, and provision for wildlife in, meadows by leaving field margins uncut, hedgerows well-connected and integrating bare patches or banks within grassland sites.

Actions

A10.3 Create and restore species-rich grassland – mapped

Create or restore species-rich grasslands, where they will expand or act as stepping stones or corridors between existing semi-natural grasslands. Ideal locations would be those near to existing good-quality sites. Follow guidance on creation and management.

Seed stock from existing species-rich grassland is used as appropriate to create new grassland sites, to help increase area of habitat and ensure local ecological integrity across sites. Locally collected seed or green hay can be sown directly or propagated as plugs to restore floral diversity of grassland.

Create more hay meadows by converting silage production fields where feasible to encourage flowers to complete their annual cycle for the benefit of small mammals and pollinators. Leave an uncut margin during cutting, to provide shelter and food sources for wildlife.

Increase resilience of grassland sites to climate change and include measures such as fire breaks in site design.

Create a combination of larger open areas and smaller mosaic glades in amongst gorse and thorn scrub to provide habitat for breeding birds.

Helpful guides

Plantlife: How to manage a meadow and How to create a meadow

Case study

Grassland restoration and habitat (hedge) creation along the Offa's Dyke Scheduled Monument and Offa's Dyke Path National Trail.

Read the case study >

Cattle grazing

A10.4 Restore grassland on roadside verges and alongside paths and tracks – mapped

Provide sustained support for volunteer groups, including the Restoring Shropshire's Verges Project (see case study). Use appropriate signage to discourage littering of these valued verges to reduce the plastic contamination in grass cuttings.

Delay mowing of wide verges until late summer and remove cuttings to increase species diversity. Retain visibility splays and consider mowing a 1-metre strip at the very edge. Include mown strips where appropriate to communicate to the public that the area is being managed not just left.

Create flower-rich long meadows associated with roadsides and railway verges. Target wide verges and aim to make them roadside verge nature reserves.

Overseed existing linear grasslands with Yellow Rattle and plant plugs of local provenance to increase species diversity.

Bow House Road Verge. Credit: Peter Carty

Case study

The Restoring Shropshire's Verges Project is taking action across Shropshire and hope to inspire others to make a difference in their local area.

Read the case study >

Open habitats

Open habitats are generally unwooded, exposed areas of landscape. In this strategy, the 'Open habitats' theme focuses on Shropshire's lowland and upland heath, ffridd and open mosaic habitats where dense vegetation is interspersed with bare or sparsely vegetated ground.

Lowland heathland – generally found at altitudes below 250 metres – tends to be associated with nutrient-poor acidic soils and is characterised by dwarf shrubs such as Bilberry, Cross-leaved Heath and heather. These plants are often found in association with Broom, gorse and several grasses. Shropshire's lowland heaths are generally small, isolated fragments dispersed across the county. The heathlands of south Shropshire are especially notable for their transitional nature between southern lowland types and northern upland heather moorland, a fine example of this is the Stiperstones and the Hollies SAC. Here vegetation characterised by Bell Heather and Western Gorse grades into moorland vegetation dominated by Heather, and then into Cowberry on the upper slopes.

Upland heathland commonly occurs on mineral soils and thin peats less than 0.5 metres deep at altitudes of between 250 and 400 metres.[43] It is characterised by a cover of at least 25% of dwarf shrubs and may include bracken and wet flushes. Although much of the upland heathland throughout the Shropshire Hills is dry, there are small but significant areas of wet heath with characteristic species such as Cotton Grass, Cross-leaved Heath and Sphagnum Moss at sites including Rhos Fiddle and Lower Short Ditch in the Clun Forest.

Heathland – both upland and lowland – typically forms part of a mosaic of habitats including scrub, woodland, grassland, bog, open water and bare ground.

Stiperstones National Nature Reserve

Ffridd is an upland fringe habitat mosaic. It is made up of a collection of diverse habitats including scattered trees and small woodlands, bracken, heather and Bilberry heath, wet and dry unimproved grassland, bog, scree and rock. Ffridd might look different in different locations and is an incredibly diverse habitat, important to a wide range of wildlife.

Open mosaic habitat is characterised by a patchwork of dense vegetation interspersed with bare or sparsely vegetated substrate, on land that has undergone significant transformation from previous human activity – for example quarries, road and railway sidings, spoil heaps and demolished or disused buildings and infrastructure. Typically formed on nutrient-poor substrates where water retention is low, open mosaic habitat is home to early successional communities of stress-tolerant species (including annuals, mosses, liverworts, lichens and ruderals), open or flower-rich grassland, scrub and heathland. Sites with a strong assemblage of nectar-rich, stress-tolerant plants sustain a wide range for invertebrates, including valuable species of bees, wasps and butterflies. Bare ground is also important for species such as lizards to bask in the sun and provides hunting grounds for various predators.

Titterstone Clee Hill

Key species

- Sandwort
- Common Toadflax
- Hypnum Moss
- Bilberry
- Water Foxtail
- Slow Worm
- Whinchat
- Red Grouse
- Nightjar
- Bog-bush Cricket
- Silver-studded Blue
- Dingy Skipper
- Grayling
- Common Tiger Beetle
- Adder
- Common Lizard

Silver-studded Blue

Challenges

- Maintaining open mosaics and preventing succession to scrub or woodland.
- Maintaining a diverse age structure in heather and gorse.
- Maintaining wet heath water levels.
- Maintaining bare ground element requires ongoing management.
- Managing access.
- Making sure different stakeholders understand the biodiversity value of open mosaic habitats.
- Certain additional issues at some sites (e.g. remediate contamination, monitor substrate degradation, control the spread of invasive species).

Threats

- Changing climate and drier summers, resulting in higher potential for heathland fires.
- Afforestation (particularly with conifer plantation).
- Fragmentation.
- Succession to scrub and wooded habitats.
- Destruction of open mosaics through the redevelopment of brownfield sites.
- Brownfield sites may also contain remnant toxic material and chemicals, which can spread due to degradation and pollute surrounding plant communities.

Opportunities

- Habitat such as ffridd and heathland can continue to be farmed while having significant benefits for a wide range of species.
- Restoration of former heathlands currently under different land use (e.g. conifer plantation).
- Using new technology including fenceless grazing effectively.
- Appropriate protection and management of existing biodiverse brownfield sites.
- Aligning habitat management with mining legacy and historic environment interest provides opportunities to deliver a range of benefits.

Whinchat

Case study

How heathland is being restored in East Shropshire, where the land was difficult to farm. Higher Tier Stewardship enabled a change in farming system – benefiting both the business and nature.

Read the case study >

Priority 11: Restore, connect and expand heathland sites

Code: P11 | Actions: A11.2 - A11.2

What would success look like

Wildflower-rich heathland and grasslands are managed by livestock to control bracken and scrub. Heathlands have diverse age profiles and structural diversity. Non-native species are well controlled and the adverse impact of visitor pressure at key sites is being addressed. Heathland blocks are larger, more connected and buffered within a mosaic of appropriate edge and connecting habitats (grassland, scrub and woodland). Heathland creation connects smaller fragments and restores lost sites.

Actions

A11.1 Establish effective management regimes for heathland sites – mapped

Manage heathland as mosaics of complementary habitats including acid grassland, bare ground, scrub, trees and dead wood, wet heath, pools and ditches.

Actively manage vegetation ideally through targeted grazing to achieve a complex and varied vegetation structure and to prevent the succession into woodland.

Increase resilience of heathland sites to climate change and include actions such as fire breaks in site design.

Heather, Shropshire Hills

Actions

A11.2 Restore heathland where geology allows to increase habitat connectivity – mapped

Where appropriate, revert plantation woodland and farmland adjacent to existing heathland to dry acid grassland and heathland.

Use heather cutting and strewing to establish new heathlands using seeds of local provenance. Create a heathland brash/seed donor site inventory.

Restore heathland as part of post-quarrying restoration at sites where underlying geology is suitable.

Restore and buffer heathland remnants, integrating and creating heathland mosaics within other habitat, such as woodlands, and making use of woodland margins, corridors and open space. Reduce fragmentation of heathlands by restoring connectivity where it has been lost.

Common lizard

Priority 12: Increase the area of ffridd habitat

Code: P12 | Actions: A12.2 - A12.2

What would success look like

Mosaics of ffridd features are well balanced and managed, with regular monitoring to ensure that no single feature becomes dominant and that grazing pressure is appropriate. New areas of well-balanced ffridd are created and managed sustainably. Trees are present and are protected from grazing impacts to maintain natural tree regeneration. The resulting habitat is benefitting a broad range of species.

Actions

A12.1 Enhance areas of ffridd habitat – mapped

Promote the importance of ffridd for a wide range of species.

Use low intensity grazing to keep some areas open and regularly review grazing density to ensure natural tree regeneration is taking place and that habitat mosaics are in balance. Fenceless grazing can help to focus grazing into, or away from, particular areas.

Control bracken, when it dominates, and manage scrub and tree encroachment to maintain balance to benefit Tree Pipit and Whinchat.

Manage wet and damp areas through targeted grazing and consider cutting rush by hand or strimming where necessary to prevent drying, as heavy machinery damages wet soils.

Create and actively manage diverse age structures and edges within scrub blocks through grazing, cutting and mowing.

Retain standing and lying deadwood within ffridd habitats to provide value for fungi, invertebrates and bird species. Leave dead trees or shrubs standing or retain small stacks of cut wood in shady areas.

Tree Pipit

Actions

A12.2 Create new areas of ffridd habitat to benefit a wide range of species – mapped

Create and restore areas of ffridd mosaic, a combination of larger open areas and smaller mosaic 'glades' in amongst gorse, thorn scrub, scattered trees and wet areas, alongside bare rock and scree, to provide habitat for breeding birds, invertebrate species and lichen.

Consider tree planting carefully. Planting may be appropriate where there are only a few trees and/or there is little or no tree regeneration. Use native species such as rowan, birch, hawthorn and other berry-bearing trees, scattered at a low density. Locations of any additional trees should be carefully considered to avoid increasing impacts of avian predators on ground-nesting birds.

Avoid artificial drainage of ffridd habitats, block existing drains to re-wet habitat and manage wetter areas through grazing.

Ffridd, Stiperstones. Credit: Simon Cooter

Priority 13: Enhance the wildlife value of open mosaic habitats

Code: P13 | Actions: A13.1 - A13.3

What would success look like

Natural regeneration leads to the establishment of open mosaic habitats on former industrial sites and brownfield sites. Open mosaic habits are allowed to establish on a range of sites where future brownfield development is likely and these are recognised through biodiversity net gain (BNG) at the point of redevelopment. Restoration plans for active extraction sites include provision of open mosaic habitats to be maintained for the long term. The cyclical nature of these habitats is well understood, and management works with natural cycles. Innovative methods of providing open mosaics are used including as part of green roofs and other urban greening solutions.

Scree habitats support strong lichen and bryophyte communities both on loose scree and in the crevices formed by larger rocks. Scrub and tall vascular plants are appropriately controlled to ensure the maintenance of open and bare ground and rock.

Actions

A13.1 Create, enhance and appropriately manage close mosaics of open habitats on former coal, mining and post-industrial sites – mapped

Engage with owners and/or operators of extraction sites on both the management of site areas not currently in production and on longer-term restoration proposals.

Enhance sites through creation and retention of open areas using rotational management including scrub clearance and scrape creation.

Identify and restore remnant heathland on former coal working sites.

Emperor Moth

Actions

A13.2 Enhance open mosaic habitats on brownfield sites – unmapped

Work with local planning authorities and developers to appropriately value open mosaic habitats within the planning process.

Enhance sites through creation and retention of open areas using rotational management including scrub clearance and scrape creation.

Actions

A13.3 Retain the wildlife value of scree – mapped

Employ rotating programme of scrub clearance at identified sites. Links to inland rock species assemblage.

Scree and bare rock in Shropshire uplands

Derelict former gas works site

Built environment and amenity spaces

While Shropshire is mostly rural, there are built environments and urban habitats throughout the county, with large concentrations in and around Shrewsbury and Telford – the strategy area's largest settlements.

Built environments are areas of land that have been transformed into artificial surfaces, providing buildings, transport infrastructure and other hard-standing areas that support human activity. They include both rural settlements and dense clusters of urban habitats forming towns and areas for commerce and industry, connected by urban transport habitats.

Alongside and within the built environment are small areas of designed, natural and semi-natural green and blue space (like gardens, road and railway verges and ponds) as well as open habitats on previously developed land. These habitats provide excellent opportunities for people to connect with nature on their doorstep. Urban habitats in villages and suburban areas are less densely developed and generally have more green and blue space than urban centres and concentrated commercial and industrial areas. Larger areas of a range of habitat types exist within nature reserves and parks. Features such as ponds, trees and shrubs in suitable conditions can provide some refuge for plant and wildlife and among developed features.

Urban biodiversity is increasingly recognised as vital for ecosystem resilience and human wellbeing. Natural England's Green Infrastructure Framework, launched in 2023, supports the creation of quality green spaces in England with the aim of improving the environment and people's lives.

Biodiverse, accessible green space for all

One of the standards set out in the Green Infrastructure Framework – and now a commitment in the UK Government's Environmental Improvement Plan – is that everyone in England should live within 15 minutes of biodiversity-rich, accessible green space.

Challenges

- Controlling the spread of built surfaces and infrastructure to minimise impacts on natural features and non-urban habitats.
- Small-scale developments – like driveways, some building extensions and tree removal – don't need planning permission and have an unquantified impact.
- As climate change progresses, the challenges of urban cooling and the creation of heat islands will continue to intensify.
- Continuing to meet housing need while avoiding adverse impacts on biodiversity.

Threats

- Urban compaction and infill of open spaces – which can remove, damage and alter natural features.
- Paving over soil alters hydrological processes and increases surface run-off and stress on local drainage systems.
- Pollution significantly impacts air and water quality.
- Waste materials from industrial and transport activities (e.g. forever chemicals and heavy metals) can collect on built surfaces and wash into waterways.
- Growth in urban habitats replaces and fragments other habitats, reducing both overall space for nature and connectivity.

Opportunities

- Significant open space in urban areas could be conserved and enhanced, which could include planting trees and making grassland more diverse.
- Householders can make their garden more wildlife friendly by planting native flowering plants and making a pond.
- New developments can be well planned to create new wildlife-rich habitats that connect to the surrounding areas.
- Minerals workings, quarries and sand and gravel extraction sites provide significant opportunities for nature recovery delivery in the long term.
- New developments and building renovation projects can easily incorporate swift nesting opportunities.
- Reducing vehicular traffic and emissions improves air quality.
- Recycling and managing industrial waste can ensure smaller land-take for landfill while reducing the infiltration of waste products into environment.

Key species

Wildlife in urban habitats has often adapted to benefit from human activity. Natural shelter within designed green and blue infrastructure is important.

- Hedgehog
- Butterflies
- Swift
- House Sparrow
- Water Vole
- Frog
- Newts
- Veteran trees

Urban heat islands

Urban and built environments get much hotter than rural areas, becoming 'islands' of heat. Densely populated city areas can be up to 12°C warmer than the surrounding countryside.[44]

Priority 14: Bring nature into towns, villages and amenity spaces

Code: P14 | Actions: A14.1 - A14.6

What would success look like

New development delivers significant areas of well-connected green infrastructure following best-practice guidance and features carefully designed low-impact lighting, some darkness, and low or no-access areas. Development is landscape led in the design stages. Private gardens offer safe havens for wildlife and nature within our towns and villages. Public access, safety and nature are well integrated in green spaces, and these contain diverse habitats and provide health and wellbeing benefits for people such as improved air quality and cooling. Sustainable urban drainage, rain gardens, ditches, ponds and watercourses are key components of the built environment. Water is well managed and flows slowly, helping to recharge groundwater aquifers, alleviate flooding and stabilise year-round flows. New tree planting follows the 'right tree, right place' principle and is in sustainable locations where watering and other elements of good tree management can be undertaken. Tree, herbaceous and perennial planting is resilient and provides food sources and shelter for a range of species through the year. People better understand the value of wildlife and wildlife features, as well as their role in protecting nature and natural resources.

New housing estate and landscaping, Shropshire

Everyone in England should live within 15 minutes of biodiversity-rich, accessible green space.

Actions

A14.1 Integrate nature recovery within new developments – unmapped

Work with developers to provide a 'How to create a wildlife garden' booklet to be provided to new homeowners.

Integrate permanent wildlife features and habitats in new development designs to connect existing wildlife-rich areas and provide a range of linear corridors and 'stepping stones' to enable movement. Consider this at an early stage of the design to deliver the best outcomes for nature.

Delivery of biodiversity net gain (BNG) on- and offsite should refer to the priorities and habitat opportunities set out in this local nature recovery strategy and LNRS maps. Provide and maintain harder-to-manage habitats – like open mosaics through the use of innovative solutions (e.g. as part of green-roof provision).

Follow best practice for green infrastructure design and management, making reference to the Green Infrastructure Framework's Design Guide. Where necessary, depending on habitat and species sensitivity, reduce or prevent visitor access, making clear to site users where and why wildlife value is being provided in preference to access.

Follow the 'right tree, right place' principle. Choose species that are resilient to climate change, pest, drought and disease and which provide food (nectar, fruit, berries) and shelter sources for a range of species throughout the year.

New developments that generate emissions make use of all best available technology, including ammonia scrubbers, well-designed and well-oriented buildings, and buffer planting.

Ensure that landscaping around new developments increases connectivity, provides well-structured shelter for wildlife and is sustainable in the long term. Consider using native hedgerows and trees, in particular, which provide habitats and reduce light and noise pollution.

Reduce demand on water resources by implementing water efficiency measures in all new developments – for example, using alternative sources of water, such as grey water and rainwater harvesting, and using rain garden techniques to intercept water and help prevent surface water flooding during increasingly frequent storms.

Integrate growing areas into new developments including orchards, allotments and community gardens.

Provide adequate and accessible, biodiverse green space and dog exercise areas associated with new development ensuring direct access to green space on the doorstep and reducing visits to sensitive sites.

Prioritise the integration of ecological function and wildlife habitat into all new development, including nest and roost bricks for swifts and bats, and bat tiles. Swift bricks are a universal brick for small bird species and should be installed in all new developments and extensions/ renovations, in accordance with BS 42021. Three bricks per build is recommended, as bird species that will use this habitat are generally colony breeders. Soffit roosting features can be installed as an additional habitat feature. Artificial nest cups for house martins should also be a priority. Existing nest sites for building dependent species, including bat species should be protected and wherever possible augmented and enhanced. Well-designed swallow nest buildings on barn conversion schemes should be incorporated into the design infrastructure. Bee bricks, hedgehog gates, fence gaps, shelters and hibernation features are to be included within new developments. Avoid or minimise the use of exterior lighting, which disrupts roosting and foraging.

Actions

A14.2 Create wildlife-friendly gardens at homes and businesses – unmapped

Educate the public on the wildlife they might find in their homes and gardens and encourage wildlife-friendly gardening.

Educate the public on the risk to aquatic invertebrates from veterinary flea and worm treatments used on domestic pets and on the risks associated with slug pellets, which affect soils and water. Also educate on using peat-free compost.

Create wildlife ponds, hibernacula, and green roofs and walls within gardens and leave messy corners.

Use planting that flowers throughout the year to support pollinators and use a range of nectar and fruit producing species. Avoid peat products.

Limit the use of chemicals (slug pellets, herbicides, insecticides), which are harmful to wildlife and can enter our waterways.

Avoid using artificial lawns, concreting and large areas of paving, which can lead to flooding and water pollution.

Reduce water use by adding connections to downspouts to redirect rainwater into rain gardens, soakaways, water butts and wildlife ponds, for example, and retrofit water-saving measures such as low-flow taps.

Engage with and educate the public on misconnections – what they are and how to spot them – and how to properly maintain private sewage treatment works such as septic tanks and cesspits.

Make people aware of how 'everyday' activities affect water quality and explain how changing those habits can benefit water quality and biodiversity.

Install bat boxes, soffit roosting features, bat lofts, raised roof tiles, swift boxes and bee bricks when carrying out renovations. Make gaps in fencing for hedgehogs to move through the built environment and install shelters and hibernation features.

Avoid or minimise the use of exterior lighting, which disrupts roosting, foraging and commuting habitats for bat species.

Helpful guides

- RHS: How to build a green roof
- Chester Zoo: How to create hibernacula
- The Wildlife Trusts: How to build a pond and Wildlife gardening

Actions

A14.3 Enhance wildlife value of multifunctional green space – mapped

Analyse green infrastructure provision and need on a local level and take targeted action to address deficiencies in type, provision or quality. This should be guided by the standard set out by the Green Infrastructure Framework – and the UK Government's commitment under its Environmental Improvement Plan – that everyone should live 15 minutes from biodiversity-rich accessible green spaces.

Manage existing sites more sensitively for nature to provide increasing wildlife benefits at community gardens, allotments, burial grounds, village greens, schools, golf courses, cricket grounds, sports pitches, railway embankments, car parks and hospitals.

Manage parks and green spaces for people and wildlife by reducing the number of cuts and leaving wild strips, buffers and corners of fields. Where possible, mow annually, using cut-and-collect techniques, and include mown strips where appropriate to communicate to the public that the area is being managed not just left.

Limit the use of chemicals that are harmful to wildlife and can enter our waterways.

Create new wildlife habitats to act as corridors and stepping stones across the built environment, expanding existing linear networks. Provide a range of habitats – including bare ground, heathland, grassland, scrub, wetlands and open mosaic habitats – and allow public access where possible. Consider the inclusion of wildlife ponds, hibernacula, green roofs and green walls.

Strategically plant trees to shade tarmac and buildings in areas where residents are at risk from high summer temperatures. Tree, herbaceous and perennial planting is resilient to climate change, drought, pest and disease using both non-native and native species while increasing species diversity and providing sources of nectar, food and shelter for a range of species throughout the year.

Use rain garden techniques to intercept water and help prevent surface-water flooding during increasingly frequent storms.

On and around school grounds, use wildlife-friendly landscaping to benefit climate adaptation and curriculum delivery.

Create community areas at all scales including pocket parks, micro-forests, ponds and wild verges as 'stepping stones' for wildlife in the built environment. Incorporate community growing, seed sharing and community gardening initiatives.

Avoid or minimise the use of exterior lighting, which disrupts roosting, foraging and commuting habitats for bat species.

Actions

A14.4 Effective water management in the built environment – unmapped

Educate the public on their role in improving water quality, reducing demand and improving water management. In particular, promote the importance making front gardens permeable (by disconnecting downpipes and directing water into rain gardens or plants), which reduces flows of surface water into storm drains.

Retrofit silt traps on highways drainage in appropriate locations to decrease silt, sediment and pollution run-off into watercourses.

Investigate localised flooding and reduce impact using a range of natural flood management solutions.

Use sustainable drainage systems (SuDS) to provide a range of benefits including water storage, water quality improvements, biodiversity and public access. SuDS should include deep sumps that are continually wet, of depths to manage vegetation growth, seeded with appropriate wet grassland mixes and include a permanent wildlife pond. Use surface features including swales, ditches and other semi-natural features to avoid domination of 'pipe-to-basin' style SuDS.

Create reedbeds in developed areas to slow the flow and improve water quality, particularly near sewage treatment plants.

De-pave the built environment in favour of permeable surfacing to increase infiltration and to decrease or slow surface water flows to combined sewers and local watercourses.

Create rain gardens in the built environment to increase infiltration and to decrease or slow surface water flows to combined sewers and local watercourses.

Reduce demand on water resources through implementation of water efficiency measures in all new developments and identify and use alternative sources of water such as grey water, rainwater harvesting.

Engage with and educate the public on **misconnections** – what they are and how to spot them – and how to properly maintain private sewage treatment works such as septic tanks and cesspits.

If your property has wastewater pipes discharging to a surface water sewer intended for rainwater only, it will cause pollution. This is known as a **misconnection**, and you need to put it right.

Actions

A14.5 Reduce the adverse impact of light pollution on wildlife – unmapped

Avoid or minimise the use of exterior lighting and street lighting, which disrupt roosting, foraging and commuting habitats for bat species.

Make use of best-available technologies to minimise adverse impacts upon wildlife while providing safe access for people – particularly in areas adjacent to natural vegetation or corridors of blue and green infrastructure. This could include using longer wavelength red light, passive infrared lighting (PIR), low-level bollards, in-surface lighting, shields, cowls, downlights and screening plants.

Establish and safeguard dark corridors within built environments, with particular reference to dark habitats associated with woodland blocks, pools, canals, rivers and streams; linear features providing connectivity; and boundaries with the darker rural environment.

Consider any changes to existing lighting (e.g. to LED streetlighting) carefully, and make sure potential ecological impacts are a key factor in decision making.

A14.6 Increase canopy cover in the built environment – unmapped

Work with communities to identify opportunities for tree planting, to fund and deliver projects which belong to the community and are integrated well into the local environment.

Plan and deliver succession planting of trees in open spaces to diversify age profile and create resilient sites. Trees are resilient to climate change, drought, pest and disease using both non-native and native whilst increasing species diversity and providing sources of nectar, food and shelter for a range of species throughout the year.

Tree pits are well designed and sized and offer adequate support for trees during establishment, and then during periods of significant drought are provided with water.

Create nature-rich green pockets through tree and shrub planting, following the principles set out in local green infrastructure frameworks or policies.

Plant fruiting species to create 'pollen lines' and community orchards increasing pollination, enhancing plant diversity and providing food.

Plant more trees in gardens, allotments, parks, school grounds, hospital grounds, land surrounding community and commercial properties, street trees in residential and retail areas and any other public spaces where appropriate to increase biodiversity and reduce heat impacts.

Create woodlands at the edges of the built environment to link rural and urban landscapes.

Invasive non-native species

Priority 15: Reduce invasive non-native species (INNS) across whole catchments

Code: P15 | Actions: A15.1 - A15.2

What would success look like

An invasive non-native species (INNS) strategy for the county has been developed and a range of suitable control actions for each identified species is available to landowners. Action is coordinated and, where appropriate, begins at headwaters and moves downstream. Control is sustained and sustainable to ensure effective control and eradication wherever possible. The public are well informed on the risks and challenges of INNS and follow basic precautions in appropriate circumstances.

Actions

A15.1 Prevent the spread of invasive non-native species – unmapped

Promote good biosecurity to prevent spread of invasive non-native species and diseases. Educate the public in how to identify INNS, who to report sightings to and, if they have them on their own land, how to control.

Map priority INNS to establish areas of concern and promote use of INNSMapper.

A15.2 Implement a targeted programme to reduce invasive non-native species – unmapped

Manage priority INNS throughout the county through coordinated, focused programmes of work using a range of available control methods including trials for eradication methods and development of fundable management plans.

Target the removal of Himalayan Balsam beginning at headwaters and moving down through catchments, and in other known hotspots where there is significant impact.

Himalayan Balsam

Public access, health and wellbeing

Priority 16: Enable more access to and connection with nature for health and wellbeing

Code: P16 | Actions: A16.1 - A16.3

What would success look like

A range of welcoming, nature-rich spaces are available to the public. Where land is prioritised for value to wildlife over public access this is made clear and is well explained. Local communities feel a sense of ownership and are proud of the spaces available to them. Active travel is encouraged, and walking in the rural environment is increasingly easy. Landowners and land managers feel confident and supported in allowing wider public access. Volunteering opportunities provide nature connection and a sense of community ownership in local spaces. The broader benefit to our health and wellbeing is recognised and there are accessible opportunities to connect with nature.

Actions

A16.1 Enable access to nature-rich sites – unmapped

Encourage historic sites, stately homes, managed gardens, golf courses, cricket fields, sports pitches, school, church and NHS land to be made available for access wherever feasible.

Churchyards and burial grounds are exceptionally accessible sites for people to connect with nature. They are free to access, within walking distance for many people, often have full disabled access, parking and benches, and sometimes have toilets.

Actions

A16.2 Create a more comprehensive network to enable active travel – unmapped

Create and manage an improved public rights of way network to provide access while directing people away from sensitive habitats.

Encourage new pathways and cycle ways that are widely accessible, with appropriate surfacing, good drainage infrastructure, wide gates or accessible kissing gates and effective signage. Provide wheelchair-friendly surfaces with benches to allow people to rest along routes wherever possible.

Encourage the creation of new permissive paths to create safe walking in areas with limited access to green space.

A16.3 Enhance peoples' connection with nature – unmapped

Use green social prescribing to connect people with local volunteer groups and local green spaces for the benefit of people and wildlife.

Educate the public by explaining land management or conservation works and to encourage them to respect, appreciate and follow rules when it comes to things such as responsible access, littering, sheep worrying, gate closing and wildlife disturbance.

Take action to engage young people in nature by working with schools and other partners to consider how they could use the LNRS to enhance biodiversity and increase their connection with nature.

Case study

Schemes like the Shropshire Hills Young Rangers initiative, a youth-focused conservation and engagement programme, show how focusing on conservation, outdoor learning and adventure can foster a long-term connection with nature.

Read the case study >

Case study

Feed the Birds is an initiative in Shropshire connecting people with the nature on their doorstep.

Read the case study >

Species

Alongside broader habitat improvement, the LNRS must describe opportunities, set priorities, and propose potential actions for the recovery and enhancement of species. This was carried out through a process of longlisting and then shortlisting species priorities, as set out in the guidance for responsible authorities.[45]

The species and assemblages prioritised in the LNRS are those that are important to the county and need additional specific actions, beyond what is covered by the 51 habitat-focused actions, or a specific combination of actions that might not otherwise be taken to ensure species recovery.

Some species that are valued and recognised by local stakeholders, or immediately recognisable to members of the public, are not specifically named in the LNRS. This is usually because actions identified for the habitats on which they rely will be sufficient to ensure species recovery, with no need for additional species-focused actions (e.g. amphibian species where pond actions, terrestrial habitat actions and connectivity actions together deliver the requirements of these species).

The LNRS Steering Group is very grateful to the team of local taxonomic and species experts who have given their time to work through the process in line with the Defra guidance.

Many species actions have been incorporated throughout the habitat actions. Where additional actions are still required to halt and reverse the decline of particular species, or an assemblage of species, these are included in the following section.

There are 29 individually named species and 9 species assemblages:

- Deadwood species assemblage
- Woodland species assemblage
- Species reliant on arable land
- Inland rock and open habitat species assemblage
- River species assemblage
- Species reliant on bog and other wetland habitats
- Species reliant on heathland and grassland habitat mosaics including ffridd
- Plants requiring growing from seed for planting out
- Bat species assemblage

Appendix 8 lists all species that have been identified to be included on the longlist of important species for the county. Details of the shortlisting methodology can be found in Appendix 9.

Individually named species

Mammal
Dormouse
Muscardinus avellanarius

Actions

- Manage suitable woodlands (deciduous and mixed) to create structural diversity and retain and enhance connectivity.
- Ensure tree species mix includes hazel.
- Create rides, glades and woodland edge with varied shrub edges.
- Manage hazel coppice on rotation, cutting non-adjacent coups on 30-year rotations.
- Create canopy gaps through targeted tree removal but do not remove understory.
- Limit deer grazing.
- Erect Dormouse boxes and/or tubes.
- Connect suitable blocks of habitat within 2 km through shelter belt, tree line and hedgerow planting and woodland creation.
- Consider the provision of dormouse 'bridges' as a means for Dormouse to cross roads and other barriers in the landscape.
- Consider reintroductions and translocations.

Further guidance: Simone Bullion, Robert Wolton and Ian White (2025) The Dormouse Conservation Handbook, 3rd edition. The Mammal Society.

See also habitat actions under woodlands, hedgerows and woody habitats.

Mammal
Hedgehog
Erinaceus europaeus

Actions

- Avoid the use of slug pellets and other pesticides.
- Create Hedgehog highways through provision of 12 cm by 13 cm holes in garden fences.
- Provide Hedgehog houses.
- Create places of refuge by collecting piles of leaves and grass and leave undisturbed.
- Create habitat mosaics in parks and open space including grass of varying lengths, open soil and dense vegetation for sheltering.
- Further guidance: People's Trust for Endanger Species – Hedgehogs.

Mammal
Pine Marten
Martes martes

Actions

- Provide well-connected suitable woodland habitats with good provision of standing deadwood.
- Provide den boxes for breeding where natural tree cavities are limited.
- Create wildlife 'bridges' to allow Pine Marten to cross roads and other barriers in the landscape.

Further guidance: The Vincent Wildlife Trust (2015) Managing forest and woodlands for pine martens.

Mammal
Water Vole
Arvicola amphibius

Actions

- Manage alternate watercourse banks in any year.
- Remove barriers to dispersal (including culverts) where possible.
- Create islands to provide refuges from predators.
- Carry out effective control of American Mink at a landscape scale.
- Reduce variability in water levels in small ditches and watercourses.

Further guidance: People's Trust for Endangers Species (2019) Helping water voles on your land.

See also habitat actions under wetlands.

Bird
Curlew
Numenius arquata

Actions

- Create and enhance grassland habitats and lowland floodplain meadow.
- Establish effective nest monitoring and protection schemes.
- Reduce predator populations through action at a landscape scale
- Carefully consider tree planting in Curlew breeding areas (where trees can provide cover/perches for predators).
- Provide advice to landowners in breeding areas.

Further guidance: RSPB (2017) Land management for wildlife – Curlew and Forestry England and Natural England guidance on upland breeding wader surveys and woodland creation (2024).

Bird
Dipper
Cinclus cinclus

Actions

- Provide Dipper nest boxes under bridges over fast flowing streams.
- Improve water quality in rivers and streams.
- Stabilise flow in watercourses that have flashy flows.

Bird
Nightjar
Caprimulgus europaeus

Actions

- Operate silvicultural systems in productive woodlands, such as clearfell/restock, especially adjacent to heathland.
- Leave lone standing trees in heathland.

See also habitat actions under heathland.

Bird
Pied Flycatcher
Ficedula hypoleuca

Actions

- Provide specialist nest boxes for a period of at least 30 years until Alder regrow to sufficient frequency and support deadwood suitable for nesting.
- Provide specialist nest boxes in oak woods in western Shropshire and monitor breeding success.

See also habitat actions under woodland.

Bird
Red Grouse
Lagopus lagopus

Actions

- Heathland management and restoration including heather management in small patches by cutting or burning.
- Reduce predator populations through action at a landscape scale.

See also habitat actions under heathlands.

Bird
Swift
Apus apus

Actions

- Provide specialist nesting bricks and boxes in built environment at least 5 metres high.
- Reduce loss of nesting sites on buildings due to building restoration, repair, demolition and conversion.

Bird
Wheatear
Oenanthe oenanthe

Actions

- Maintain some well-grazed areas of grassland.
- In quarry restoration, maintain some open ground, boulders and scree.

Bird
Willow Tit
Peocele montanus

Actions

- Manage wet and damp woodlands for stands of dense scrub, maintaining standing deadwood for nesting.
- Reconnect key habitats to aid dispersal, ensuring sufficient edge habitat is retained.
- Install Willow Tit nest logs in suitable locations.

See also habitat actions under wetlands and wet woodland.

Bird
Lesser Black-backed Gull
Larus fuscus

Actions

- Control and limit human disturbance at roost site at Ellesmere, particularly in autumn and winter.

Plant
Green-winged Orchid
Anacamptis morio

Actions

- Enhance suitable hay meadows using green hay from Minsterley Meadows, which has a good population for Green-winged Orchid, to promote the spread of the species.

Credit: Nigel Jones

Invertebrate
A hoverfly
Cheilosia semifasciatus

Actions

- Retain trees shading Umbilicus (Navelwort plant) and encourage growth in the vicinity of stands of Umbilicus.

Invertebrate
Noble Chafer
Gnorimus nobilis

Actions

- Manage established traditional orchards appropriately.
- Minimise pruning, especially of thicker branches.
- Retain veteran features including hollows and deadwood on fruit trees.
- Retain all fallen deadwood on site.
- Retain Umbellifer (and similar) flowers and refrain from making land neat and tidy.
- Control scrub around the trees.
- Avoid herbicides and pesticides.
- Plant new trees to maintain orchard and provide diverse age structure.

Invertebrate
Grayling Butterfly
Hipparchia semele

Actions

- Halt the spread of scrub and thick bracken which swamp food plants including Heather, Sheep's Fescue, Red Fescue, Bristle Bent and Early Hair-grass.
- Maintain soils that are dry and well-drained, with sparse vegetation and plenty of bare ground in open positions.
- Adults require basking areas and are attracted to muddy puddles and sap from tree trunks.

Further guidance: Butterfly Conservation – Grayling factsheet.

Invertebrate
Silver-studded Blue
Plebejus argus

Actions

- Create and/or restore a network of heathland sites associated with Prees heath.

Invertebrate
Pearl-bordered Fritillary
Boloria euphrosyne

Actions

- Carry out a local research project surveying potentially suitable sites to identify exactly where it is breeding.
- Target conservation measures at existing sites and nearby sites suitable for colonisation.

Invertebrate
Small Pearl-bordered Fritillary
Boloria selene

Actions

- Carry out a local research project surveying potentially suitable sites to identify exactly where it is breeding.
- Target conservation measures at existing sites and nearby sites suitable for colonisation.

Credit: Erinna Miles

Invertebrate
Kentish Glory
Endromis versicolora

Actions

- Rotational coppicing and strategic thinning/clear-felling of birch coupes (maintain tree height below 3 metres) in the area of the Wyre Forest where the moth will be reintroduced.
- Surveying and monitoring post reintroduction into forest.

Invertebrate
Scarce Blue-tailed Damselfly
Ischnura pumilio

Actions

- Species uses small streams, flushes and ponds and even ephemeral sites such as wheel ruts.
- Manage vegetation by mechanical operations, livestock trampling or erosion at known sites.

Further guidance: British Dragonfly Society – Scarce Blue-tailed Damselfly factsheet.

Invertebrate
Wall butterfly
Lasiommata megera

Actions

- Take care with grassland management to support foodplants – Sheep's Fescue and other fine grasses.
- Favours a short sward; grassy, rocky slopes/gullies, flowery meadows; woodland clearings associated with open stony ground, path, brownfield sites, moorlands where its foodplants occur.
- Adults require basking areas (e.g. large rock faces on Wenlock Edge). Overwinter as young larvae.

Invertebrate
Scarlet Malachite Beetle
Malachius aeneus

Actions

- Protect remaining flowery grassland at Colemere and survey for species as adults feed in nearby flower rich meadows.
- As they are believed to breed in thatched roofs, provide conservation information to owners of thatched buildings.
- Create beetle nurseries where appropriate.

Further guidance: Buglife species management sheet – Scarlet Malachite Beetle.

Credit: Mags Cousins

Invertebrate
Slender Mud Snail
Omphiscola glabra

Actions

- Ensure suitable ponds in open woods and commons have good water quality and fluctuating water table that includes a dry period.

Further guidance: PondNet species dossier – Slender Mud Snail.

Invertebrate
Grizzled Skipper
Pyrgus malvae

Actions

- Found in scrubby unimproved grassland especially limestone grasslands and woodland clearings. Also, in disused artificial habitats such as quarries, pits and railway lines. The Wyre Forest and Oswestry uplands are important areas. Food plant Wild Strawberry, Creeping Cinquefoil, Tormentil. Overwinters as pupae. Ensure supply of its favoured foodplants is maintained.

Further guidance: Butterfly Conservation – Grizzled Skipper.

Invertebrate
Black Darter
Sympetrum danae

Actions

- Requires acidic shallow pools and flushes to remain wet.
- Support the Species Action Plan that's in place for Stepping Stones Project, covering the Long Mynd and Stiperstones and areas in between.

Invertebrate
Lilljeborg's Whorl Snail
Vertigo lilljeborgi

Actions

- Glacial relic species, found in calcareous short sedge fen with high water table. Ensure water table maintained at appropriate level in suitable habitats.

Credit: Mags Cousins.

Invertebrate
Desmoulin's Whorl Snail
Vertigo moulinsiana

Actions

- Found in tall sedge fen in open alder or willow carr, fringing two Shropshire meres. Ensure suitable habitat maintained.

Species assemblages

Deadwood species assemblage

Deadwood is a haven for many invertebrate species which in turn support birds, bats, and small mammals. It also hosts fungi, mosses, and lichens, all of which contribute to nutrient cycling and forest health. Standing dead trees and fallen logs provide nesting cavities for birds like woodpeckers and nuthatches, roosting opportunities for bats and shelter for amphibians and reptiles.

Taxon	Common name	Scientific name
Invertebrate	a Beetle	*Abdera quadrifasciata*
Invertebrate	a Beetle	*Ischnomera sanguinicollis*
Invertebrate	a Beetle	*Trichius fasciatus*

Actions

- Retain standing and fallen deadwood wherever possible.
- Include submerged deadwood in rivers, streams and ponds.
- Retain old and decaying birch stumps.

Woodland species assemblage

Woods are a key habitat for many species. All types of animals have found a home in the canopy, beneath the trees, amongst the roots, within the bark itself, not mention countless species of fungi under the woodland floor.

Taxon	Common name	Scientific name
Invertebrate	Drab Looper	*Minoa murinata*
Invertebrate	Common Fan-foot	*Pechipogo strigilata*
Plant	Yellow Star of Bethlehem	*Gagea lutea*
Plant	Touch-me-not Balsam	*Impatiens noli-tangere*

Actions

- Reduce density of woodland understory particularly at woodland edge.
- Regular disturbance of woodland edges by clearance or coppicing.
- Use rotational coppicing of woodland on heavy soil to encourage low, bushy growth.
- Implement ongoing management to maintain scrubby birch habitats.
- Create areas of dappled shade and reduce density of ground flora in wet woodland.

Species reliant on arable land

A significant number of species live on arable land. It is a transient habitat subject to regular disturbance, for example from ploughing. Several adaptations have allowed these species to cope with disturbance, and many plant and bryophyte species can survive for years in the soil in a dormant state, triggered to germinate after disturbance.

Taxon	Common name	Scientific name
Bryophyte	a Bryophyte	*Bryum gemmilucens*
Bryophyte	a Bryophyte	*Didymodon tomaculosus*
Bryophyte	a Bryophyte	*Ditrichum pusillum*
Bryophyte	a Bryophyte	*Fossombronia caespitiformis*
Bryophyte	a Bryophyte	*Phaeoceros carolinianus*
Bryophyte	a Bryophyte	*Weissia squarrosa*
Bryophyte	a Bryophyte	*Weissia rostellata*
Invertebrate	Necklace Ground Beetle	*Carabus monilis*
Plant	Corn Chamomile	*Anthemis arvensis*
Plant	Stinking Chamomile	*Anthemis cotula*
Plant	Dwarf Spurge	*Euphorbia exigua*

Actions

- Support rare arable plants that require soil disturbance to complete their flowering cycle through considered ploughing and exclusion of herbicides. Further guidance: Centre for Ecology and Hydrology, Botanical Society of Britain and Ireland, Plantlife, Joint Nature Conservation Committee, Biological Records Centre and Natural England (2015) Conserving important arable plants: The challenge and opportunity for arable farmers.
- Reduce pesticide use and encourage appropriate stewardship options. Support Buglife, an ongoing national project. See the Buglife directory for species management sheets with relevant options.
- Maintain open ground and cultivate to keep more aggressive plants in check.
- Use spring-sown crops where possible and retain stubble over winter.
- Leave unharvested, fertiliser-free conservation headlands and cultivated fallow plots or margin strips.
- Use low input options, preceding rotational enhanced set-aside.
- Minimise inputs of pesticides and herbicides.
- Provide advice and incentives for management, particularly in key locations.

River species assemblage

Rivers can be among our richest freshwater habitats and support species that depend on permanent running water. Important species include salmon and other fish that need clean gravels to spawn on and mayflies that depend on constant high oxygen levels and cool water.

Taxon	Common name	Scientific name
Invertebrate	White-clawed Crayfish	*Austropotamobius pallipes*
Invertebrate	a Caddisfly	*Leptocerus interruptus*
Invertebrate	Yellow Mayfly	*Potamanthus luteus*
Invertebrate	Depressed River Mussel	*Pseudanodonta complanata*
Invertebrate	a Riffle Beetle	*Riolus nitens*
Invertebrate	a Riffle Beetle	*Stenelmis canaliculata*
Invertebrate	a Caddisfly	*Oecetis notata*
Invertebrate	Freshwater Pearl Mussel	*Margaritifera margaritifera*
Invertebrate	Scarce Blue-tailed Damselfly	*Ischnura pumilio*
Invertebrate	Common Clubtail	*Gomphus vulgatissimus*
Invertebrate	Southern Yellow Splinter	*Lipsothrix nervosa*
Invertebrate	Scarce Yellow Splinter	*Lipsothrix nigristigma synonym of L. nobilis*
Fish	Allis Shad	*Alosa alosa*
Fish	Twaite Shad	*Alosa fallax*
Fish	European Eel	*Anguilla anguilla*
Fish	River Lamprey	*Lampetra fluviatilis*
Fish	Brook Lamprey	*Lampetra planeri*
Fish	Sea Lamprey	*Petromyzon marinus*
Fish	Atlantic Salmon	*Salmo salar*
Fish	Brown Trout	*Salmo trutta*
Fish	Greyling	*Thymallus thymallus*

Actions

- Improve water quality through buffer zones and management of cattle access to water, etc.
- Maintain clean gravels for spawning and silt habitats for young fish.
- Remove physical barriers within rivers, such as weirs, and to adjacent wetland habitats.
- Enhance rivers with in-stream features to provide a range of flow conditions suitable for all stages of life cycle.
- Slow the flow of streams by placement of large boughs and other timber.
- Maintain healthy marginal trees and their submerged roots. Bank management only in one side in a year, with flexibility for targeted works to ensure trees at risk from *Phytophthora alni* are retained.
- Reduce silt and sediment. Avoid dredging.
- Put course woody debris in streams.
- Promote Check Clean Dry protocol for control of invasive species spread and disease.
- Create refuge using boulders, bricks, breeze blocks, hessian etc.
- Consider translocations.
- Survey to identify remaining populations.

Species reliant on bog and other wetland habitats

Springs and flushes are generally formed by changes in the underlying geology on slopes, which force water to the surface, often with different chemical properties to surface water in surrounding habitats. Otherwise-acidic, peaty habitats may be associated with more base-rich flushes, springs and stream sides, often of limited extent. These habitats support a range of plant species that are scarce or rare in Shropshire.

Taxon	Common name	Scientific name
Bryophyte	a Bryophyte	*Barbilophozia kunzeana*
Bryophyte	a Bryophyte	*Biantheridion undulifolium*
Bryophyte	a Bryophyte	*Bryum weigelia*
Bryophyte	a Bryophyte	*Scapania paludicola*
Bryophyte	a Bryophyte	*Sphagnum platyphyllum*
Bryophyte	a Bryophyte	*Sphagnum subsecundum s.s.*
Bryophyte	a Bryophyte	*Dicranum undulatum*
Bryophyte	a Bryophyte	*Cephalozia pleniceps*
Bryophyte	a Bryophyte	*Cephaloziella elachista*
Bryophyte	a Bryophyte	*Odontoschisma francisci*
Bird	Snipe	*Gallinago gallinago*
Invertebrate	Water Beetle	*Agabus uliginosus*
Invertebrate	a Micro Moth	*Ancylis tineana*
Invertebrate	a Spider	*Glyphesis cottonae*
Invertebrate	Argent and Sable	*Rheumaptera hastata*
Invertebrate	White-faced Darter	*Leucorrhinia dubia*
Invertebrate	Window-winged Sedge (a Caddisfly)	*Hagenella clathrata*

Table continues over page.

Taxon	Common name	Scientific name
Invertebrate	Golden-ringed Dragonfly	*Cordulegaster boltonii*
Invertebrate	Scarce Blue-tailed Damselfly	*Ischnura pumilio*

Actions

- Avoid mechanical or chemical damage to sphagnum bogs.
- Raise water tables where appropriate.
- Encroaching vegetation should be cut back as necessary to maintain appropriate light levels.
- Sustained management to maintain scrubby birch habitats within bog sites.
- Rush cutting to introduce diverse sward and prevent drying.
- Avoid excessive trampling by livestock or people by managing access.
- Seek to reduce nitrogen levels.
- Create more temporary pools within appropriate habitats.
- Maintain scrubby birch habitats within bog sites and coppice.
- Maintain open pools within bog habitat.
- Support species action plans in place for Stepping Stones Project covering Long Mynd and Stiperstones and areas in-between.

Plants requiring growing from seed for planting out

Many native plant species have declined, and reintroduction helps restore these species to areas where they once thrived but have since disappeared. Certain species have poor seed dispersal, low germination rates or face competition from invasive species. In such cases, growing from seed and planting out is necessary to re-establish viable populations.

Taxon	Common name	Scientific name
Plant	Spreading Bellflower	*Campanula patula*
Plant	Petty Whin	*Genista anglica*
Plant	Dyer's Greenweed	*Genista tinctoria*
Plant	Marsh St John's Wort	*Hypericum elodes*
Plant	Greater Butterfly-orchid	*Platanthera chlorantha*
Plant	Black Poplar	*Populus nigra*
Plant	Meadow Saxifrage	*Saxifraga granulata*
Plant	Devil's Bit Scabious	*Succisa pratensis*
Plant	Cowberry	*Vaccinium vitis-idaea*
Plant	Yellow Mountain Pansy	*Viola lutea*
Plant	Marsh Violet	*Viola palustris*

Spreading Bellflower

Actions

- Identify suitable seed sources, harvest and store seed appropriately for each species in the assemblage.
- Grow and plant out small plants in suitable grassland habitats: meadows for Dyer's Greenweed, Greater Butterfly-orchid and Devil's Bit Scabious; acid grasslands for Yellow Mountain Pansy; acidic wet grasslands for Marsh Violet; and floodplain grasslands for Meadow Saxifrage.
- Grow and plant out small plants in suitable woodland habitats. In disturbed woodland with coppicing activity for Spreading Bellflower. In ancient woodlands for Greater Butterfly-orchid.
- Grow and plant out young trees in riparian habitats and floodplains through propagation from long cuttings.

Inland rock and open habitat species assemblage

Shropshire has a wide range of rock types due to its varied geology, and this is mirrored by the range of species this habitat supports, including rare and threatened species. Inland rock covers natural outcrops, cliffs and scree, quarry faces and scree, mining spoil including contaminated material and even churchyards and buildings. Rock types range from acid to alkaline and igneous to sedimentary. Thin soil over rock, scree, quarry floors, on rock ledges and in crevices, where the underlying rock dominates the soil type, is also an important element of this habitat.

Taxon	Common name	Scientific name
Invertebrate	Devon Red-legged Robberfly	*Neomochtherus pallipes*
Plant	Red Hemp-nettle	*Galeopsis angustifolia*
Plant	Scarce Prickly-sedge	*Carex muricata muricata*
Lichen	a Lichen	*Catillaria aphana*
Lichen	a Lichen	*Cladonia novochlorophaea*
Lichen	a Lichen	*Cladonia phyllophora*
Lichen	a Lichen	*Lichenopeltella peltigericola*
Lichen	a Lichen	*Phlyctis agelaea*
Lichen	a Lichen	*Myriquidica atriseda*
Lichen	a Lichen	*Umbilicaria cylindrica*
Lichen	a Lichen	*Umbilicaria hirsuta*
Lichen	a Lichen	*Umbilicaria polyrrhiza*
Bryophyte	a Bryophyte	*Cinclidotus riparius*

Table continues over page.

Actions

- Reduce public use of rock in relevant locations to prevent abrasion.
- Monitor impact of non-invasive, shading vegetation, and remove when necessary.
- Encourage landowners not to change the microclimate for populations in shaded, humid locations (e.g. by felling canopy trees) in key places.
- Retain and possibly increase sparse scrubby tree cover on sunny slopes with scree and stone outcrops.
- Maintain open ground and prevent succession.
- Avoid damaging disturbance at contaminated mine sites supporting rare assemblages of lichens.
- Where appropriate, consider new rock and scree features in habitat creation schemes.

Taxon	Common name	Scientific name
Bryophyte	a Bryophyte	*Orthodontium gracile*
Bryophyte	a Bryophyte	*Syntrichia princeps*
Bryophyte	a Bryophyte	*Targionia hypophylla*
Bryophyte	a Bryophyte	*Serpoleskia confervoides*
Bryophyte	a Bryophyte	*Bryum concinnatum*
Bryophyte	a Bryophyte	*Bryum canariense*
Bryophyte	a Bryophyte	*Bryum creberrimum*
Bryophyte	a Bryophyte	*Bryum kunzei*
Bryophyte	a Bryophyte	*Entosthodon muhlenbergii*
Bryophyte	a Bryophyte	*Grimmia incurva*
Bryophyte	a Bryophyte	*Grimmia laevigata*
Bryophyte	a Bryophyte	*Grimmia montana*
Bryophyte	a Bryophyte	*Grimmia orbicularis*
Bryophyte	a Bryophyte	*Hedwigia ciliata s.s.*
Bryophyte	a Bryophyte	*Plasteurhynchium striatulum*
Bryophyte	a Bryophyte	*Pottiopsis caespitosa*
Bryophyte	a Bryophyte	*Pterygoneurum ovatum*
Bryophyte	a Bryophyte	*Scapania cuspiduligera*
Bryophyte	a Bryophyte	*Seligeria donniana*
Bryophyte	a Bryophyte	*Seligeria pusilla*
Bryophyte	a Bryophyte	*Tortula freibergii*

Species reliant on heathland and grassland mosaics, including ffridd

Active management removing dominant and mature vegetation to keep our heathland, grassland and ffridd habitats in favourable condition. Many of the species such as plants, fungi, invertebrate and birds associated with the plants and vegetation structure unique to these habitats, cannot survive in over vegetated and shaded habitats such as dense scrub and woodland.

Taxon	Common name	Scientific name
Invertebrate	Bilberry Bumblebee	*Bombus monticola*
Invertebrate	Dingy Skipper	*Erynnis tages*
Invertebrate	Glow Worm	*Lampyris noctiluca*
Invertebrate	Black Oil Beetle	*Meloe proscarabaeus*
Invertebrate	Violet Oil Beetle	*Meloe violaceus*
Invertebrate	a Micro Moth	*Sterrhopterix fusca*
Plant	Frog Orchid	*Coeloglossum viride*
Plant	Maiden Pink	*Dianthus deltoides*
Plant	Autumn Lady's-tresses	*Spiranthes spiralis*
Bird	Tree Pipit	*Anthus trivialis*
Bird	Whinchat	*Saxicola rubetra*
Reptile	Adder	*Vipera berus*

Actions

- Connect mosaics of habitat including heath, grassland, open habitats and scrub.
- Manage ffridd with bracken control, scrub management and tree encroachment to maintain a balanced mosaic of habitats.
- Ascertain and implement the appropriate level of grazing to avoid both overgrazing and nutrient enrichment, and undergrazing and scrub encroachment.
- Maintain young birch scrub and other scrub. Manage with scalloped edges to create diverse habitat niches.
- Implement rush cutting to introduce diverse sward and prevent drying out.
- Maintain light-to-moderate grazing where Bilberry is present to enable plant to flower on last year's growth.
- Rotational management to maintain and expand the supply of Bird's-foot Trefoil.
- Encourage growth of Sheep's Fescue and a few other fine grasses.
- Manage flower-rich grasslands appropriately for solitary bees.
- Reduce moluscicide use.
- Reduce light pollution.
- Reduce disturbance at key sites.

Bat species assemblage

Bats are important insect eaters one bat will eat thousands of insects in one night of foraging. Bats require fresh foods sources, water and good roosting areas. They are sensitive to environmental changes, making them excellent ecological indicators.

Taxon	Common name	Scientific name
Mammal	Barbastelle	*Barbastella barbastellus*
Mammal	Bechstein's Bat	*Myotis bechsteinii*
Mammal	Brandt's Bat	*Myotis brandtii*
Mammal	Brown Long-eared Bat	*Plecotus auritus*
Mammal	Common Pipistrelle	*Pipistrellus pipistrellus*
Mammal	Daubenton's Bat	*Myotis daubentonii*
Mammal	Greater Horseshoe Bat	*Rhinolophus ferrumequinum*
Mammal	Leisler's Bat	*Nyctalus leisleri*
Mammal	Lesser Horseshoe Bat	*Rhinolophus hipposideros*
Mammal	Nathusius's Pipistrelle	*Pipistrellus nathusii*
Mammal	Natterer's Bat	*Myotis nattereri*
Mammal	Noctule	*Nyctalus noctula*
Mammal	Serotine	*Eptesicus serotinus*
Mammal	Soprano Pipistrelle	*Pipistrellus pygmaeus*
Mammal	Whiskered Bat	*Myotis mystacinus*

Greater Horseshoe Bat

Actions

- Identify bat roosting sites to enable their protection through planning policy.
- Educate homeowners around bats in buildings, preventing loss of roost sites during maintenance and re-roofing not requiring permission.
- Avoid modern roof linings and wood preservatives in buildings with potential for, or supporting, roosting bats.
- Avoid felling mature and veteran trees with bat-roosting potential.
- Retain deadwood in woodlands and trees with hollows, holes, loose bark and other roosting features.
- Minimise light pollution in the rural environment, at woodland edges and along watercourses and hedgerows etc., to minimise disturbance to bats.
- Minimise use of pesticides and provide unmanaged set-aside and field margins to support invertebrate food sources for bat species.
- Provide bat roosting boxes and features in a range of new build properties.
- Provide bat roosting boxes in woodlands and on trees.
- Connect woodlands supporting roosting bats across the landscape through planting trees, shelter belts and hedgerows.
- Increase species and structural diversity of scrub at woodland edges to provide good invertebrate food sources for bat species.
- Encourage freshwater invertebrates as food sources for bat species through river management and enhancing riparian corridors (e.g. by retaining bankside trees on both sides of watercourses).
- Maintain access to cellars, caves and mines. Prevent blocking-up of bat access to underground sites.

Oak tree

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< Return to previous page

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 1: Legislation and policy

Appendix 1: Legislation and policy

The development of the Local National Recovery Strategy (LNRS) is a result of a framework of international treaties, national legislation and national and local policy.

30 by 30 biodiversity target

In 2022, the UK Government committed to the global biodiversity target of protecting and conserving 30% of land and sea for biodiversity by 2030. Known as '30 by 30', this ambitious target was agreed at the 15th Conference of the Parties to the United Nations Convention on Biological Diversity and forms part of the Global Biodiversity Framework. Scientists agree that protecting at least 30% of land, fresh water and ocean in this way, within this short timescale, is necessary if we are to address the biodiversity crisis and the threat of climate change.

In England, 30 by 30 will initially be delivered through existing designated sites and networks, including Natura 2000 sites, Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and areas of managed broadleaved and mixed woodland, which qualify as Other Effective Area-Based Conservation Measures (OECMs). OECMs are voluntary areas, which must primarily be managed and protected for the long term for biodiversity, as laid out in criteria set by the UK Department for Environment, Food & Rural Affairs (Defra).

The 30 by 30 target will be a key driver in reversing the decline of nature in the UK, by expanding and improving our protected areas and creating new areas for wildlife, allowing nature to spill over into the wider landscape. Achieving 30 by 30 is very important if we are to achieve the ambitions of the Environmental Improvement Plan, particularly reversing species decline by 2030, creating and restoring large areas of new habitat and ensuring people have access to green space.

Criteria to determine what is counted in 30 by 30:

1. Purpose: 30 by 30 areas should be able to demonstrate that their purposes or management objectives will ensure the delivery of in-situ conservation outcomes.
2. Protection: 30 by 30 areas should be able to demonstrate that in-situ conservation will be sustained over the long term (at least 20 years) and that the area will be protected against loss or damage to important biodiversity values, through legal or other effective means. This includes protected area designations, conservation covenants, long-term ownership and relevant long-term management obligations.
3. Management: 30 by 30 areas should be effectively managed and able to demonstrate overall progress towards in-situ conservation outcomes. Management should provide confidence that governance or ownership of the area has the mandate and capacity to achieve and sustain such outcomes.

Local nature recovery strategies are an integral part of achieving 30 by 30, but go further by mapping a greater area of opportunity. Regarding 30 by 30, there are important conversations to be had around appropriate management for conservation and how this aspiration fits alongside the clear need to maintain food production whilst enabling local farming and land management businesses to flourish.

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The Environment Act 2021

The Environment Act 2021 sets out the requirements for local nature recovery strategies and the process by which responsible authorities are appointed and strategies produced.

Statutory guidance provides further detail relating to the content of the LNRS and the process by which it is to be prepared, agreed and adopted. Requirements for engaging with local people, stakeholders and supporting authorities are clear, and a review will take place every 3 to 10 years as determined by the Secretary of State.

The Environment Act 2021 also introduces mandatory requirements for new developments to deliver a Biodiversity Net Gain (BNG) and places a new, enhanced Biodiversity Duty on local authorities. The biodiversity duty is a pivotal mechanism for embedding nature recovery into the heart of local governance. Under Section 102 of the Environment Act (2021), all public authorities in England, including local authorities and town and parish councils must:

- Consider what they can do to conserve and enhance biodiversity
- Agree policies and specific objectives
- Act to deliver those objectives
- Review their actions at least every five years

This duty builds on the earlier Natural Environment and Rural Communities (NERC) Act 2006 but significantly strengthens it by making biodiversity a statutory consideration in all public functions. Local authorities must now "have regard to" LNRSs and report on actions taken. This is not just about compliance, it's a lever for embedding biodiversity into planning, procurement, land management, and service delivery. For example, biodiversity considerations can influence housing design, flood resilience, green infrastructure, and even public health initiatives.

Farming policy since the Second World War

Over 80% of land in Shropshire and Telford & Wrekin is farmed, meaning farming policy has a significant influence on the county's rural landscape. A business is incentivised by, and is at times required to comply with, aspects of government policy. Until recently, policies and rural payments encouraged more intensive farming systems with a focus on producing as much food as possible in response to food security concerns after the Second World War. More recently, Government policy has shifted, and payments are now being made to landowners for carrying out land management actions that benefit nature and wider society. From a nature perspective this change is welcome. However, for these policies to deliver for nature, farmers and land managers need a period of sustained stability in order to have confidence in the new system and to adapt their businesses accordingly.

Key farming policies in recent decades:

1947: The Agriculture Act is introduced with the aim of increasing domestic production and encouraging more people into farming by securing farmer incomes through guaranteed produce prices. Importantly from a nature perspective, the Act financially rewarded landowners for removing their hedgerows.

1973: From 1973, the UK support system that had been established under the 1947 Agriculture Act, is subsumed into the Common Agriculture Policy (CAP), introduced in the European Union in 1962. The CAP aimed to increase agricultural productivity, ensure a fair standard of living for farmers, stabilise markets, ensure the availability of supplies, and ensure reasonable prices for consumers. For most of its existence, the CAP provided income support to farmers by supporting the prices they were paid for produce.

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1984: Farms are so productive that they are growing more food than is needed. The policy is widely criticised for encouraging overproduction, leading to 'wine lakes' and 'butter mountains' – produce that was then often dumped in third markets, with adverse impacts on local agriculture.

1992: The CAP shifts from market support to producer support. Price support is scaled down and replaced with direct payments to farmers. Farmers are encouraged to be more environmentally friendly.

2003: A major CAP reform cuts the link between subsidies and production. Farmers now receive an income support, on the condition that they look after the farmland and fulfil food safety, environmental, animal health and welfare standards.

2014: The CAP is reformed to strengthen the competitiveness of the sector, promote sustainable farming and innovation, support jobs and growth in rural areas, and to move financial assistance towards the productive use of land.

2021: Following the UK's exit from the European Union ('Brexit'), the UK Government introduces the new Agriculture Act 2020 to set up a domestic framework based on a payment system of 'public money for public goods' in England.

The Environmental Land Management (ELM) scheme (Sustainable Farming Incentive, Countryside Stewardship Higher Tier and Landscape Recovery) is introduced in late 2021 to replace the CAP. The ELM aims to improve the environment by paying farmers for specific environmental benefits, rather than on the basis of amount of land farmed.

2021–2027: The transition to the new system is taking place over a number of years.

A Green Future: Our 25 Year Plan to Improve the Environment

The 25 Year Environment Plan (2018) sets out UK Government ambitions around nature recovery networks and the development of a new strategy for nature in England. It was mandated by the Environment Act 2021. It establishes the principles of the 2010 Making Space for Nature review (the 'Lawton Report') as the basis for nature recovery. It also sets out the process by which LNRS were piloted in certain areas of England and details how the pilots informed the national approach.

The Environmental Improvement Plan 2025 (EIP25) is the second statutory revision of the UK's 25 Year Environment Plan and primarily applies to England, as environmental policy is devolved. It sets out the delivery roadmap for restoring England's environment over the coming years

The plan is structured around 10 interdependent goals, with "Thriving plants and wildlife" as the apex goal. EIP25 contains legally binding targets and includes the rollout of local nature recovery strategies and biodiversity net gain to guide habitat creation and restoration.

There is some funding to support these commitments, for example over £750 million is being channelled into tree planting and peatland restoration through the Nature for Climate Fund.

National planning policy

There is a requirement in the National Planning Policy Framework (NPPF) for local plans to protect and enhance biodiversity. Local nature recovery strategies should be used by plan-makers to inform the way they address this NPPF requirement. The key aspects are as follow:

Paragraph 159. The improvements to green spaces required as part of the Golden Rules [which refer to housing on land currently designated as greenbelt] should contribute positively to the landscape setting of the development, support nature recovery and meet local standards for green space provision where these exist in the development plan. Where no locally specific standards exist, development proposals should meet national standards relevant to the development (these include Natural England standards on accessible green space and urban greening factor and Green Flag criteria). Where land has been identified as having particular potential for habitat creation or nature recovery within Local Nature Recovery Strategies, proposals should contribute towards these outcomes.

Paragraph 192. To protect and enhance biodiversity and geodiversity, plans should:

a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity [68]; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation [69]; and

b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

...

[68] Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

[69] Where areas that are part of the Nature Recovery Network are identified in plans, it may be appropriate to specify the types of development that may be suitable within them.

Local planning policy

The Government expects that local planning policy, including new local plans, will take into account local nature recovery strategies going forward. There is a duty upon all local authorities to have regard to the LNRS, and it is expected that this would include measures of protection for the areas identified as having the highest potential for nature recovery. The current adopted local plans for Shropshire and Telford & Wrekin do not refer directly to LNRS in policy, but future iterations will be required to do so.

Planning and Infrastructure Bill (Nature Recovery and the Nature Restoration Fund)

The Planning and Infrastructure Bill, which was introduced to Parliament in March 2025, aims to "speed up and streamline the delivery of new homes and critical infrastructure". The intention is to introduce a 'Nature Restoration Fund,' which will be new way for developers to discharge environmental obligations. The fund would provide developers with an option to pay into a centralised 'fund' to relieve them of certain obligations relating to protected species and protected sites. Mitigating action would then be taken by Government.

The Land Use Framework

From 30 January 2025 to 25 April 2025, the UK Government ran a consultation on land use, to inform the development of the Land Use Framework. The framework will be a key element of how national and local policy, 30 by 30, LNRS, BNG and aspirations around food production and renewable energy are integrated, prioritised and controlled. The intention is to have in place a strategic plan for land use that is overseen nationally and would set out principals by which government would manage principles the competing demands upon land in England.

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 2:
Current and ongoing action for nature recovery

Appendix 2: Current and ongoing action for nature recovery

Taking coordinated and strategic action for biodiversity in Shropshire and Telford & Wrekin is not a new concept, and while the Local Nature Recovery Strategy (LNRS) methodology is new and to some extent standardises the approach nationally, it builds on a large number of projects and initiatives that have gone before. This appendix summaries a selection of current and ongoing actions and mechanisms for nature. Please note this does not constitute an exhaustive list.

- **The Shropshire Biodiversity Action Plan (BAP)** took a habitat- and species-based approach to coordinated conservation action in the county and was part of a national approach to halting the decline of biodiversity. The BAP work took a partnership approach and identified actions relevant to habitat and species conservation which were then attributed to partner organisations. When funding for BAP work ceased, the plans were no longer updated and monitored; however, many of the inter-organisational relationships built as part of the BAP partnership remain.
- **Green Infrastructure Strategies** are produced by local authorities as supporting evidence during the local plan process. These strategies identify existing green infrastructure assets including parks, green spaces, play facilities and sports fields. The strategies also assess whether current provision meets local needs and what additional facilities might be required as towns and villages continue to grow. Shropshire Council and Telford & Wrekin Council have separate green infrastructure strategies, which are published on their respective websites.
- **The National Food Strategy: The Plan (2021)** analysed the British food industry from farm to fork. Henry Dimbleby sets out how overhauling our approach to food, nutrition, inequality in food availability and quality, and establishing an approach to balancing food production with the natural environment are both necessary and possible.
- **Agri-environment scheme options** have historically included measures for land to be managed for wildlife, habitat conservation or connectivity (including hedgerows, field margins and conservation headlands) alongside food production. The government's Environmental Land Management Scheme (ELM) continues to provide a range of measures intended to ensure that food production goes hand in hand with protecting the natural environment and water resources. Sustainable Farming Initiative (SFI), Countryside Stewardship and Landscape Recovery grants form part of this new approach.
- **The Severn Valley Water Management Scheme** is a River Severn Partnership scheme looking at a climate resilient approach for the upper reaches of the Severn, including exploring how nature-based solutions can help water management and flooding issues.

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- **The Shropshire Hills National Landscape Management Plan** sets out the proposed management approach for the Shropshire Hills National Landscape. Each National Landscape has an adopted management plan, running on five-year cycles, which addresses a range of issues relevant to the designation including (but not limited to) land management, tourism, renewable energy, farm diversification, thriving communities and built development. The current adopted management plan runs from 2025 to 2030.
- **Farming in Protected Landscapes (FiPL)** is a funding programme designed to support farmers and land managers working within England's protected landscapes National Landscapes (formerly Areas of Outstanding National Beauty). FiPL is part of Defra's Agricultural Transition Plan, which is moving away from direct payments to farmers and towards rewarding environmentally beneficial practices. It is not an agri-environment scheme, but rather a competitive grant programme that funds one-off projects.
- **Farmer groups** are an important means by which landowners and land managers, usually in specific geographic areas, can share knowledge and best practice. They are farmer led but often supported by a facilitating organisation. Groups come together to support each other in understanding and addressing the challenges of farming in a particular set of circumstances. There are several farmer groups across Shropshire and Telford & Wrekin.
- **Community groups** are active all over the county. As part of these groups, local people work together to help restore nature in their area. Activities include wildlife monitoring, practical action, running events and talks, and delivering specific local projects.
- **Catchment-based partnerships** are a mechanism established by the UK Department for Environment, Food & Rural Affairs (Defra) to achieve the requirements of the Water Framework Directive (WFD). There are five catchment partnerships in Shropshire: Shropshire Middle Severn, Severn Uplands, Worcestershire Middle Severn, Teme, Weaver and Gowy. Objectives focus on working together to achieve vibrant, healthy and resilient river systems.
- The **Sandscapes, Stepping Stones** and **Back to Purple** projects represent partnership efforts across Shropshire and the West Midlands to restore, create and reconnect areas of heathland and grassland habitat within the wider landscape. Sandscapes is a partnership project, led by National Trust, that focuses on restoring and reconnecting areas of sandy habitat, including heathland, across the West Midlands. Stepping Stones, also led by the National Trust, focuses on connective corridors of habitat linking heathlands and grasslands. Back to Purple was a partnership project, focused around the Stiperstones National Nature Reserve, that worked to restore sites on the edge of existing heathlands to extend the high-quality heathland found in south Shropshire. The aims of all three projects, and other projects of this type, closely align with LNRS aspirations and the "more, bigger, better, better connected" approach (known as the 'Lawton principals').
- **Peatland partnerships** are formed around significant areas of peat to facilitate Defra's aspiration that these peatlands be returned to favourable management as a way of addressing biodiversity and climate change concerns. Local stakeholders and landowners work together to re-wet peat and manage land effectively. The Marches Peat Partnership focuses action around the largest peatland sites in the county.

- **Biodiversity hotspot mapping** is a method of recognising where biodiversity and/or species recording is focused. Maps for a range of species groups can be found on the Shropshire Council website.

- **Buglife's** B-lines is a national project that maps out a series of 'insect pathways' running through our countryside and towns. Led by Buglife in partnership with a range of other stakeholders, nature recovery projects are restoring and creating wildflower-rich stepping stones along these 'pathways', creating new habitats to link existing wildlife areas together and creating a network through which invertebrates and other wildlife can move.

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 3: Habitat condition data

Appendix 3: Habitat condition data

This technical appendix includes habitat condition data for:

- Sites of Special Scientific Interest (SSSI)
- Woodlands
- Water bodies
- SSSI condition data

SSSI condition data

SSSI's are largely in private ownership, and management of the designated features varies over time according to surrounding land uses and changes in funding. SSSI's represent a considerable biodiversity asset, including what were, at the time of their designation, some of the best examples of particular habitats found in the UK.

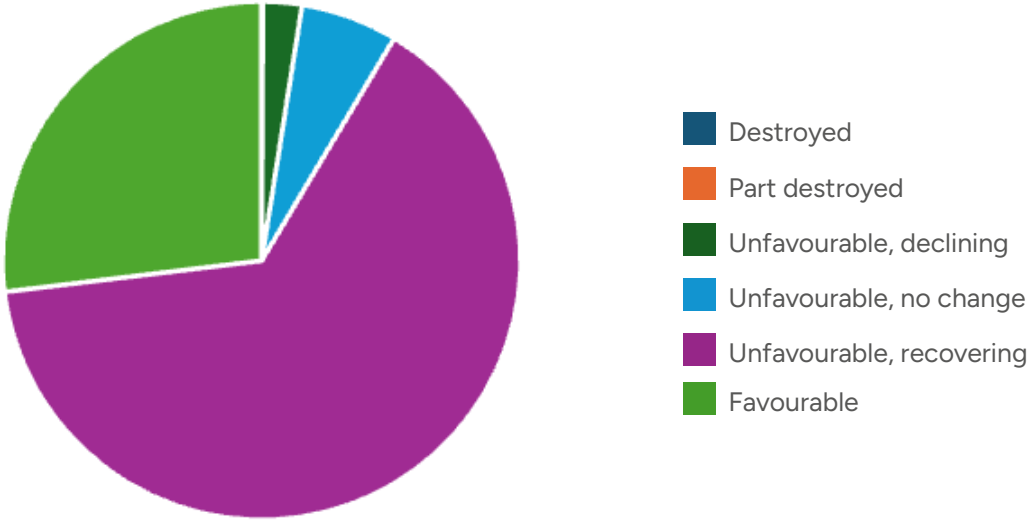


Figure 1 shows SSSI condition in Shropshire and Telford & Wrekin. 'Percentages destroyed' (0.08%) and 'Part destroyed' (less than 0.001%) are not displayed to their small size.

Explore the LNRS map online

Discover the full LNRS here

Condition of woodland

In 2020, a national report estimated that just 7% of native woodlands were in good ecological condition.[1] Approximately 42% of Woodland SSSI units in Shropshire and Telford & Wrekin are currently in "favourable" condition, which is above the 34% "favourable" condition woodland units recorded across England as a whole. The county is home to large tracts of broadleaf woodland listed within the priority habitat inventory – a spatial dataset that maps priority habitats of principal importance for biodiversity[2] under Section 41 of the Natural Environment and Rural Communities Act (2006). There is limited information about the ecological condition of broadleaf woodland.

Conifer woodlands make up around 30% of Shropshire's total woodland area. National data from 2020 indicates that many conifer plantations are ecologically poor due to stands of uniform age, the lack of native tree species, open space and deadwood.[3] Where conifer woodland is managed with objectives for both timber production and biodiversity, as by Forest England in recent decades, more spacious and mixed woodlands are the result.

Trees outside of woodlands include small tree clusters (of less than 0.5 hectares in size) in addition to individual trees present in scrub, ffridd, agricultural fields, hedgerows and in transport verges.[4] Despite wide variations in species and condition across the strategy area, woodlands and trees remain vital for sequestering large amounts of carbon, providing habitat for a wide variety of native species, supporting connectivity of other habitats and reducing urban heat. They are a vital component of wider nature recovery plans within each landscape area of the LNRS.

Condition of water bodies

The Water Framework Directive

The main legislation for water protection in the UK is the Water Framework Directive (WFD).[5] The WFD sets legally binding targets and requires the UK to implement River Basin Management Plans (RBMPs) and the measures to protect and restore waterbodies (rivers, lakes and artificial). RBMPs play a key role in delivering goals set out in the 25 Year Environment Plan.

The three RBMP areas that overlap with Shropshire comprise:

- 138 waterbody sub-catchments
- 2 artificial waterbodies (canals)

Due to the WFD, waterbodies probably represent the most consistently monitored habitat reflecting growing public awareness of the state of freshwater habitats in the UK.

Explore the LNRS map online

Discover the full LNRS here

Ecological status of waterbodies

The target set out in 25 Year Environment Plan[6] is to restore 75% of our water bodies to good ecological status. In Shropshire and Telford & Wrekin currently 6.42% of rivers and canals are in good ecological condition.[7]

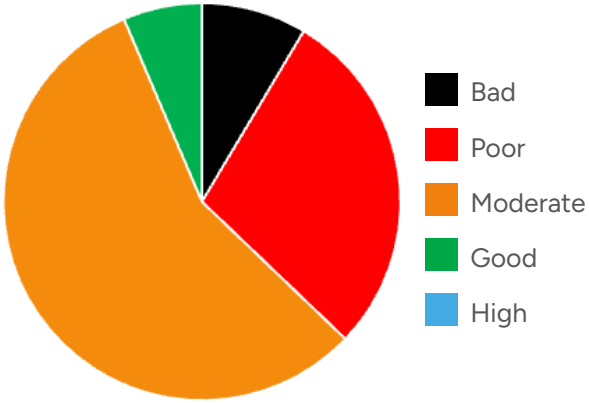
Table 1 shows the ecological status of rivers and canals in Shropshire and in England.[8]

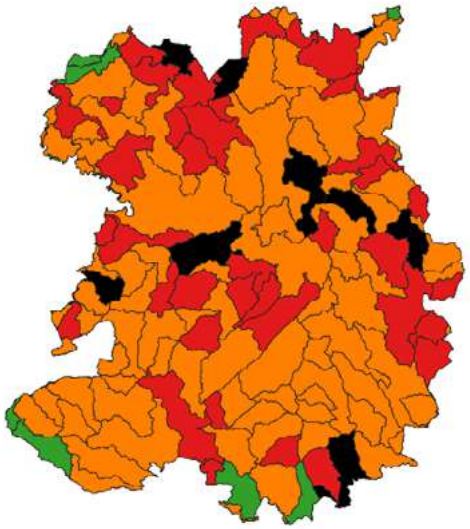
Figure 2 (top) shows the percentage of WFD rivers and canals in Shropshire by ecological status. Figure 3 (bottom) maps the ecological status of WFD rivers and canals in Shropshire by area.

Waterways fail to achieve good ecological status for a range of reasons including pollution from agriculture, outputs from waste water treatment, the use of chemicals in both domestic and industry settings, climate change (including flood events and drought events) and artificial barriers to fish migration (which are an indicator of biological and habitat condition under the WFD). Watercourses remain challenging to restore, with recovery at the catchment scale requiring not only physical restoration of modified riverbanks, but also appropriate waste management facilities, changes to waste water management infrastructure and additional financial incentives to helpland managers to reduce pollution from agriculture.

Lakes across the county also require appropriate interventions to improve condition. Of the 13 WFD lake waterbodies in the strategy area, none achieve high ecological status, with only 15% currently in good condition.[9]

While these figures appear low, they are comparable to the national picture, confirming that Shropshire faces similar challenges to other areas in England.





Ecological Status	Shropshire Rivers and Canals WFD Cycle 3		England Rivers and Canals Total 3,900
	Number of WFD waterbodies	% of WFD waterbodies	% of WFD waterbodies
Bad	12	8.57	3.2
Poor	40	28.57	18.6
Moderate	79	56.42	62.3
Good	9	6.42	15.8
High	0	0	0.1

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1. Forestry Commission (2020) National Forest Inventory (NFI) woodland ecological condition in Great Britain: Classification Results Woodland ecological condition in Britain.
2. As defined within the Natural Environment and Rural Communities Act (2006).
3. Forestry Commission (2020) National Forest Inventory (NFI) woodland ecological condition in Great Britain: Classification Results Woodland ecological condition in Britain.
4. Christine Reid, Karen Hornigold, Ewan McHenry, and others (2021) State of the UK's Woods and Trees 2021. Woodland Trust.
5. As defined by The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Accessed October 2024.
6. UK Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment (PDF).
7. UK Department for Environment, Food & Rural Affairs (2024) Accredited official statistics: 21. Surface water status [Dataset]. Accessed October 2024.
8. UK Department for Environment, Food & Rural Affairs (2024) Accredited official statistics: 21. Surface water status [Dataset]. Accessed October 2024.
9. UK Department for Environment, Food & Rural Affairs (2024) Accredited official statistics: 21. Surface water status [Dataset]. Accessed October 2024.

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 4: Land cover data

Appendix 4: Land cover data

This technical appendix sets out land cover data for Shropshire and Telford & Wrekin including:

- Current land use data
- Tree canopy cover
- Priority habitats
- Land use change over time
- Land uses

Land use coverage has been estimated using UK Centre for Ecology & Hydrology (CEH) Land Cover Map (LCM) data.[1]

Table 1 shows land cover in Shropshire by CEH LCM land cover class (%). Percentage land cover for bog (less than 0.05%) and calcareous grassland (less than 0.005%) is not represented in Figure 1 due to their small size.

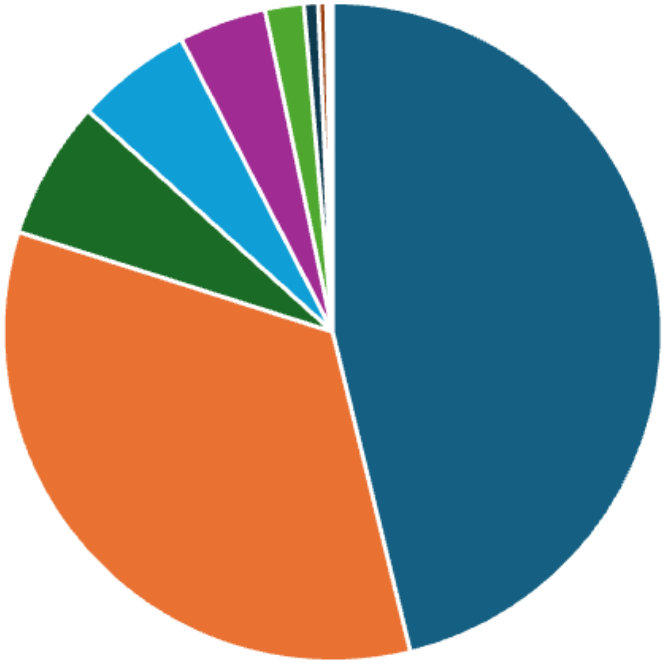
Land cover class (CEH LCM)	Percentage of Shropshire area
Improved grassland	46.2
Arable & Horticulture	33.7
Broadleaved mixed and yew woodland	6.8
Suburban & Urban	5.7
Acid grassland	4.3
Coniferous woodland	1.9
Dwarf shrub & heath	0.7
Standing open water & canals; Rivers & Streams	0.4
Neutral grassland	0.2
Inland rock	0.1
Bog	Less than 0.05% *
Calcareous grassland	Less than 0.005% *
Total	100

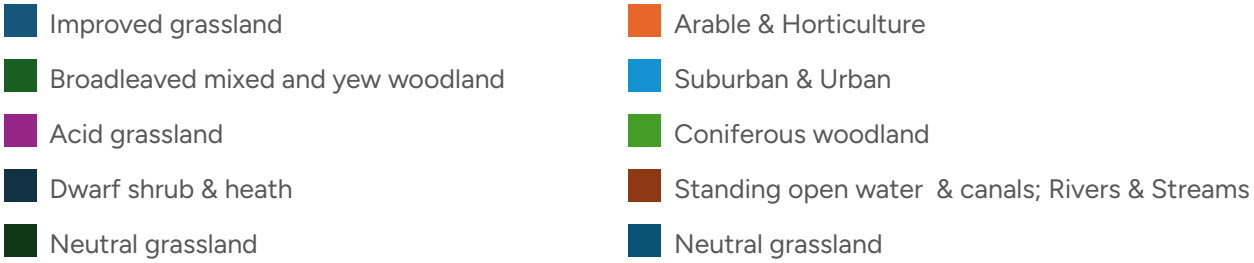
Figure 1 shows the percentage of land cover types in Shropshire. Percentage land cover for bog (less than 0.05%) and calcareous grassland (less than 0.005%) is not represented due to their small size.

Tree canopy cover

Current estimates for tree cover in the strategy area range from13.2% to 15.1%,[2,3] which is slightly above the national average of 13%.[4] Telford & Wrekin has a borough-wide average of 15%, with some wards reaching 22%, positioning it well to exceed the UK Government's aspiration of 19% tree cover by 2050. Woodland is extensive across many parts of Shropshire, representing approximately 1.6% of the total UK woodland cover. Specific natural capital validation data for Shropshire woodlands remains limited; however, pro-rata extrapolation from national estimates equates to a value of £166.4m[5] for all woodlands in the strategy area.

Figure 1





Priority habitats

Priority habitats cover a wide range of semi-natural habitat types and were originally identified as being the most threatened habitats and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). The Natural England Priority Habitat Inventories are a spatial dataset describing the geographic extent and location of these habitats, which are now called Section 41 Habitats of Principal Importance.[6]

These inventories are a best effort at recognising the most distinctive and most threatened habitats in the county but are an amalgamation of datasets and include varying levels of on-the-ground surveying.

Table 2 (next page) shows distribution (percentage cover) of habitat types within the Priority Habitat Inventory for Shropshire.[7] Lowland calcareous grassland covers less than 0.001% of Priority Habitat in Shropshire.

*These habitats are included in the inventories on the basis of having good potential for restoration.

Figure 2 shows Shropshire woodlands by type (%) based on the National Forest Inventory.[8]

Figure 2

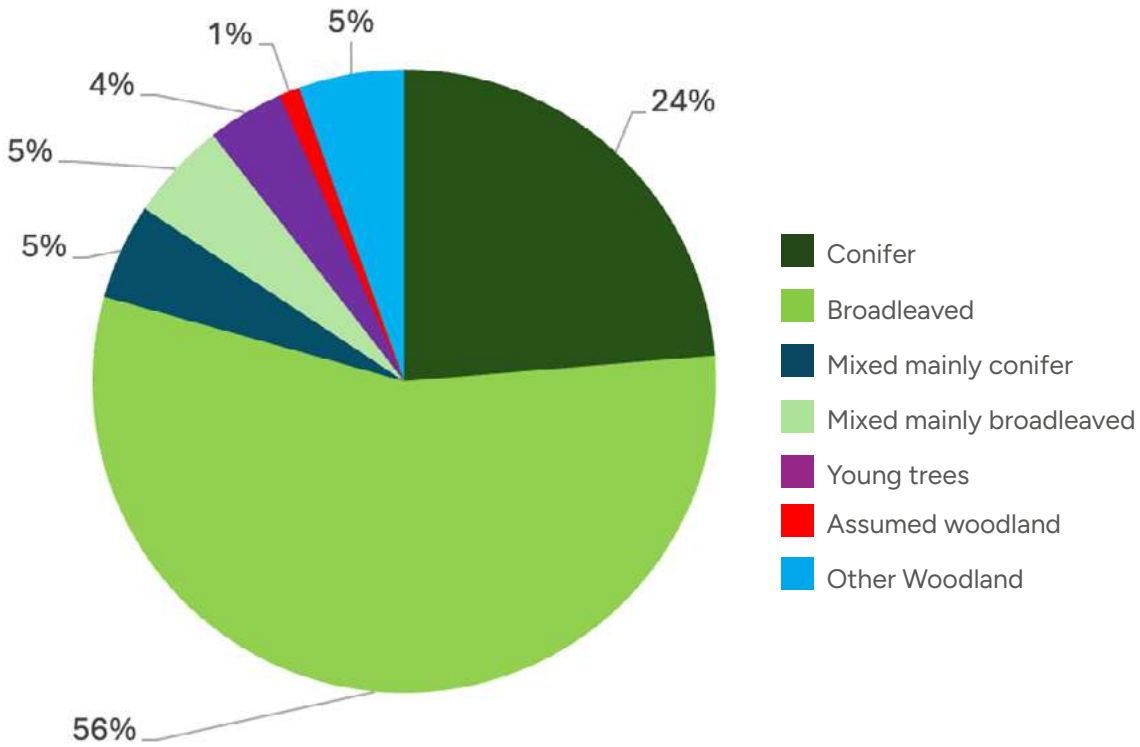


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Table 2

Habitat type	Habitat grouping (by UK HAB Level 2)	Percentage cover (%)
Deciduous woodland	Woodland	52.96
No main priority habitat (additional habitats)*	Other	11.99
Good quality semi-improved grassland	Grassland	10.34
Grass moorland	Grassland	3.74
Lowland dry acid grassland	Grassland	2.29
Lowland meadows	Grassland	2.06
Coastal and floodplain grazing marsh	Grassland	1.34
Traditional orchard	Grassland	1.08
Lowland calcareous grassland	Grassland	0.31
Upland haymeadow	Grassland	0.01
Coastal and floodplain grazing marsh, Lowland meadows	Grassland	0.01
Upland calcareous grassland	Grassland	0.00
Upland heathland	Heathland	9.62
Lowland heathland	Heathland	0.82
Fragmented heath	Heathland	0.37
Blanket bog	Wetland	0.01
Lowland raised bog	Wetland	0.83
Purple moor grass and rush pastures	Wetland	0.82
Upland flushes fens and swamps	Wetland	0.73
Lowland fens	Wetland	0.52
Reedbeds	Wetland	0.02
Deciduous woodland, Lowland raised bog (wet woodland)	Wetland	0.11
Ponds	Rivers and lakes	0.03

Figure 3 shows percentage cover of habitat type (grouped at UK HAB level 2) within the Priority Habitat Inventory for Shropshire.[9] Rivers and lakes cover 0.03% and so are not visible.

Land use change over time

Land use change over time can be derived from satellite imagery interpretation using the UKCEH Land Cover Maps.[10] Data from 1990 and 2015 has been compared to estimate land use changes during that 25-year period.

Data shows that grassland and cropland areas have been lost over the period 1990–2015 to a combination of woodlands, wet habitats and built-up areas. Several urban extensions to both Shrewsbury and Telford, along with smaller developments, commercial or employment sites and infill housing, have been constructed over this period and can be seen reflected in the figures. It is likely that these trends have continued beyond 2015 and may even have intensified. The increasing profile of tree planting as a mechanism for addressing climate change and the funding initiatives connected to woodland creation, which emerged in 2019 or so, are likely to result in larger woodland gains over time.

Figure 3

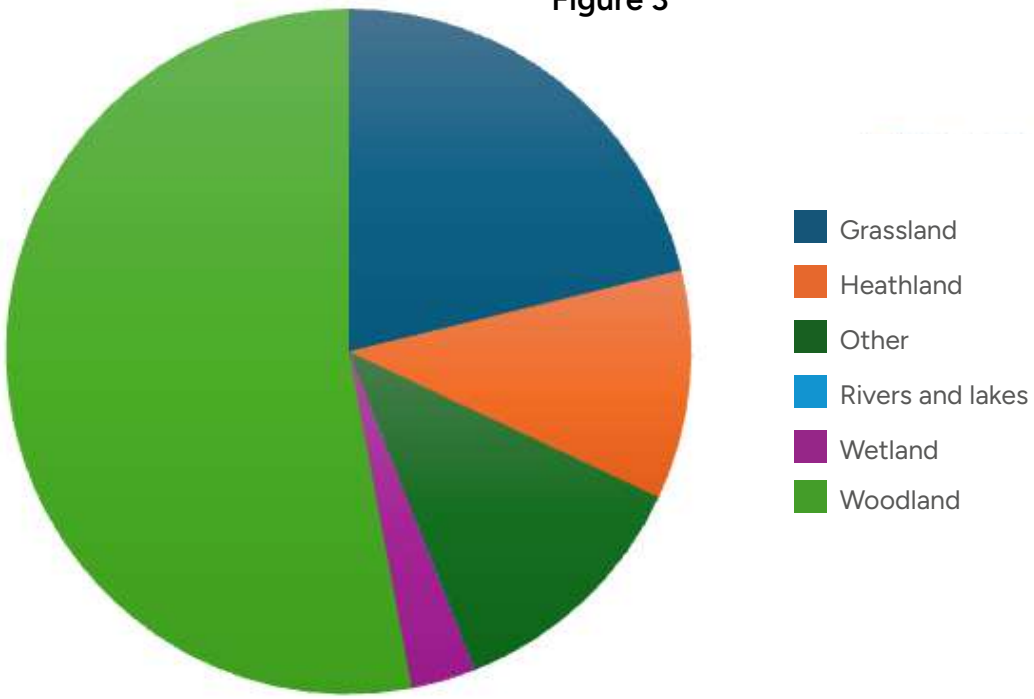

Table 3 shows land use cover change in Shropshire, 1990–2015.

Land cover type	Percentage change
Woodland (Forests)	+ 1.3
Arable (Cropland)	- 0.2
Grassland	- 2.7
Water (Wetlands)	+ 0.1
Built up areas	+ 1.7
Other	- 0.1

1. Christopher Marston, Daniel R. Morton, Aneurin W. O'Neil and Clare S. Rowland (2024) Land Cover Map 2023 (10m classified pixels, GB) [Dataset]. NERC EDS Environmental Information Data Centre. Accessed 3 October 2024.
2. Forestry Commission (2023) Tree canopy cover by Wards in the UK [Dataset]. Accessed 30 September 2024.
3. Friends of the Earth (2023) Tree canopy cover by Local authority [Dataset]. Accessed 30 September 2024.
4. Different methods for estimating tree cover likely account for the difference between these figures and those shown in Table 1 and Figure 1; some methodologies look only at tree cover in woodland, while some include other aspects of tree cover, such as hedges, field trees, urban trees and scrub.
5. Based on data from Office for National Statistics (2024) Woodland natural capital accounts, UK: 2024 [Dataset]. Accessed 31 October 2024.
6. Forestry Commission (2024) National Forest Inventory GB 2021 [Dataset]. Accessed October 2024.
7. As defined within the Natural Environment and Rural Communities Act (2006).
8. Natural England (2024) Priority Habitat Inventory (England) [Dataset]. Accessed 9 October 2024.
9. Natural England (2024) Priority Habitat Inventory (England) [Dataset]. Accessed 9 October 2024.
10. Clare S. Rowland, Christopher Marston, Daniel R. Morton and Aneurin W. O'Neil (2020) Land Cover Change 1990-2015 (25m raster, GB) [Dataset]. NERC Environmental Information Data Centre. Accessed June 2024.

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 5: Existing Nature Network
(areas of particular importance for biodiversity)

Appendix 5: Existing Nature Network (areas of particular importance for biodiversity)

Shropshire and Telford & Wrekin provides high quality examples of a range of habitats which are recognised through international, national, and local designations. Along with ancient woodland and veteran trees, these designated sites form an important part of the Local Nature Recovery Strategy (LNRS) baseline, representing areas which are known to be of particular importance for biodiversity. Many of these sites are already considered in the planning system through existing legislation and policies.

Internationally designated sites

Within or partially within Shropshire and Telford & Wrekin there are six Special Areas of Conservation (SACs) and two phases of Ramsar sites (internationally important wetlands). These sites represent some of the best examples nationally of these globally valuable habitats or support internationally important populations of particular species. SACs and Ramsar designations are also designated as Site of Special Scientific Interest (SSSIs).

The six SACs are:

- River Clun SAC
- The Stiperstones & the Hollies SAC
- Fenn's, Whixall, Bettisfield, Cadney and Wem Mosses SAC
- Brown Moss SAC
- River Dee and Bala Lake SAC (partially within the Shropshire LNRS area)
- West Midlands Mosses SAC

The two Ramsar phases – known as Midlands Meres and Mosses Phase 1 and Phase 2 – cover 34 component sites spread across Shropshire, Staffordshire and Cheshire.

Sites of Special Scientific Interest

There are 111 Sites of Special Scientific Interest (SSSIs) in the county, designated to recognise and protect a range of habitats, species interests and geological features. SSSIs include river stretches, disused canals, meadows and grasslands, heathlands, woodlands and former quarries. Each SSSI is divided into units and is assessed by Natural England to establish condition. Information on SSSI condition can be found in Appendix 3.

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National Nature Reserves

National Nature Reserves (NNRs) represent examples of the best habitats, geological features, landscapes and resources for species nationally. They are managed by Natural England, either alone or in partnership with other bodies.

There are four NNRs in Shropshire, which are:

- The Wyre Forest NNR (partially in the Shropshire LNRS area)
- Stiperstones NNR
- Fenn's, Whixall and Bettisfield Mosses NNR
- Wem Moss NNR

Local Nature Reserves

Local Nature Reserves are declared by local authorities or by other bodies (usually town or parish councils) appointed to that duty by the local authority. Natural England is engaged in the selection process and must support the declaration. These sites represent locally important sites for nature, access to nature and education.

There are currently 34 Local Nature Reserves in Shropshire and Telford & Wrekin, protected and managed for wildlife and people.

Local Wildlife Sites and Local Geological Sites

In Shropshire and Telford & Wrekin there is a single register of Local Sites, which includes Local Wildlife Sites and Local Geological Sites. There are 692 Local Sites in the county, recognising high-quality examples of locally important habitats and geological features. Sites have been selected by a partnership of local organisations based on a set of adopted local criteria. The majority of local sites are in private ownership and knowledge regarding current condition is challenging to maintain.

Ancient and semi-natural woodland, plantation on ancient woodland sites and veteran trees

Ancient woodland is also included in Zone 1, the Existing Nature Network as this habitat is considered of particular importance for biodiversity. Ancient woodland is defined as an area that has been wooded continuously since at least the year 1600. Shropshire's iconic woodland landscapes include the Wenlock Edge escarpment – the longest stretch of unbroken woodland in England. In the south-east is Wyre Forest, currently the largest woodland NNR in the country.

Despite their landscape and ecological significance, in response to uncertainty brought on by the World Wars, the need for timber and food security meant that the 20th century saw areas of ancient semi-natural woodlands (ASNW) cleared to increase the land available for agriculture and to provide land for conifer timber plantations.

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Conifer timber plantations on land that used to be ASNW are now classed as plantation on ancient woodland sites (PAWS). Just 2.6% of Shropshire is now covered by ASNW, slightly less than the rest of England which stands at 2.8%. The clearance of ASNW impacted Shropshire more than other parts of England, with significantly more PAWS (58%) created compared to the national average (39%).

PAWS still retains some of its ancient character and is a priority for restoration back to predominantly native woodland. The actual area of ASNW may be underrepresented due to the exclusion of smaller woodlands from previous inventories. Natural England is currently undertaking a revision of the ancient woodland inventory, to include smaller sites between 0.25 hectares and 2 hectares.

There are 2246 veteran and ancient trees recorded across the strategy area, and these have been included in Zone 1, the Existing Nature Network. These trees are irreplaceable in their own right but are also irreplaceable habitat for a wide range of often highly specialised organisms including lichens, mosses fungi and invertebrates.

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AGILE Nature Recovery and NbS Opportunity Maps: Shropshire, Telford and Wrekin - Technical Report

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 6: Mapping methodology

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Section 3.6 by Richard Hammerton, Shropshire Council

Contents

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1 Introduction

This document describes the Agile nature recovery opportunity maps for Shropshire and Telford & Wrekin, which were created as part of a research partnership between Shropshire Council and the Leverhulme Centre for Nature Recovery at the University of Oxford. The aim of this partnership was to explore how the maps could be used in practice to support the development of Local Nature Recovery Strategies. As part of this partnership, we are keen to receive feedback on the usefulness of the maps and suggestions for improvements.

The system for generating these maps has been developed over many years of research, most recently as part of the Agile Initiative at the Oxford Martin School, and further development of the maps is now being taken forward by the Leverhulme Centre for Nature Recovery at the University of Oxford.

1.1 What is the Agile Initiative?

The Agile Initiative is a five-year programme (2022–2027) based at the Oxford Martin School which aims to respond to specific social and environmental policy questions with fast-paced solution-focused 'Sprints' that deliver demand-led new research. The NbS sprint worked with policymakers and practitioners to help provide tools and guidance for tackling the challenges around scaling-up high-quality nature-based solutions in the UK. This included mapping NbS and nature recovery opportunities, as well as guidance on governance, funding and monitoring NbS, with a map of case study examples. See our NbS knowledge hub for all the outputs.

1.2 What are the Agile opportunity maps?

The maps can be created for any area in England, using our open-source software, and we are also working on adapting the system for use in the other UK nations. They show areas which are potentially suitable for specific types of nature recovery and Nature-based Solution (NbS) opportunities, such as restoring woodlands, grasslands, wetlands, heathland and peatland, based on a series of simple rules. They are intended to encourage the siting of interventions in the most suitable locations to maximise benefits and minimise trade-offs.

The Agile opportunity maps are intended as a **decision-support tool** as part of a process of participatory engagement with stakeholders (see our Recipe for Engagement), and should always be used in conjunction with **ground-truthing** and **consultation with local experts** (see our Ground-truthing Guide).

The maps provide the following information:

- Habitat, based on information from OS Mastermap, Natural England's Priority Habitat Inventory (PHI), CROME crop map of England and OS Greenspace data.
- Agricultural land classification (ALC), Designations and Public accessibility.
- Scores from 0 to 10 for 18 ecosystem services, and a similar score for biodiversity
- Estimates of carbon stored and sequestered per hectare (which can be used to estimate totals for the area)
- Opportunities for nature recovery and nature-based solutions: woodland & scrub, grassland, heathland and wetland creation or restoration; peatland restoration; agroforestry opportunities (silvoarable or silvopasture), community orchards, erosion prevention and natural flood management.

The maps can be used for several purposes (Figure 1). They can provide a baseline habitat map (1), then following the addition of extra data (2) they can identify areas that are currently delivering high levels of ecosystem services (3) and identify opportunities for enhancements (4). For this

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project, we also developed a new system for creating a priority network of opportunities to form the LNRS Local Habitat Map, known in Shropshire and Telford & Wrekin LNRS as the Zone 2 Opportunity Network Map. Finally, the ecosystem service scores can be exported to a spreadsheet, and this can then be used to assess the outcome of different interventions in terms of changes to ecosystem service scores, and hence benefits for people (5). This last step is not automated and would require additional work.

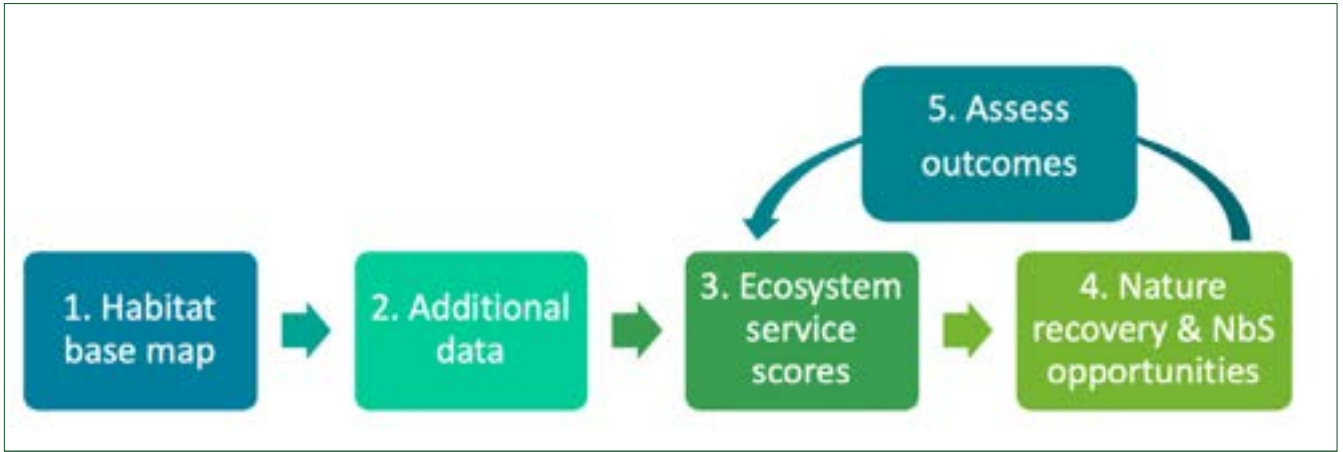

Figure 1. The Agile Opportunity Maps can be used to produce a baseline habitat map, assess baseline ecosystem service delivery, identify opportunities (including creation of a priority network map), and assess the benefits or trade-offs of proposed interventions.

The key features of the maps are:

1. Complete, detailed coverage with no gaps or overlaps – allows full habitat inventory and assessment of 'white space' options in areas in-between designated areas, including urban areas.
2. Matches OS Mastermap boundaries but also includes smaller habitat patches
3. Includes constraint and opportunity layers (ALC, designations, public access, flood zone, slope, soil type, peat status) all in one layer for rapid assessments
4. Shows opportunities for nature recovery (woodland & scrub, grassland, heathland, wetland, ponds, wood pasture, community orchards, agroforestry) and nature-based solutions (flood and erosion protection)
5. Creates a network of priority opportunities
6. Open-source code can be used to generate the maps anywhere in England
7. Maps can be updated easily:
   - Download zip files from the LNRS data viewer and elsewhere to a specified directory
   - Run the python code (takes 3-4 days for a typical county)
8. Flexible – we can respond to user requests for changes and new features.

2 Licensing requirements

The software to generate the maps is freely available, and most of the datasets incorporated into the maps are open access. However, there are some license requirements.

- **OS Mastermap.** The base layer for the maps is OS Mastermap (OSMM). This is free for public sector organisations and academics. Other users can also apply for licenses for non-commercial use under specific conditions. The GIS files for the maps may not be shared with other users unless they have a license to use OS Mastermap – this could be a contractor's license granted by the Council.
- **Soil data.** Standard versions of the opportunity maps use freely available national soil data but the Council purchased National Soil Map data with a license from Cranfield University. Those license conditions need to be followed when sharing the maps with others (this can be via providing a sub-license). The soil data is only used to i) identify the highest priority soil erosion prevention opportunities, and ii) identify potential opportunities to restore acid, calcareous and neutral grassland.
- **Hedgerow data.** The Council purchased hedgerow data from UK CEH. This is only used for creating the priority network maps, where existing tall or wide hedgerows form one element of the network and in some versions of the map field boundaries with no hedgerows (or low / narrow hedgerows) form a potential opportunity. Sharing images is allowed. Sharing derived data is only allowed if the Derived Data does not contain substantial amounts of the Licensed Data and cannot act as a direct substitute for the Licensed Data or be used to create a direct substitute for the Licensed Data. However, the data can be shared with 'co-deliverers', defined as: "a person who is supplied by the Licensee with the Licensed Data for purposes all of which support the achievement of the Licensee's statutory functions, where no revenue or credit is received in relation to any supply of the Licensed Data that exceeds the marginal costs of supply (unless it is a statutory charge)/ where that person supplied with Licensed Data uses it only for non-commercial purposes."
- **ArcGIS.** The data is supplied as ArcGIS File Geodatabase datasets. Individual opportunity layers can also be provided as shapefiles that can be used by other GIS packages such as QGIS, but attribute names will be truncated to 10 characters. Unfortunately, the symbologies that we provide to display the maps in the correct colours cannot be exported from ArcGIS to other formats.

The incorporation of licensed datasets into the Agile maps is summarised below.

The base habitat map, ecosystem service maps and carbon maps: use OSMM but no other licensed datasets.

The opportunity maps:

- use OSMM, but individual opportunity layers can be exported in a way that removes the OSMM boundaries.
- use soil data for calcareous / acid / neutral grassland opportunities and to split the erosion prevention opportunities (on slopes over 7 degrees) into high and low priorities, based on the soil erodibility
- do not use hedgerow data.

The priority network itself:

- does not use soil data (because we do not split out the erosion opportunities into high and low). However, when the individual opportunities within the network are mapped, these do use soil data as outlined above.
- uses hedgerow data (only for the hedgerow opportunities)
- uses OSMM for the field boundaries, which are incorporated in:
  - the hedgerow opportunities
  - the Countryside Stewardship polygons (as these have been trimmed those down to OSMM fields, though entire holdings could be used instead if necessary)
  - priority habitats (though could use original PHI data instead of the tidier version that matches OSMM boundaries)
  - the Historic Landscape Character (HLC) polygons, as these were made to fit the OSMM boundaries (though we could go back to using the original HLC polygons if necessary)
  - the canals
  - peat opportunities.

2.1 Attribution

Please always display this copyright statement prominently with any output maps, whether presented online, in reports or papers, in presentations, or printed.

Created using Agile Opportunity Maps software from the Oxford Martin School. This map incorporates OS data (© Crown Copyright and database rights 2025 Ordnance Survey AC0000851941) and Open Government License data.

For maps that include National Soil Map data (i.e. any maps that include calcareous grassland opportunities and erosion opportunities) please add this attribution statement:

Soils Data © Cranfield University (NSRI) and for the Controller of HMSO [2025].

For maps that include the UK CEH hedgerow data please add:

Some features of this map are based on digital spatial data licensed from the UK Centre for Ecology & Hydrology, © UKCEH. 'Contains Ordnance Survey data © Crown Copyright 2007, Licence number 100017572.'

3 Map creation methodology

3.1 Stage 1: The habitat baseline map

The habitat baseline incorporates the following datasets.

- **Ordnance Survey Mastermap (OSMM) Topography Layer**. This is a highly detailed vector map, i.e. it contains polygons mapping the shape of fields, buildings, etc., rather than a raster map comprised of pixels. Hence the resolution is extremely precise - it shows individual buildings, roads, verges, gardens, waterbodies and field boundaries (Figure 2). It also includes a certain amount of useful habitat information, e.g. coniferous, broadleaved and mixed woodlands, scattered trees, scrub, rough grassland, heath, marsh, rock and boulders. It is regularly updated by OS.
- **Habitat data:** Natural England's Priority Habitat Inventory (PHI), Wood Pasture and Parkland and Open Mosaic Habitats on Previously Developed Land. These are freely available national datasets, but users should be aware that much of this data is from around 2010. The maps should therefore always be used in conjunction with local knowledge and ground-truthing.

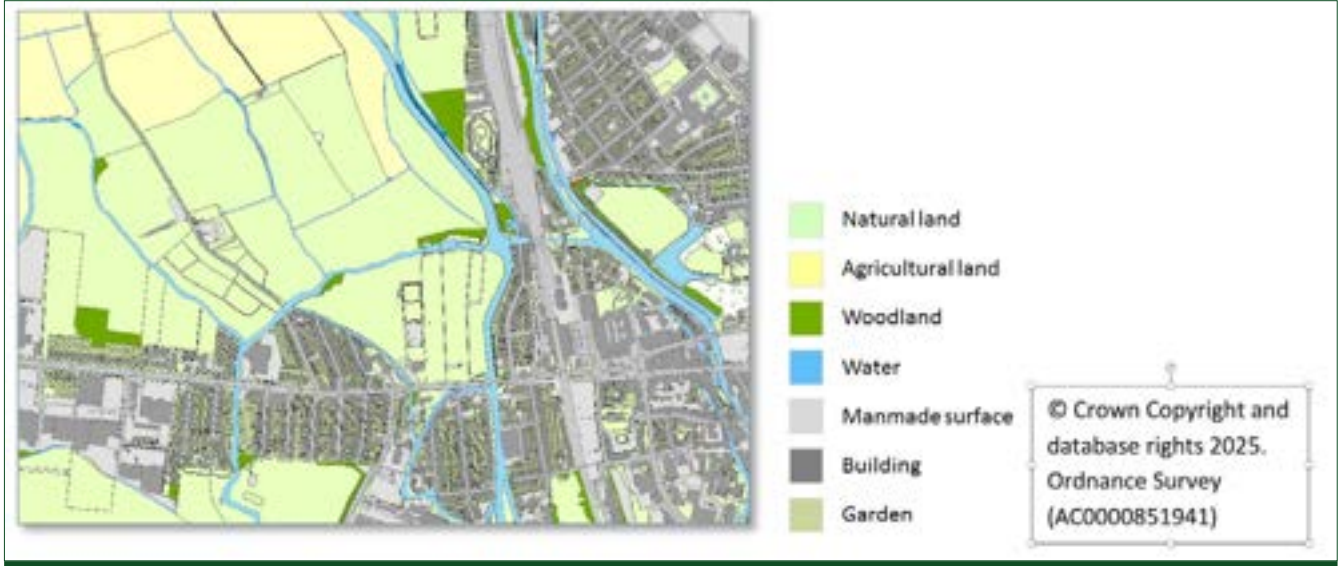

Figure 2. An extract from Ordnance Survey Mastermap (for Oxford), which has accurate mapping of buildings, gardens, roads, field boundaries etc plus some information on habitats

- **The Rural Payment Agency's Crop Map of England** (CROME) is used to determine whether agricultural land is arable or improved pasture. This version uses CROME from 2022, the most recently available version at the time the maps were created (Autumn 2024).
- **OS Greenspace Data** is used to identify greenspace (allotments, playing fields, playgrounds, golf courses, cemeteries and churchyards and amenity grassland). We use both OS Open Greenspace, which covers all areas, urban and rural, and OSMM Greenspace, which only covers larger urban areas (not villages) but contains more detail (e.g. it identifies amenity grassland) (Figure 3).

All the datasets are merged into a single layer. One challenge when merging these datasets is that often the boundaries do not exactly match OS Mastermap boundaries. Therefore a straightforward intersect operation, when performed at county scale, creates millions of tiny extra polygons ('slivers') along the main polygon edges, where the boundaries overlap slightly, which makes the dataset unmanageable. The Agile software overcomes this challenge using a novel process (designed by Martin Besnier, a visiting researcher from the Université Paris Sud) that can merge 'messy' non-matching boundaries while staying faithful to the OSMM base map (Figure 4). The final habitat base map therefore has complete and detailed coverage of the area with no overlaps or gaps (Figure 5).

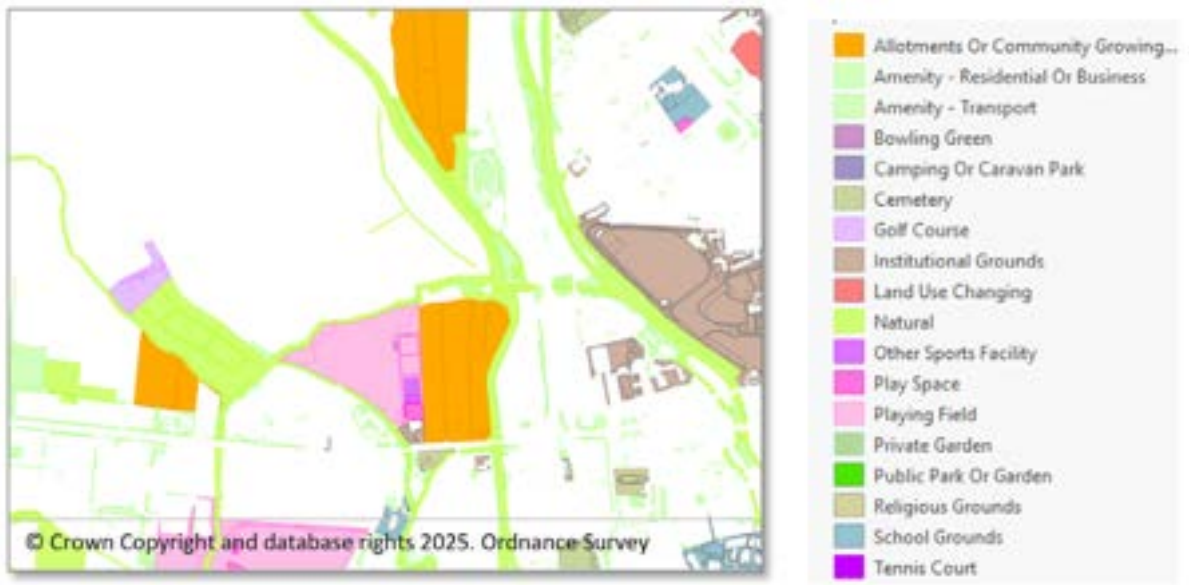

Figure 3. Extract from Ordnance Survey Green Space maps (for Oxford)

Figure 4. Agile map generation software merges messy datasets with non-matching boundaries, staying faithful to the original OS Mastermap boundaries but merging in new habitat patches where needed.

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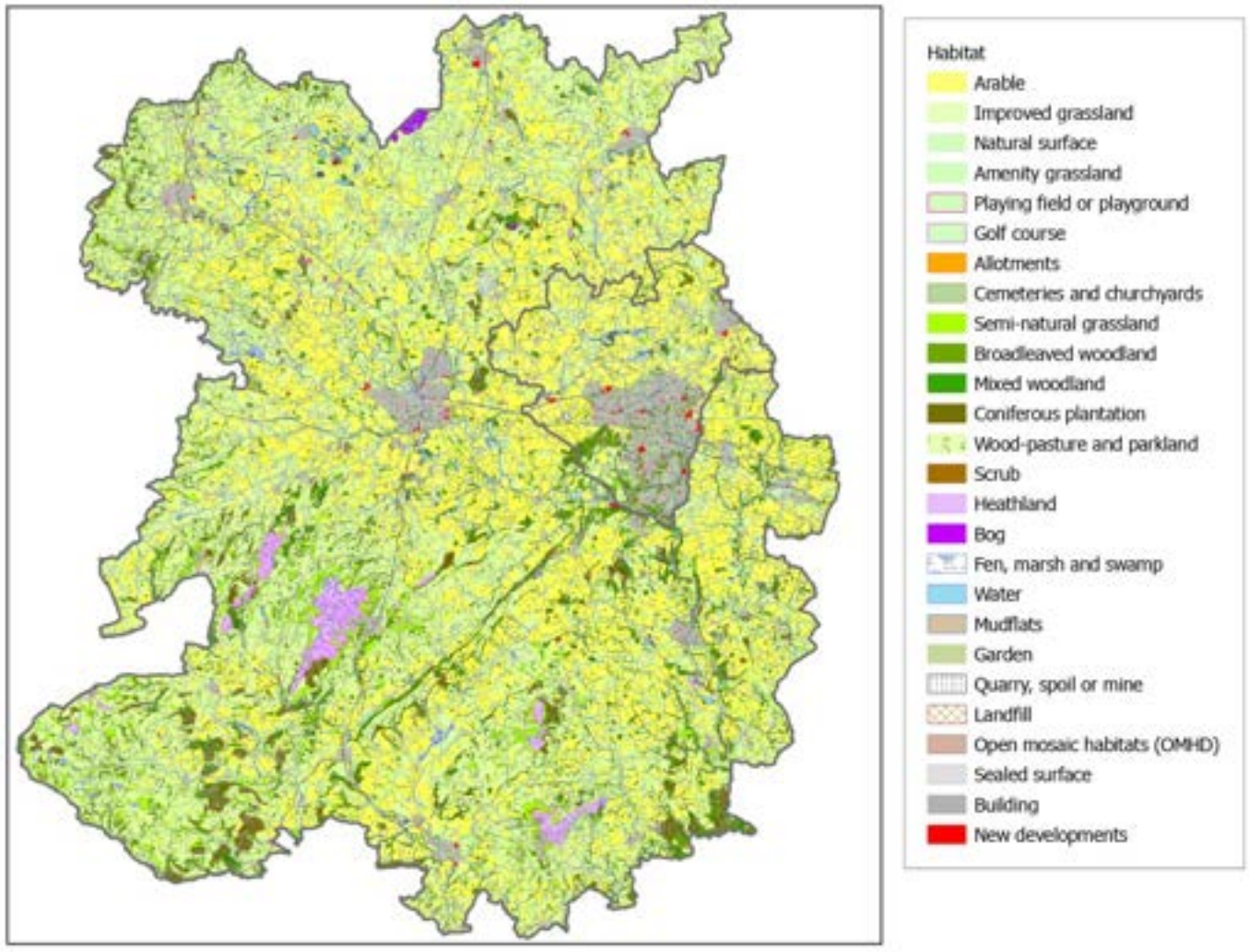
Figure 5. Extract from the Agile habitat baseline map for Shropshire showing complete and detailed coverage including greenspace



Created using Agile Opportunity Maps software from the Oxford Martin School. This map incorporates OS data (© Crown Copyright and database rights 2025 Ordnance Survey AC0000851941) and Open Government License data.

Figure 6. The Agile habitat map for Shropshire, Telford and Wrekin

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3.2 Stage 2: Adding extra data to inform ecosystem service scores and nature recovery opportunities

In order to inform the ecosystem service scores and also the constraints for the opportunity mapping, the following additional datasets are then merged in to the habitat base map.

- Agricultural Land Class: used to assess the capability of the land to produce food and to inform selection of nature recovery and NbS opportunities that minimise trade-offs with food production (see Stage 3).
- Nature and cultural designations. We aim to incorporate all the relevant designations, e.g. National Nature Reserves, Local Nature Reserves, SSSIs, Scheduled Ancient Monuments, National Trust Land, Green Belt, National Landscapes (formerly AONBs), etc. Currently we use a standard list of around 20 designations, all freely available. Users can add local datasets, e.g. Local Wildlife Sites.
- Public accessibility information is incorporated in order to assess the capability of the land to provide opportunities for nature-based recreation. This is based on Countryside and Rights of Way open access land, assumptions about the accessibility of certain types of greenspace, plus 50 m buffers around public footpaths. There is also an option to incorporate additional footpath and open space accessibility data from Open Street Map: this was not done for Shropshire.

3.3 Stage 3: Estimating ecosystem service scores

We map the potential for each habitat to deliver benefits for people. This is done using a table of scores (from 0 to 10) that reflect the capability of each habitat to deliver each of 18 ecosystem services (Figure 7, Table 1). The matrix of scores is provided as a spreadsheet, for reference. The scores for some services are adjusted using multipliers to reflect Agricultural Land Class (for food production), designations (for cultural ecosystem services), and public accessibility (for recreation).

We can export a summary of the average scores per hectare for the area, and the area of high-scoring habitats. This information can also be used to explore the possible outcome of future interventions on ecosystem service delivery.

This section first describes the scores, then the multipliers, then presents important caveats to use when interpreting the ecosystem service maps.

Scores

The scores have been developed over several years of research and testing, drawing on the following sources (a publication describing the rationale underpinning the scores is in preparation):

- A literature review of 780 papers.[1]
  A comparison exercise with similar scoring systems and other evidence sources, as part of the development of Natural England's Environmental Benefits from Nature tool (EBNT), which can be used alongside the Biodiversity Metric for assessing the ecosystem service outcomes of land-use change.
- A series of expert review consultations as part of the EBNT project.

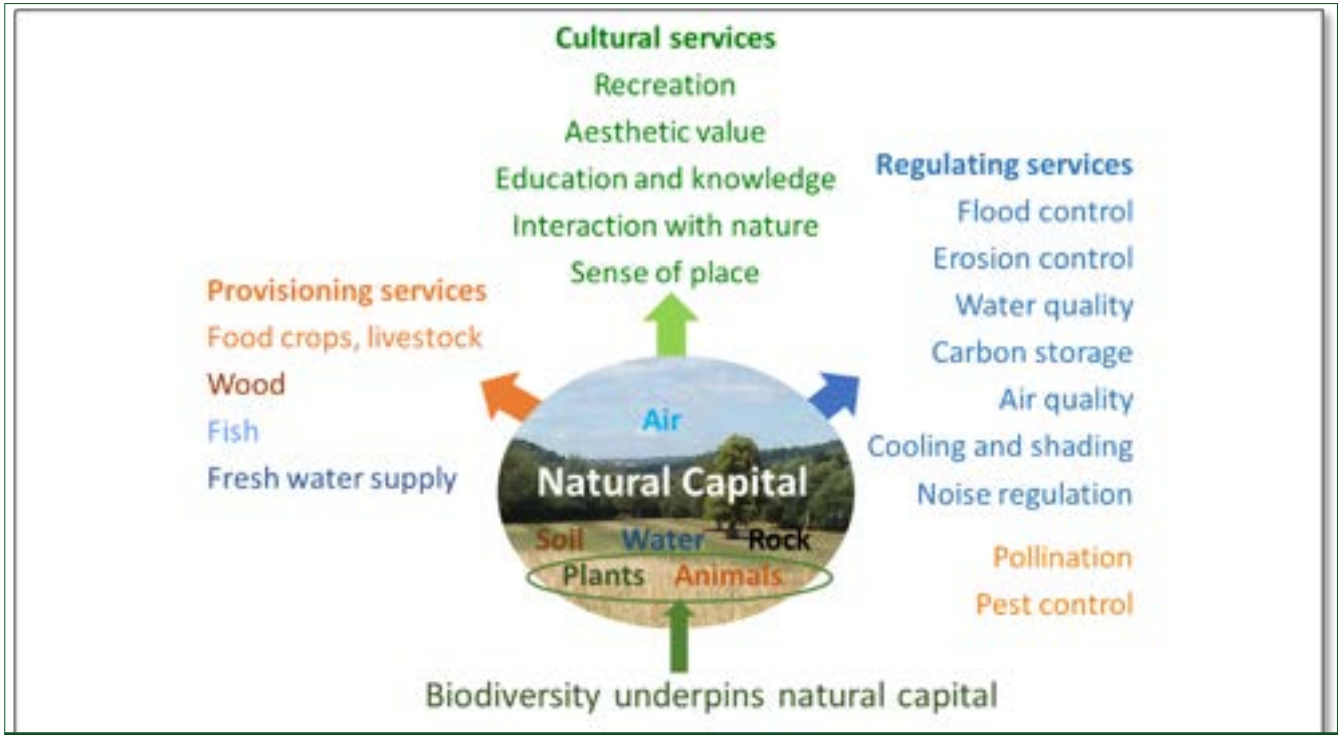

Figure 7. The 18 ecosystem services mapped by the Agile maps. These flow from natural capital and are all underpinned by biodiversity.

Table 1. Definitions of each of the 18 ecosystem services

Provisioning	Food production	Arable crops, horticulture, livestock, orchards, allotments, urban food, wild food (e.g. gathering berries or mushrooms).
	Wood production	Timber, wood production for paper, woody biofuel crops, coppice wood or wood waste used for biofuel.
	Fish production	Aquaculture, commercial fishing, recreational fishing (recreational fishing is also a cultural service, but the habitat conditions match those for fish production).
	Water supply	Impact of soil and vegetation on rainwater runoff and infiltration, and thus on groundwater recharge or surface water flow.

Regulating	Flood protection	Reduction of surface runoff, peak flow, flood extent and flood depth through canopy interception, evapotranspiration, soil infiltration and physical slowing of water flow.
	Erosion protection	The ability of vegetation to stabilise soil against erosion and mass wastage by protecting the soil from the erosive power of rainfall and overland flow, trapping sediment, and binding soil particles together with roots.
	Water quality regulation	Direct uptake of pollutants by terrestrial or aquatic vegetation; interception of overland flow and trapping / filtration of pollutants and sediment by vegetation before it reaches watercourses; breakdown of pollutants into harmless forms e.g. by denitrifying bacteria that convert nitrates into nitrogen gas. Also infiltration into the ground, allowing pollutants to be filtered out by the soil and preventing pollution of watercourses – though pollutants could enter groundwater supplies.
	Carbon storage	Carbon stored in vegetation and soil. In the context of land use change (with complete loss of habitats and often major soil disturbance), this is more relevant than carbon sequestered annually. The 'time to reach target condition' reflects the time taken for a new habitat to reach a typical carbon sequestration rate for a mature habitat.
	Air quality regulation	Removal of air pollutants by deposition, absorption and/or breakdown by vegetation. Fine particles (PM2.5) are the most damaging type of pollution, but vegetation can also remove ozone and nitrogen oxides (by absorption into pores).
	Cooling and shading	Shade, shelter and cooling effect of vegetation and water, especially urban trees close to buildings, green roofs and green walls, which can reduce heating and cooling costs, or trees in urban parks which can provide shade on hot days.
	Noise reduction	Attenuation of noise by vegetation.
	Pollination	Pollination of crops (and wild plants, supporting other ES) by wild insects (mainly bees and hoverflies). Excludes pollination by managed honeybees.
	Pest control	Predation of crop or tree pests by invertebrates (e.g. beetles, spiders, wasps), birds and bats.

Cultural	Recreation and leisure	Provision of green and blue spaces that can be used for any leisure activity, e.g. walking, cycling, running, picnicking, camping, boating, playing or just relaxing.
	Aesthetic value	Provision of attractive views, beautiful surroundings, and pleasing, calming or inspiring sights, sounds and smells of nature.
	Education and knowledge	Opportunities for formal education (e.g. school trips), scientific research, local knowledge and informal learning (e.g. from information boards or experiences).
	Interaction with nature	Provision of opportunities for formal or informal nature-related activities, e.g. bird watching, botany, random encounters with wildlife, or feeling 'connected to nature'. There is some overlap with biodiversity, but access by people can have negative impacts on some wildlife habitats. Excludes recreational fishing; hunting / shooting (not covered); the intrinsic value of nature (covered by the biodiversity metric); existence value (from just knowing that nature exists).
	Sense of place	The aspects of a place that make it special and distinctive – this could include locally characteristic species, habitats, landscapes or features; places related to historic and cultural events, or places important to people for spiritual or emotional reasons.

Woodland habitats tend to have high scores for the regulating and cultural services, because trees are highly effective for storing carbon, intercepting rainwater and stabilising soil as well as being attractive locations for recreation. Semi-natural grasslands also score highly for cultural services but less for services such as carbon storage and flood protection. Farmland has a maximum score of 10 for food production, but tends to have low scores for most of the other services (with the exception of water provision via groundwater recharge). However certain elements of farmed landscapes (hedges, field margins, woodlands, paths) do have higher scores for regulating and/or cultural services. The matrix also includes scores for watercourses, wetlands and urban green infrastructure.

3.3.1 Multipliers

The scores for some services are adjusted using multipliers, as follows.

1. Agricultural Land Class (ALC): a multiplier based on ALC is applied to the Food production score, to reflect the fact that high grade land produces higher yields and is also more versatile (i.e. it can produce a range of crops, including horticulture). The multiplier ranges from 2.4 (Grade 1) down to 0.5 (Grade 5). After applying the multiplier, scores are re-normalised to the scale of 0-10. Grade 1 agricultural land (arable and improved grassland) thus scores 10, Grade 2 scores 7.6, Grade 3 scores 4.9, Grade 4 scores 3.5 and Grade 5 scores 2.1. The multipliers are roughly based on expected differences in productivity (in tonnes per hectare) between the different land classes, and a further arbitrary uplift to reflect the versatility of Grade 1 and 2 land.
2. Public accessibility is used to adjust the scores for recreation. For paths, the ecosystem service of recreation is delivered not from the path itself (which could be a sealed surface which scores zero) but from the way in which the path enables the user to experience a green space setting. We therefore assume that the service of recreation in green space is delivered by the area within a 50m buffer zone on each side of the path. Habitats within this 50m buffer receive a 'public access' multiplier of 0.75, reflecting that although they are not actually accessible to the path user, they contribute to the experience of recreation in green space. The accessibility multiplier is not currently applied for the services of education, aesthetic value or interaction with nature, where the application of the multiplier is less straightforward (e.g. some areas could be available for educational trips but not publicly accessible). The accessibility multiplier is arbitrary and is:

- 1 for open access
- 0.9 for schools, which are accessible only to pupils and only during school hours but are nevertheless very important for recreation
- 0.75 for the zone 50m each side of paths (see above)
- 0.75 for semi-restricted access (areas restricted to clubs or members, e.g. allotments, bowling greens, but where access is not expensive or exclusive)
- 0.5 for restricted access (e.g. golf courses, where membership is expensive)
- 0.25 for private gardens (very useful to owners but not anyone else).

3. Nature and cultural designations.

- There is an arbitrary multiplier of 1.1 for the service of aesthetic value for areas within AONBs.
- There is an arbitrary multiplier based on the number of nature and/or cultural designations for each site for the services of education (nature and certain cultural designations), interaction with nature (nature designations only) and sense of place (nature or cultural designations). The multiplier is 1.1 for one designation, 1.15 for two and 1.2 for three or more.

3.3.2 Ecosystem service maps

With scores for 18 different ecosystem services, it can be difficult to get an overview of where the land delivers benefits to people. Adding scores for different services together is best avoided, because this is not comparing like with like. The scores are simply rankings of the capacity of different habitats to deliver each service on a scale of 0 to 10. A score of 10 for recreation means that we think that land parcel delivers the maximum possible level of service for recreation (in terms of habitat type and accessibility), but that does not make it equivalent to a score of 10 for carbon storage or food production because the scores are not in common physical or monetary units. However, to help identify the important natural assets in the area, we show the maximum score out of all the regulating and cultural services. Polygons with high maximum scores are known to have a high value for delivering at least one regulating or cultural service. This is intended to be displayed together with a separate overlying layer showing high-scoring areas for food production (i.e. Grade 1 and 2 arable and improved grassland). Areas with high scores for food production have low scores for most of the regulating and cultural services. Following feedback from users, we display these areas in a different colour (orange) to distinguish them from the areas with high scores for other services (green) (Figure 8).

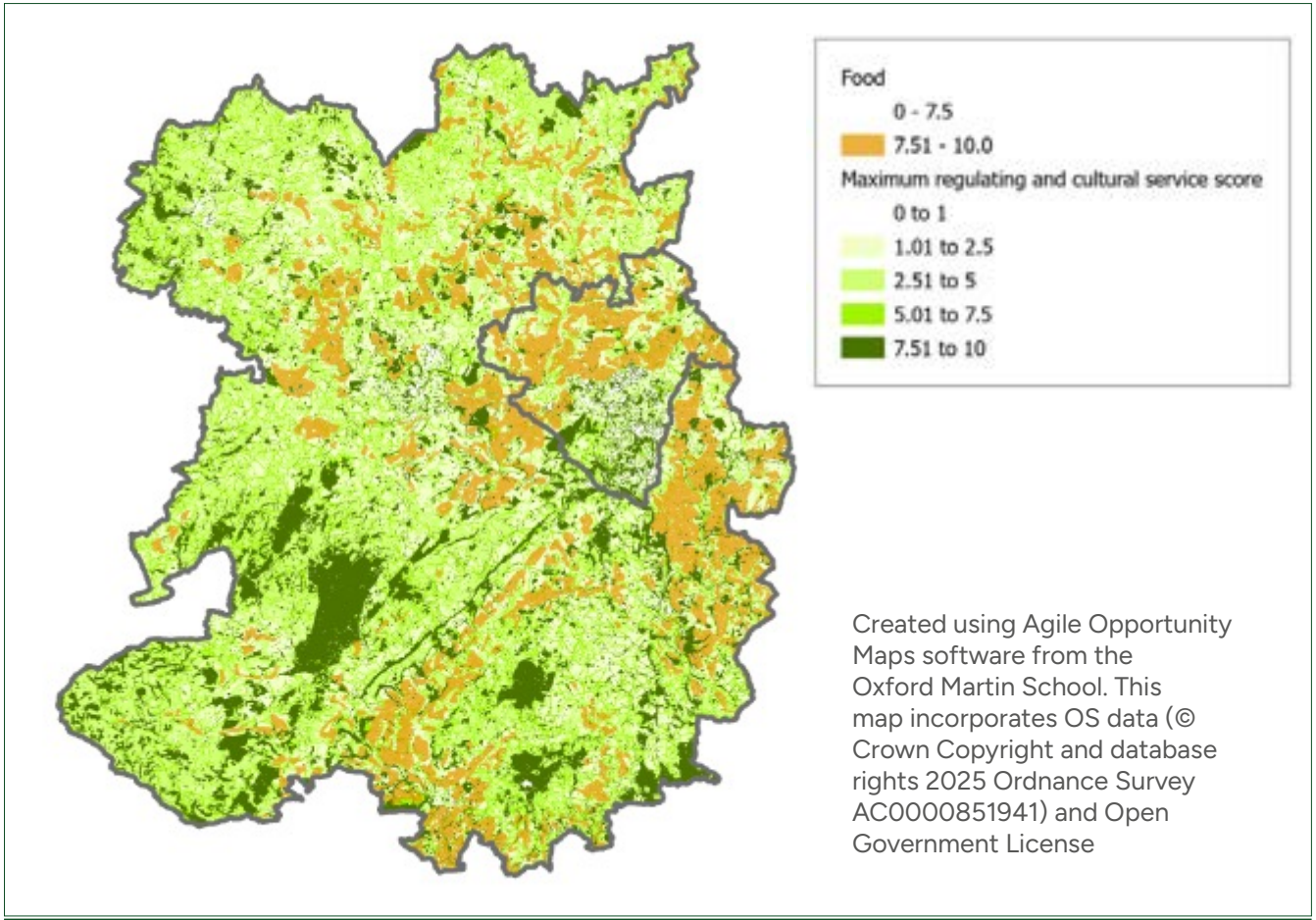

Figure 8: Maximum score for cultural and regulating services (green) or food provision (orange)

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3.3.3 Caveats for the ecosystem service maps

Please be aware of the following caveats when interpreting the ecosystem service scores.

- As the scores are based on habitat type, all habitats of the same type will have the same score, unless one of the multipliers has been applied.
- The scores reflect only potential supply of services, not demand or actual flow of services.
- Scores for most of the ecosystem services are indicative rankings of different habitats based on best available evidence. The exceptions are carbon storage and air quality regulation, where the scores are directly proportional to biophysical evidence (carbon stored in soils and vegetation[2], and estimates of the health benefits of air pollution removal by vegetation in the UK Natural Capital Accounts[3]). Scores for cultural services such as aesthetic value are subjective, as they are dependent on personal views. However, the scores are about as robust as this type of scoring system can be.
- The service of fish provision is delivered by rivers and lakes. These score 10, but the scores should be adjusted according to the ecological quality of the waterbody. This can be done using the Water Framework Directive status provided by the Environment Agency, but this is not currently automatically integrated into the maps.
- Hedgerows and individual trees are also very important for delivering ecosystem services. Where available, maps of these landscape features can be displayed as an extra layer on top of the habitat-based maps.
- Note that although these maximum scores are a useful way of synthesising the scores from multiple services, they do not reflect the multi-functionality of habitats. Thus a habitat with a high score for just one service will appear in the same shade of green as a habitat that delivers high levels of multiple services. We are interested in feedback on different methods of displaying the results.

3.3.4 Carbon storage and sequestration maps

- To complement the scores, we provide estimates of carbon storage in tonnes per hectare (Figure 9) and carbon sequestration in tonnes per hectare per year (Figure 10), based on literature evidence from Natural England[4], and other sources.[2]

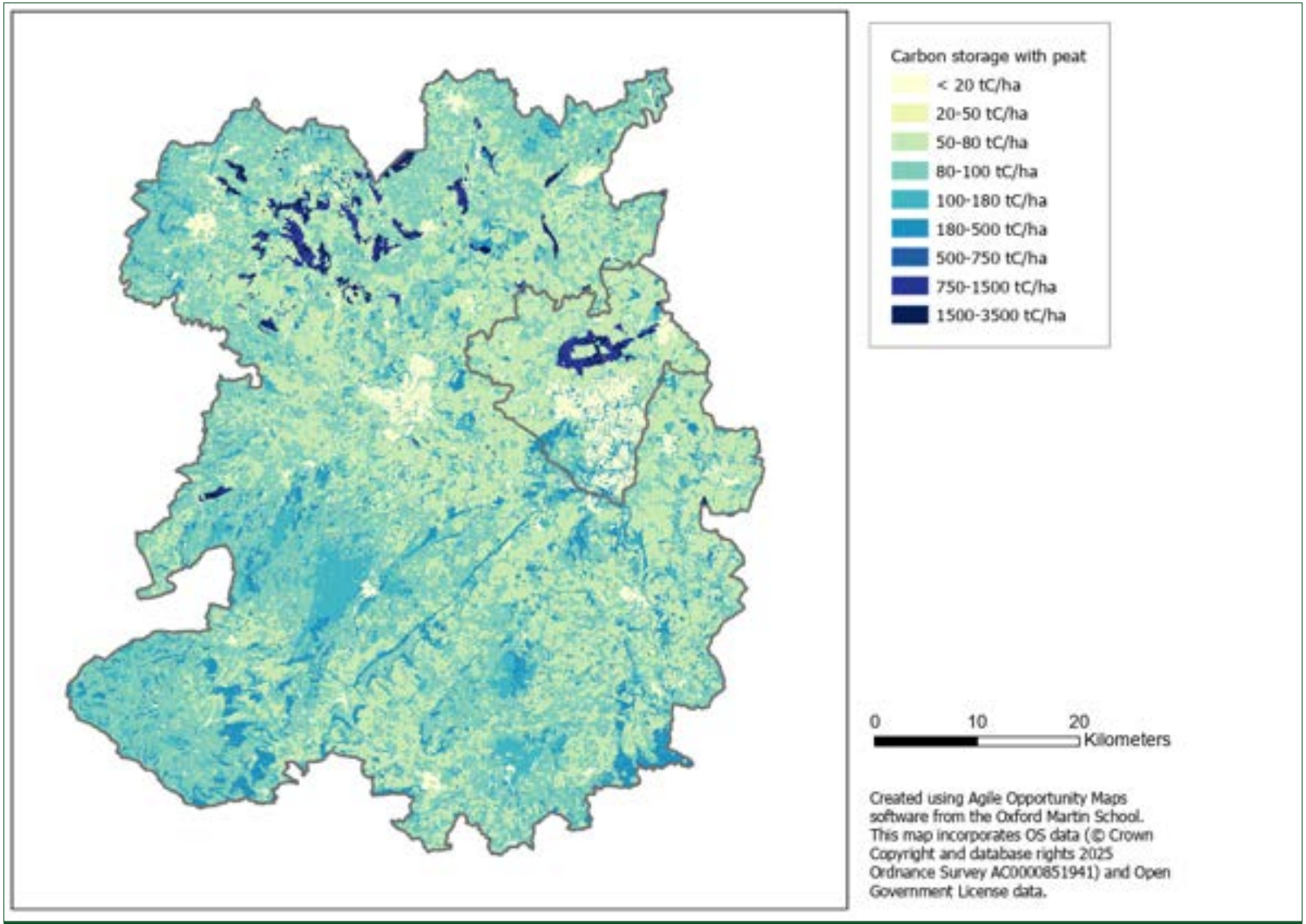

Figure 9. Carbon storage map of Shropshire, Telford and Wrekin

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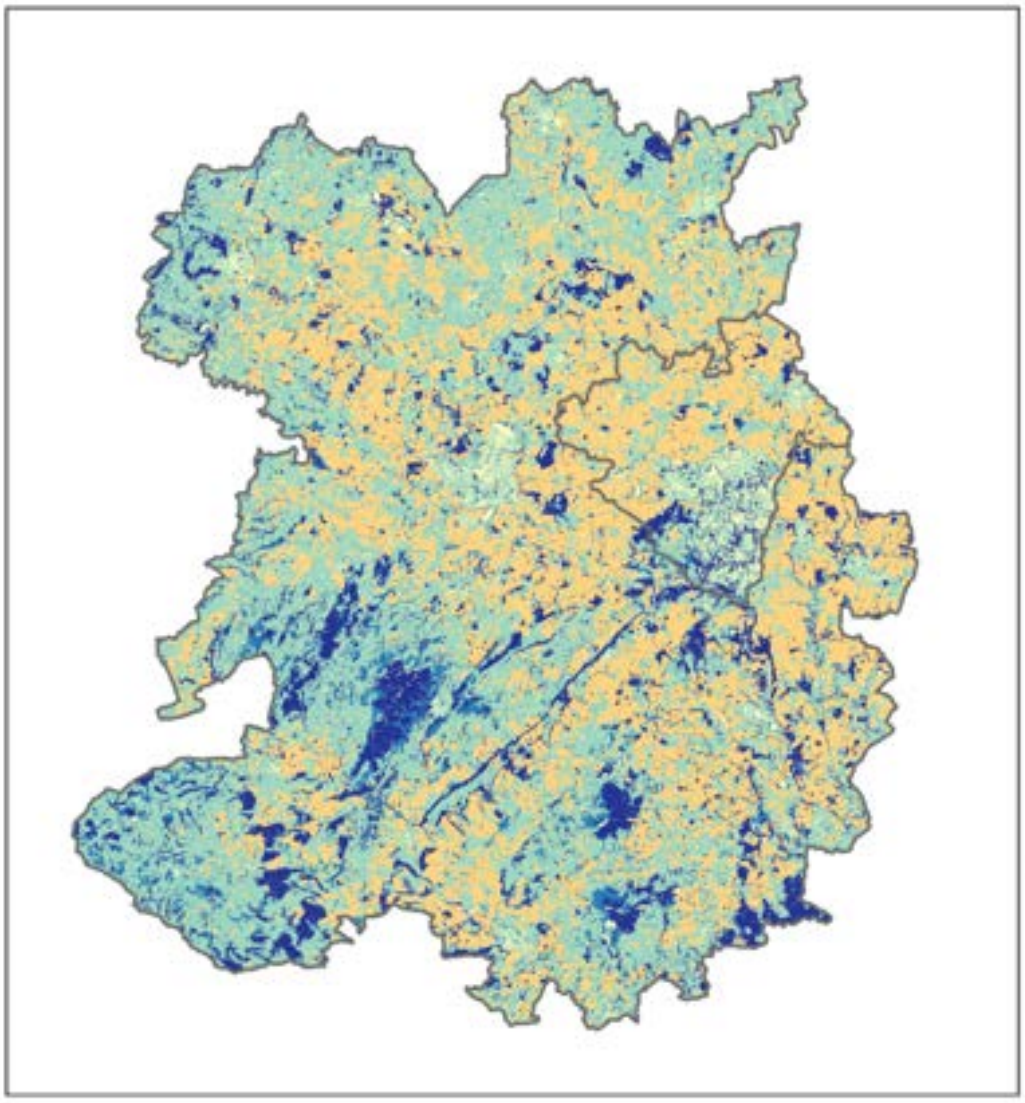

Figure 10. Carbon sequestration map of Shropshire and Telford & Wrekin

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3.4 Stage 4: Identifying nature recovery and NbS opportunities

Opportunities for nature recovery and NbS have been identified using the constraints shown in Table 2. The general ecological rules used to identify opportunities were initially developed in partnership with the Oxfordshire Treescapes Project, and have been expanded to include a wider range of habitats, as described below.

1. Target low-biodiversity habitats (arable land, improved grassland, poor quality semi-improved grassland, felled woodland, bracken), thus avoiding conversion of semi-natural habitats to other habitats. The exception is degraded deep peat, which is prioritised for restoration regardless of habitat type (except for manmade surfaces or gardens) unless the Natural England peat status dataset records the presence of valuable semi-natural habitats or native woodland. Note that some areas mapped as 'Wood-pasture and parkland' are actually mainly improved grassland, possibly with a few trees – this is a known issue due to the Natural England dataset mapping entire parkland areas regardless of detailed habitat type within the estate boundaries. We therefore allow semi-natural grassland restoration on areas of 'Wood-pasture and parkland' which the CROME crop map identifies as improved grassland.
2. Avoid the conversion of high-grade farmland (ALC grade 1 or 2) to other habitats. The exceptions are for peatland and wetland, where food production produces high carbon and biodiversity impacts and so restoration takes priority, and for agroforestry or restoration of improved grassland to semi-natural grassland, where food production can still continue. This rule is intended to minimise displacement of food production and associated impacts to other regions, as high-grade land can produce twice as much food as low-grade land. However, it does have complex implications and trade-offs that we intend to discuss further with stakeholders, especially for restoration of chalk grassland which is largely confined to Grade 2 land in certain regions, and for production of horticulture on fen peat, which has implications for food security and local economies.
3. Avoid conversion of peat to other habitats except for degraded shallow peat or peaty pockets, which might be suitable for restoration to wetland, heathland or semi-natural grassland (or mosaics) if it cannot be restored to peat bog. Tree planting is a particular risk on peat (even on shallow peat), because it results in loss of soil carbon that can outweigh the carbon sequestered by the trees.[5]
4. Wetland and pond creation opportunities are currently restricted to the flood zone (1 in 100 year risk of flooding; Environment Agency flood zone 2). We are also working on a method of identifying non-flood zone sites for wetland creation using the Topographic Wetness Index.
5. Woodland, grassland, heathland and wetland opportunities are zoned depending on distance from core habitat patches (200m, 500m, 1km, or over 1km but within the Natural England Nature recovery network for that habitat). This is based on the approach pioneered by Gloucestershire Wildlife Trust for the Gloucestershire Local Nature Partnership nature recovery network maps. The core patches are above a size limit: 1000 m^2 for woodland, 500 m^2 for grassland and heathland, and 100 m^2 for wetland. For woodland, grassland and wetland they are restricted to areas identified as priority habitat (excluding areas identified only as 'floodplain grazing

marsh' in the Priority Habitat Inventory, which can include improved grassland on the floodplain). A fifth zone identifies areas outside these networks where there are no constraints on habitat creation; these areas can be suitable for creation of stepping stone habitats in network gaps. The maps include entire fields in each zone, even if only part of the field is within the distance limit; the rationale is that most interventions will target a whole field. However, this could be changed in response to user feedback.

6. We map separate networks for calcareous, neutral, or lowland acid grassland, with calcareous grassland restricted to calcareous soils, and lowland acid grassland restricted to the Natural England lowland acid grassland recovery network (as the soil type is difficult to predict). We use the freely available British Geological Survey Soil Parent Material Model at 1km resolution to identify calcareous soils, though there is also a facility to use Soilscapes or the National Soil Map for a more accurate result if a license has been purchased from Cranfield University. We also map a 'combined grassland network' that includes all these types as well as less specific core grassland areas such as 'good quality semi-improved grassland'.

7. Agroforestry is considered to be suitable even for high grade farmland, as evidence suggests it can make food production more resilient (there might be a small yield loss in the short term for silvoarable, but evidence suggests no loss or even a gain for silvopasture due to increased animal welfare). However, we avoid suggesting conversion of existing pasture to silvoarable, as that would involve loss of stored soil carbon and biodiversity. We also do not suggest conversion of high-grade arable land to silvopasture, on the grounds that it is more appropriate to continue plant-based food production on high grade land. An exception could be if the area is at high risk of erosion (though this is not yet implemented).

8. Community orchards follow the same rules as woodland opportunities but are also restricted to within 500m of urban areas (identified using Ordnance Survey Zoomstack urban areas).

9. Erosion prevention opportunities are identified on steep slopes (over 7 degrees), with a higher priority if the area also has highly erodible soils. Note that freely available soil erodibility datasets have low accuracy, so the slope is the main indicator. The default option is the British Geological Survey Soil Parent Material Model dataset at 1km^2 resolution, but Shropshire Council purchased the National Soil Map from Cranfield University, which can give a much better indication of erodibility.

10. Natural flood management using woodland is targeted using the Wider Catchment Woodland dataset from the Environment Agency. This indicates areas where soils have restricted drainage, where woodland creation can help to improve soil infiltration and thus reduce flooding.

Table 2. Constraints used to identify opportunities for nature recovery and NbS

	Arable	Improved grassland	Amenity grassland	Poor semi-improved grassland	Bracken	Felled woodland	Semi-natural habitats	Deep Peat	Shallow peat and peaty pockets	Verges	ALC 1 or 2	Flood zone
Woodland	**y**	**y**	**y**	**y**	**y**	**y**	**n**	**n**	**n**	**n**	**n**	**y**
Grassland	**y**	**y**	**y**	**y**	**y**	**y**	**n**	**n**	**y**	**y**	**If improved grass**	**y**
Heathland	**y**	**y**	**y**	**y**	**y**	**y**	**n**	**n**	**y**	**n**	**n**	**y**
Wetland	**y**	**y**	**y**	**y**	**y**	**y**	**n**	**n**	**y**	**n**	**if peat**	**essential**
Peatland	**y**	**y**	**y**	**y**	**y**	**y**	**y**	**y**	**y**	**n**	**y**	**y**
Silvoarable	**y**	**n**	**n**	**n**	**n**	**n**	**n**	**n**	**n**	**n**	**y**	**y**
Silvopasture	**unless ALC 1 or 2**	**y**	**n**	**n**	**n**	**n**	**n**	**n**	**n**	**n**	**y**	**y**
Community orchard	**y**	**y**	**y**	**y**	**y**	**y**	**n**	**n**	**n**	**n**	**n**	**y**

An example of an opportunity map for restoring calcareous grassland is shown in Figure 11. We map zones according to the distance from core habitat in shades of blue. The 'extension zone' in pale blue is areas that are not within 1km of core habitat patches but which are located within Natural England's habitat network (shown as a blue hatching overlay). This provides links between habitat patches that are close together. The cream colour is areas that are not in a network but for which there are no constraints. These could be opportunities to create stepping stones. For designated areas, restoration may or may not be appropriate and additional consultation is necessary with the relevant site managers and local ecological experts. We therefore map designated areas in shades of purple rather than shades of blue, to distinguish them.

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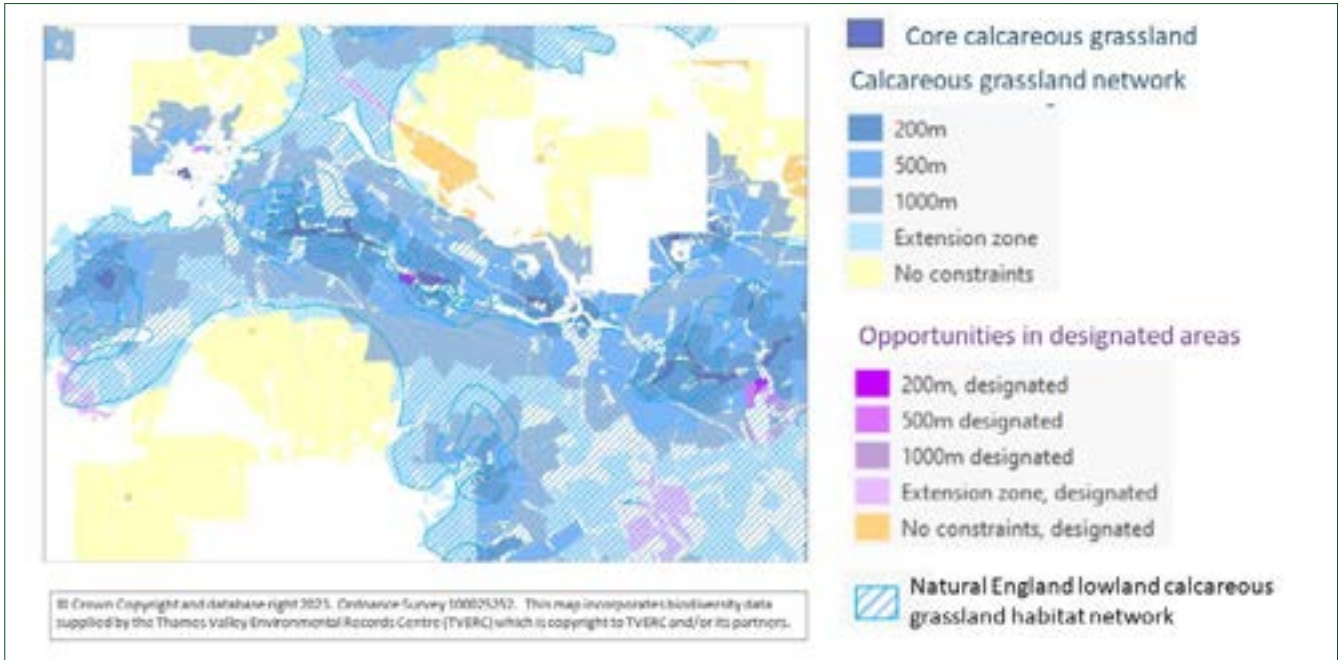

Figure 11. Example of part of a calcareous grassland opportunity network, with designated sites distinguished by using purple shades

These network maps tend to identify more opportunities for habitats that are more common, such as woodland. To address this, we created a more refined woodland network map that was more restricted in extent and prioritised connecting existing woodland patches. This was done using a buffer / reverse buffer approach, similar to the method Natural England used to create their maps.

3.4.1 Prioritising The Opportunities

Our priority maps indicate which might be the highest priority opportunities in a given location. These rules are still developing and we are seeking to refine them as feedback emerges. It is important to emphasise again that detailed ground-truthing and consultation with stakeholders and local experts is essential before any interventions are implemented on the ground: the Agile maps should only be used to indicate which options might be best suited to certain locations. See the Ground Truthing Guidance for more details.

Peat restoration is always prioritised on deep peat, due to the urgent need to cut the exceptionally high level of emissions from degraded peat. **Wetlands** are currently prioritised on floodplains, although we emphasise here that these should be part of a mosaic of **floodplain meadows, ponds,** and small patches of **wet woodland**. More detailed 'Stage zero' modelling of floodplain restoration potential (i.e. modelling the potential to restore the floodplain to its original state prior to human intervention), using higher resolution height data (1m or 2m rather than the 5m LIDAR used here) can identify which parts of the floodplain are slightly higher or lower.[6] This can then be used to target wetland creation in the lower areas, wet woodland on the slightly drier areas, and meadows in the areas in-between (as floodplain meadows do not benefit from prolonged inundation).

For woodland, grassland and heathland, the habitat closest to a patch of the same habitat is prioritised. However, this approach has drawbacks as it ignores opportunities to create 'stepping stones' in areas currently deprived of existing habitat.

For many areas, two or more options are equally suitable and we record a list of all

the equally suitable options. We always note opportunities for agroforesty or community orchards, though these occur further down the list than the opportunities for semi-natural habitat restoration.

Following the approach pioneered by the Gloucestershire Local Nature Partnership, for areas where more than one habitat is equally suitable, we suggest that one option is to aim to create mosaic or intermediate habitats that could be used by species from each habitat as a corridor between patches of their core habitat. For example, where grassland and woodland are equally suitable, options could include wood-pasture and parkland with scattered trees, scrub, silvopasture or orchards. This is reflected on the map by showing the symbol for grassland with scattered trees. For areas where heathland and woodland and/or agroforestry are equally suitable, the map shows the symbol for heathland with scattered trees.

Often three, four or even five options might all be suitable. We do not attempt to show all these via the map symbology, but clicking on a polygon will reveal the full list of priority options. However, in some cases it might be more appropriate to prioritise a specific habitat that is particularly at risk, or supports rare and threatened species, rather than simply the one that is closest to existing core habitat patches. For example, in some areas, semi-natural grassland and lowland heathland are more scarce than native woodland.

The priority opportunities map for Shropshire and Telford & Wrekin is shown in Figure 12. The map includes areas of existing habitats (with dark outlines), existing other land use such as built-up areas (shades of pale grey and green) and the nature recovery opportunities. Although the map covers the whole county, this does not imply that all the opportunity areas should be targeted for intervention, as that would leave no space for food production! It simply suggests the highest priority opportunities in any one area. The aim is that this map can be used to support a process of participatory stakeholder engagement, to take account of local priorities and the need for nature-based solutions to tackle local problems.

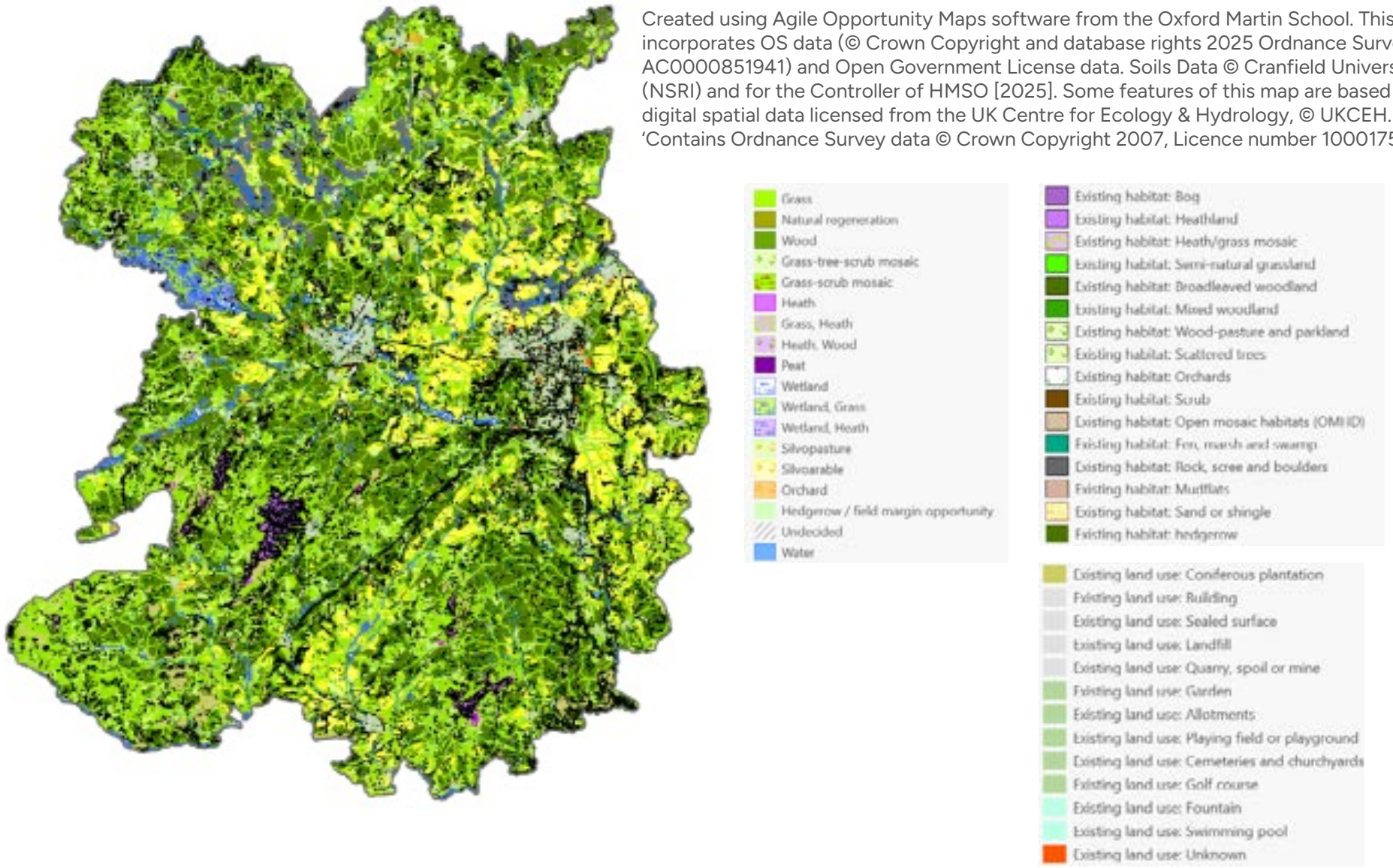

Figure 12. Nature recovery opportunities map for Shropshire and Telford & Wrekin

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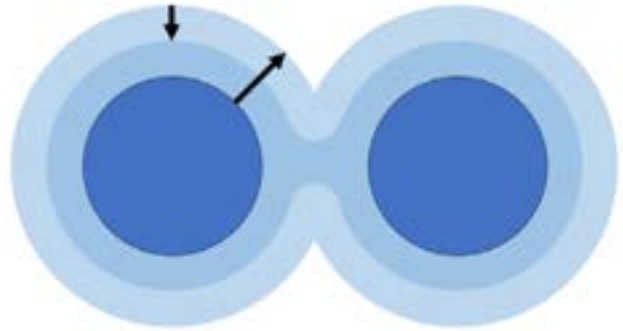
3.5 Stage 4a: Creating LNRS networks

For this research partnership we worked together to create a system for generating an LNRS priority map (known in Shropshire as the Zone 2 Opportunity network) by combining multiple priority areas such as nature reserves and priority habitats into a reasonably well-connected network. This was done partly by using linear features such as river valleys and greenways as connecting features, and partly using a system of buffering that helped to link the priority features together. We developed new software to automate this system, which will be released for wider use following further testing and refinement.

The buffering system was inspired by the method used by Natural England to create their National Habitat Networks (see blue hatching on Figure 11). To mimic this, we applied positive buffers to certain priority network elements (such as important designated sites) followed by reverse (negative) buffers. This has the effect of 'gluing together' any sites which are closer than the positive buffer distance, but removing any parts of the buffer that do not form a link between nearby sites (see schematic in Figure 13, top). It therefore helps to create a more connected network without using up too much land in the buffer zones. The reverse buffer step tends to create characteristic rounded edges and sometimes 'holes' in the network (Figure 13, bottom). This happens when the initial buffer leaves a small gap and the reverse buffer then expands the gap to a rounded hole. These gaps could be filled in, but this was not done because it would make the network too big (in terms of the % of the county covered).



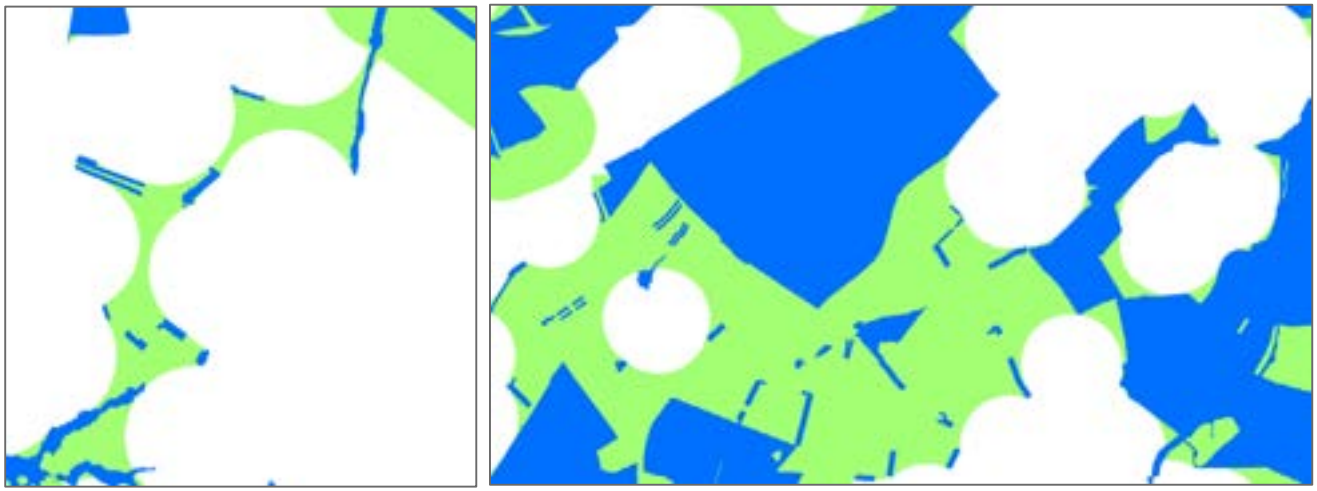


Figure 13.
Top: Schematic diagram of reverse buffer process. Using a positive buffer (outer pale blue zone, long arrow) followed by a smaller negative buffer (short arrow) to link nearby sites (dark blue circles) into a connected network (the middle blue zone shows the final buffer zone).

Bottom: Extracts from the map, showing how the buffer (green) links together the network components (blue) while the reverse buffer process also creates characteristic concave rounded edges and sometimes holes.

Following a period of co-design during which different combinations of network elements, buffer distances and constraints were trialled, the final list of elements included with the total area of each component and the buffer distances applied is shown in Table 3.

Constraints were excluded from this priority network:

- High grade agricultural land (Grade 1 and 2) unless:
  - It is (or has recently been) under a Countryside Stewardship, Higher Level Environmental Stewardship or Organic scheme
  - It is on peat soil (in which case it will be prioritised for peatland restoration)
  - It is on a slope over 7 degrees (in which case it will be prioritised as an erosion reduction opportunity)
  - It is on the floodplain (this was requested by local stakeholders who felt there were valuable nature recovery opportunities on high grade floodplain land)
- Sealed surfaces, buildings, roads, rail, gardens, allotments, development sites, and active quarries or landfill sites

Water has not been removed as it has existing biodiversity value and can also be restored. Neither have coniferous plantations, golf courses or playing fields.

Table 3: Priority network component areas (after constraints have been removed), percentages of the total network area and county area, buffer distances applied, and buffer link extensions (polygons closer together than this will be joined with a link).

Priority network component	ha	% of network	% of county	Unique % of county[1]	Buffer	Buffer link extension
SAC	926	0%	0.3%	0.0%	200	600
Ramsar	561	0%	0.2%	0.0%	200	600
NNR	1,421	1%	0.4%	0.0%	200	600
LNR	866	0%	0.2%	0.0%	100	400
SSSI	7,325	4%	2.1%	0.0%	200	0
Ancient woodland	9,100	5%	2.6%	0.0%	200	600
National Trust	2,985	2%	0.9%	0.0%	0	0
Historic park or garden	3,812	2%	1.1%	0.0%	0	0
Scheduled monument	113	0%	0.0%	0.0%	0	0
LWS	17,992	10%	5.2%	0.4%	100	400
Local geological site	2,045	1%	0.6%	0.0%	0	0
Priority habitats	35,001	19%	10.0%	1.5%	0	0
Ancient trees	15	0%	0.0%	0.0%	5	40
HLC_targets	47,731	25%	13.7%	1.2%	0	0
Habitat bank	45	0%	0.0%	0.0%	0	0
Flood zone2	19,557	10%	5.6%	1.0%	0	0
OS open rivers	7,992	4%	2.3%	0.1%	20	0

Table continued on next page

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Notes for Table 3

1. Unique % of county is the percentage of Shropshire and Telford & Wrekin that is only covered by that component of the network, with no overlapping components.
2. The SSSI buffer is included as a separate row, not within the other buffers. 'Other buffers' is the sum of the areas of all the individual buffers (except for the SSSI buffer) that don't overlap with any individual network components.
3. 'Overall network buffer' is a final 100m buffer and reverse buffer that was applied to most of the network, to help improve connectivity. To keep the network within the target size, the following components were excluded from this step: Ffridd, Woodland priority network, Non-priority woodland and RoFSW.

The final network map occupies 54% of the county, of which 8% is existing Areas of Particular Importance for Biodiversity (APIBs), and 14% is existing APIBs plus existing priority habitats. Figure 14 shows the network, identifying the existing APIBs and priority habitats that need to be protected, nature recovery opportunity areas, high grade farmland where there could be agroecology options, and areas where opportunities may be constrained by the existing land use (e.g. coniferous plantations, golf courses, playing fields). Figure 15 also shows the network, this time identifying the individual network components (where components overlap, only one is shown). The final dataset was intersected with waterbody catchments, for information only.

Table 3 continued

Priority network component	ha	% of network	% of county	Unique % of county[1]	Buffer	Buffer link extension
Surface water flood risk	14,997	8%	4.3%	1.1%	0	0
Canals	200	0%	0.1%	0.0%	10	0
Wide hedges over 2 m tall	873	0%	0.3%	0.2%	0	0
Field margin / hedgerow opportunities	11,790	6%	3.4%	0.1%	0	0
National Trails	160	0%	0.0%	0.0%	20	0
Sustrans Greenways	55	0%	0.0%	0.0%	10	0
Peat opportunity	16,630	9%	4.8%	1.3%	100	0
Erosion opportunity	12,588	7%	3.6%	1.3%	0	0
Countryside Stewardship	39,425	21%	11.3%	5.3%	0	0
ES HLS or organic stewardship	682	0%	0.2%	0.1%	0	0
Cemeteries and churchyards	164	0%	0.0%	0.0%	0	0
Ffridd opportunities	24,726	13%	7.1%	1.0%	0	0
Woodland priority network	29,119	15%	8.4%	0.2%	0	0
Non-priority broadleaved & mixed woodland	10,101	5%	2.9%	1.1%	0	0
SSSI 200m buffer[2]	9,376	5%	2.7%	0.4%	200	0
Other buffers[2]	12,174	6%	3.5%	3.5%	Various2	Various2
Overall network buffer[3]	22,015	12%	6.3%	6.2%	0	200
Whole network (without overlaps)	188,679	100%	54%	NA	NA	NA

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3.5.1 Notes on specific network elements

Countryside Stewardship (CS), Environmental Stewardship Higher Level Stewardship (HLS) and Organic farms. This uses government datasets to identify all areas under HLS or organic farming, plus fields where specific CS options have been applied (see Table 4) chosen to represent 'permanent' nature recovery actions (hedges, woodland, priority habitat restoration). This is intended to recognise areas where landowners / managers have already been taking action for nature and also be indicative of a willingness to do more. The areas covered were trimmed to exact field boundaries (rather than entire landholdings) by selecting the OS Mastermap field polygons that included the option points, using a spatial join.

Historic Landscape Character (HLC) targets. The HLC dataset was provided by Shropshire Council and aims to indicate past land use. It was used to identify areas where it might be relatively easy to restore areas back to a recent habitat. Specific types of HLC were selected as follows.

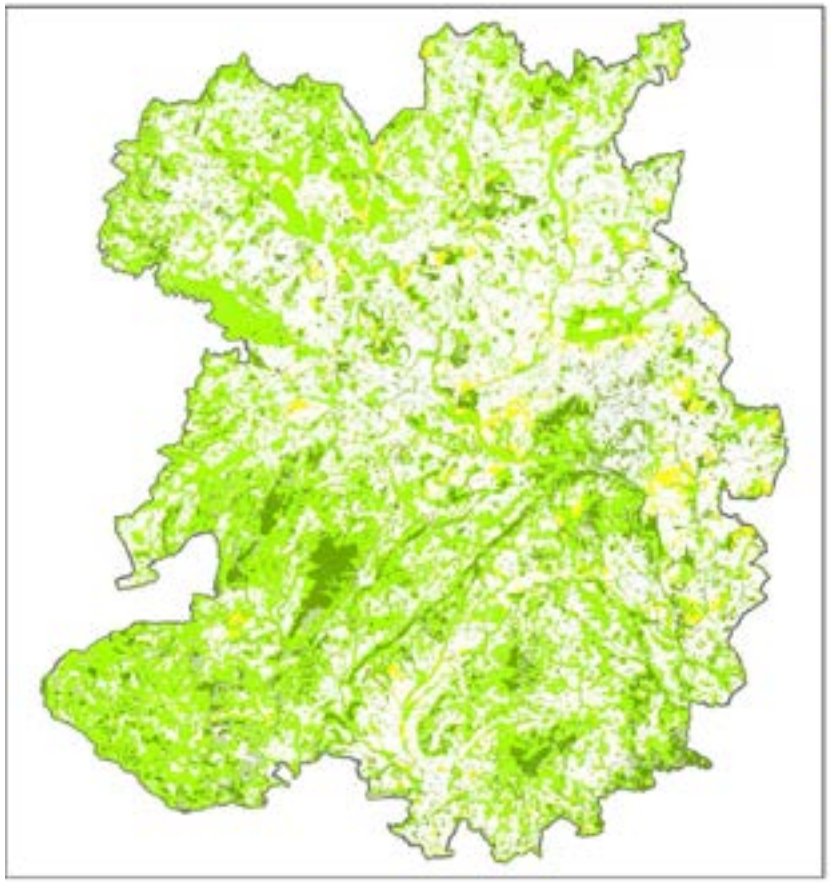
HLC_name IN ('Broadleaved ancient woodland', 'Broadleaved woodland with sinuous boundaries', 'Disused lead/ copper mine', 'Disused stone quarry', 'Drained wetlands', 'Heathland', 'Large assarts with sinuous boundaries', 'Late clearance/ assarts', 'Miscellaneous floodplain fields', 'Mixed ancient woodland', 'Moorland', 'Moss/ raised bog', 'Other commons', 'Parks and gardens', 'Pre-1880s orchard', 'Post-1880s orchard', 'Replanted ancient woodland', 'Small assarts', 'Unimproved enclosed hill pasture', 'Unimproved open hill pasture').

Table 4. Countryside stewardship options selected for inclusion in the priority network

Countryside Stewardship options included
BE3 - Management of hedgerows
BE4 - Management of traditional orchards
BE5 - Creation of traditional orchards
BN11 - Planting new hedges
BN5 - Hedgerow laying
BN6 - Hedgerow Coppicing
BN7 - Hedgerow Gapping
FM2 - Major preparatory work for Priority Habitats (creation and restoration) and Priority Species
GS10 - Management of wet grassland for wintering waders and wildfowl
GS13 - Management of grassland for target features
GS14 - Creation of grassland for target features
GS2 - Permanent grassland with very low inputs (outside SDAs)
GS5 - Permanent grassland with very low inputs in SDA
GS6 - Management of species-rich grassland
GS7 - Restoration towards species-rich grassland
GS8 - Creation of species-rich grassland
GS9 - Management of wet grassland for breeding waders
HS2 - Take historic and archaeological features currently on cultivated land out of cultivation.
LH1 - Management of lowland heathland
LH2 - Restoration of forestry and woodland to lowland heathland
LH3 - Creation of heathland from arable or improved grassland
PA3 - Woodland Management plan/per ha

Countryside Stewardship options included
SW7 - Arable reversion to grassland with low fertiliser inputs
TE1 - Planting Standard Hedgerow Tree
TE10 - Coppicing Bank-side Trees
TE2 - Planting Standard Parkland Tree
TE3 - Planting Fruit Trees
TE4A - Woodland Tree Planting - Biodiversity
TE4B - Woodland Tree Planting - Improving water quality or reducing flood risk
TE4C - Woodland Tree Planting - Restock after a tree health issue
TE4D - Woodland Tree Planting - Hedges and clumps
UP1 - Enclosed rough grazing
UP2 - Management of rough grazing for birds
UP3 - Management of Moorland
WD1 - Woodland creation - maintenance payments
WD10 - Management of upland wood pasture and parkland
WD11 - Restoration of upland wood pasture and parkland
WD12 - Creation of upland wood pasture
WD2 - Woodland improvement
WD4 - Management of wood pasture and parkland
WD5 - Restoration of wood pasture and parkland
WD6 - Creation of wood pasture
WD7 - Management of successional areas and scrub
WD9 - Livestock exclusion supplement - scrub and successional areas
WN2 - Creation of scrapes and gutters
WN5A - Pond Management - creation (first 100 sq m)

Countryside Stewardship options included
WN5B - Pond Management - restoration - first 100 sq m
WN6A - Pond Management - creation - (areas more than 100 sq m)
WN6B - Pond Management - restoration - (areas more than 100 sq m)
WT1 - Buffering in field ponds and ditches in improved grassland
WT10 - Management of lowland raised bog
WT5 - Management of ponds of High Wildlife value (more than 100 sq m)
WT8 - Management of fen
WT9 - Creation of fen



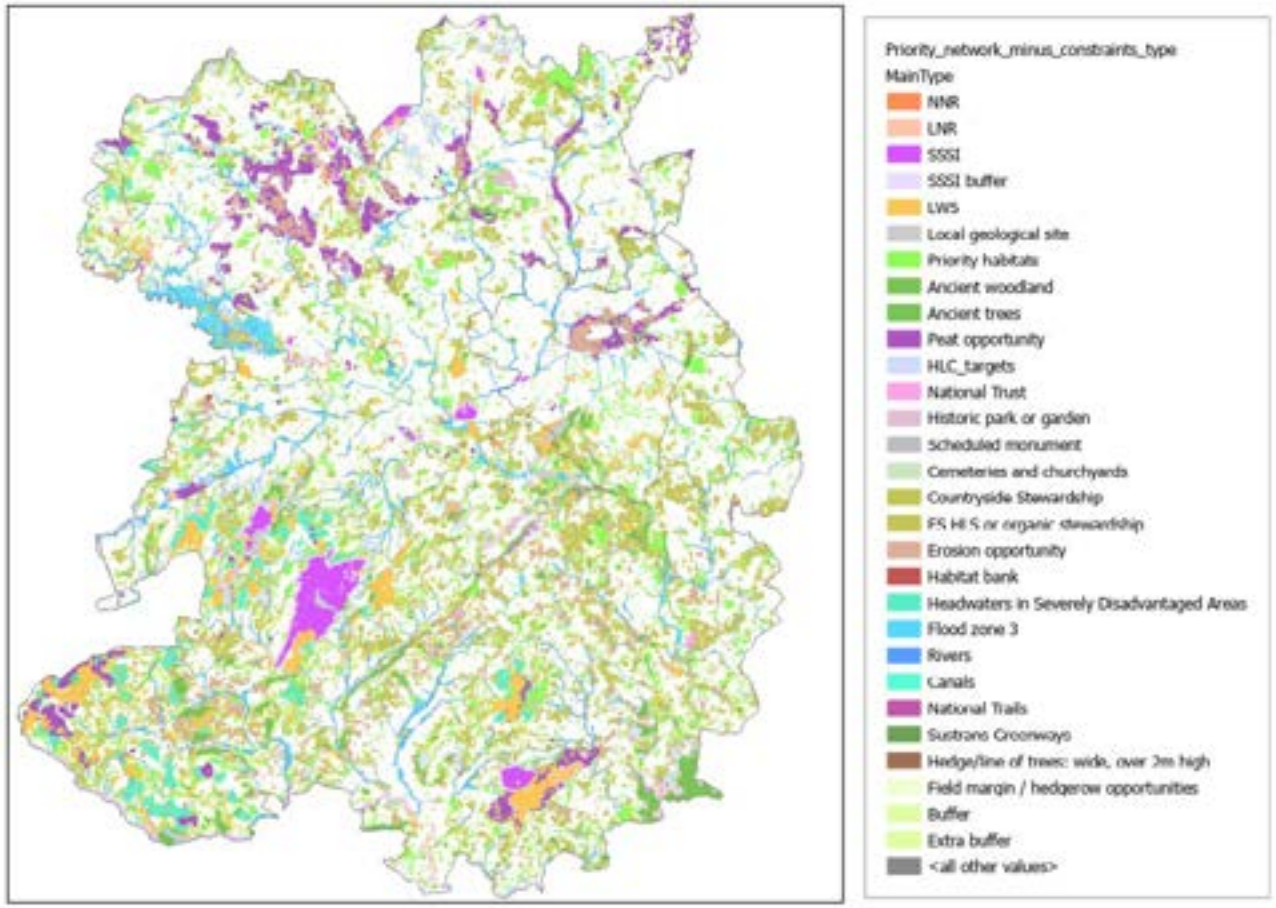
Created using Agile Opportunity Maps software from the Oxford Martin School. This map incorporates OS data (© Crown Copyright and database rights 2025 Ordnance Survey AC0000851941) and Open Government License data. Soils Data © Cranfield University (NSRI) and for the Controller of HMSO [2025]. Some features of this map are based on digital spatial data licensed from the UK Centre for Ecology & Hydrology, © UKCEH which contains Ordnance Survey data © Crown Copyright 2007, Licence number 100017572.

Figure 14. Priority network map showing overall type of components

Upper catchments in severely disadvantaged areas. This aimed to identify opportunities for nature-based solutions to address flood and erosion risk in priority upland headwaters, e.g. by moorland restoration. It was created as follows.

- Calculate stream order (Agile map code hydrology_prep.py, section calc_wetness)
- With the stream network, convert vertices to points, setting point type = start vertex, to generate stream nodes to use as pour points.
- Run the ArcGIS Watershed function, using flow direction and stream start points.
- Convert the watershed raster to polygons
- Join watersheds to stream start points using their ids, and export to new dataset, to incorporate stream order data.
- To identify priority headwaters: intersect stream order 1 catchments with severely disadvantaged areas.

We also attempted to identify natural flood management opportunities on the lower slopes of upper catchment river valleys, which could have also been intersected with soils with impeded drainage. However, it was decided not to include these opportunities because it was difficult to clearly identify the appropriate catchment stream order to use (e.g. 2 or 3).



Created using Agile Opportunity Maps software from the Oxford Martin School. This map incorporates OS data (© Crown Copyright and database rights 2025 Ordnance Survey AC0000851941) and Open Government License data. Soils Data © Cranfield University (NSRI) and for the Controller of HMSO [2025]. Some features of this map are based on digital spatial data licensed from the UK Centre for Ecology & Hydrology, © UKCEH which contains Ordnance Survey data © Crown Copyright 2007, Licence no. 100017572.

Figure 15. Priority network map showing individual network components

Ffridd. A map of opportunities to restore ffridd (a characteristic scrubby habitat found on steep slopes) was created by Shropshire Council following a methodology developed by National Trust by identifying slopes over 12 degrees within a fixed altitude range. It was smoothed and cleaned as follows:

1. Converted to single part and deleted polygons under 1000m^2
2. Buffered by 100m then reverse buffered by -100m.
3. Constraints erased (manmade and water).

Woodland priority opportunity network. Instead of using the standard woodland opportunity layer created by the Agile maps (see Section 3.4), we created a smaller but more connected woodland opportunity network, to reduce the bias towards woodland creation caused by an extensive distribution of small woodland patches in the landscape. This was done by:

1. Buffering and reverse buffering all broadleaved and mixed woodland (priority and non-priority) and wide hedges over 2m high by 50m

2. Merging this with another layer created by

   a. buffering and reverse buffering all broadleaved and mixed woodland (but not tall wide hedges) by 200m, and

   b. deleting isolated polygons under 3 ha.

3. Intersecting this layer with woodland targets, i.e. simple_legend in (arable, improved grassland, natural surface, amenity grassland) and not grade 1 or 2.

4. The whole layer was too big to include in the network but we included it as an extra opportunity where it intersected with the existing network.

Risk of flooding from surface water (RoFSW). This dataset was added to help identify further wetland creation opportunities beyond the floodplain. It is an Environment Agency dataset and was processed as follows:

1. The medium risk component (1 in 100 year risk) and the low-risk component (1 in 1000 year risk) were each clipped to the Shropshire, Telford and Wrekin boundary (We decided not to separate out the high-risk component from the medium risk component (which includes the high risk areas) because the opportunities will be similar for both high and medium risk, i.e. the wetter areas, but different for low-risk (the drier areas).

2. Both datasets were buffered by 5 m (dissolving), converted to single part, polygons over a certain size selected ($100m^2$ for medium risk, $1000m^2$ for low risk) and then reverse buffered by -5m to smooth the edges, not dissolving (as this should not be needed when we are shrinking polygons).

3. Constraints were erased from each dataset: i) water (Simple_hab = 'Water') and ii) man-made features (buildings, sealed surfaces, gardens, unknown, landfill). Quarries and spoil were not excluded because some nature sites are incorrectly mapped as active quarries rather than disused. Allotments were not excluded because if parts of them flood there could be local opportunities. The floodplain (Flood zone 2/3) was not erased, because the intention is that this dataset can be used for more precise targeting of floodplain opportunities. For example, wetlands could be targeted in the areas with high-medium RoFSW, and the drier low-risk areas could be used for floodplain meadows, wet woodlands, or cleanwater ponds (to avoid contamination from polluted rivers).

4. Both datasets were converted to single part. Features over 100 m^2 were extracted from the high-medium risk dataset and features over 1000 m^2 were extracted from the low-risk dataset.

5. The datasets were each modified by adding a 10 character text attribute RoFSW identifying the dataset, which was populated with either '1 in 100' or '1 in 1000'.

6. The high-med risk dataset was used to erase the low- risk dataset then the two were merged

7. The erase operation will have created more small polygons in the low-risk dataset, so convert to single part, select all polygons under $100m^2$ and eliminate.

8. Check for any isolated polygons under $1000m^2$ by dissolving the dataset, converting to single part, and selecting only polygons over $1000m^2$. The select polygons from the undissolved dataset that intersect with the selected dissolved polygons and export to create the final dataset.

9. We are less interested in linear features but want decent sized blobs. So we rejected polygons with a ratio of perimeter to area of over 0.2.

10. Grade 2 land intersecting RoFSW was not excluded from the network, as it was felt that land at risk of flooding would be less valuable for food production.

3.6. Mapped Actions and Selection Criteria

Each area shown on the Priority Network map has one or more suggested actions to help improve habitats and support nature's recovery.

These actions are grouped into five themes:

- Water and Wetlands
- Trees, Woodlands and Other Woody Habitats
- Grasslands
- Open Habitats
- Built Environment and Green Spaces

To decide where each action is most appropriate, a range of environmental datasets and indicators were used. This helped to identify places with good potential for these specific nature recovery actions, as well as rule out areas where an action wouldn't be suitable or would duplicate something already mapped. The same approach was applied consistently across the county, using the best available evidence at the time. Feedback during the consultation process was used to refine the mapped actions further.

In some cases, broader "opportunity zones" were used rather than mapping precise locations. This was done for the actions; creating ponds, riparian buffers, and restoring headwaters. These wider areas highlight where an action could work well, but the exact site needs to be appropriately chosen by the land manager.

The tables that follow set out the datasets used, the key criteria for selecting suitable areas, and also those criteria determining where actions were excluded from locations. The final part of this sections set out this same information for how the species actions were mapped.

Historic environment data will be incorporated into the LNRS mapping as a contextual and advisory filter. Nationally designated heritage assets, sourced from the National Heritage List for England (NHLE), including Scheduled Monuments, Listed Buildings, and Registered Parks and Gardens, will be used alongside non-designated heritage assets recorded in the Historic Environment Record (HER).

These datasets will be used to identify LNRS map polygons that intersect known historic environment features. Where such intersections occur, the relevant LNRS polygons will include additional guidance text within the attribute table displayed on the public webmap. This guidance will highlight the presence of historic environment considerations and signpost users to the need for appropriate assessment and consultation at the delivery stage.

This approach reflects established planning and agri-environment practice, where both designated and non-designated heritage assets are considered when proposing land management or enhancement works. It ensures that opportunities for nature recovery are informed by historic environment sensitivities, while recognising that detailed assessment and mitigation are best undertaken at the project or scheme level rather than through the strategic LNRS mapping process.

Theme 1 – Water and Wetlands

Action	Datasets used	Selection criteria	Exclusion criteria
A3.4 Restore streams and rivers to a more natural state	AGILE compiled datasets – EA Detailed River Network (DRN), OS MasterMap Watercourse layer (label 'Running water')	Main rivers and smaller watercourses identified from DRN and OS MM Running Water layers	None required
A3.5 Enhance riparian buffer zones	EA DRN and OS MM Running Water layers (primary); AGILE Habitat layer	Polygons within 15 m of mapped watercourses. Selection by habitat class: wet woodland, broadleaved/coniferous/ mixed woodland, bog, fen marsh and swamp, reedbed, marshy grassland, scrub	Bare ground, built surfaces
A4.1 Restore existing areas of high-quality peat, fen and bog habitat	AGILE Opportunity Priority and Habitat fields	Existing peat, fen and bog habitats identified from AGILE opportunity priority and habitat fields (e.g. bog, bog woodland, fen marsh and swamp, lowland fens, wet woodland)	None beyond dataset classification
A4.2 Restore, connect and expand areas of wetland mosaic habitat	AGILE Opportunity Priority and Habitat fields; EA RoFSW data; Flood Zones 2 and 3; HLC 'Miscellaneous floodplain fields'	Combined selection of existing wetland habitat and high surface-water flood risk areas indicating potential for restoration	Areas already mapped as wetland; churchyards and cemeteries; ffridd habitat; road verges; existing open water; ancient woodland
A4.3 Restore ability of catchment headwaters to 'act as a sponge'.	AGILE hydrological layers; Digital Terrain Model (DTM) for slope and flow accumulation; Soils (Cranfield NSRI); AGILE habitat layer	Polygons within upper-catchment areas, headwater flow paths or steeply sloping ground (generally greater than 10–15 degrees) with poor or impeded drainage. Selection favours upland grassland, heath, or rough grazing habitats where natural hydrology and infiltration can be restored through vegetation recovery, wet grassland, or scrub establishment	Built land, sealed surfaces, arable land on freely draining soils, existing woodland or wetland habitats already assigned to other mapped actions, and areas already mapped for restoration of existing peat, fen and bog habitats

Action	Datasets used	Selection criteria	Exclusion criteria
A4.4 Target regularly flooded land for wetland creation and grazing marsh	EA Flood Zones 2 and 3 (primary); HLC 'Miscellaneous floodplain fields' used for checking	Floodplain areas identified from EA Flood Zones 2 and 3, checked against HLC floodplain fields	Verges, ffridd, churchyards, existing open water, existing wetland habitats including peat, fen and bog, and ancient woodland
A5.1 Enhance ponds	OS MasterMap Standing Water layer (primary)	All standing water polygons classed as ponds	Ornamental ponds, swimming pools, fountains, artificial and industrial ponds
A5.2 Create new ponds	Cranfield Soil data (primary); AGILE Habitat and Land Use layers	Soils with > 2.5 existing ponds/km^2 used to select suitable areas for pond creation. Action applied to LNRS polygons within these soil types	Road verges, built surfaces, industrial land
A6.1 Restore and enhance canal habitats	OS MasterMap 'Canal' layer (primary)	All polygons mapped as canals in OS MM, including some sections of disused canal now existing as linear ponds	None required – action applied directly to canal polygons

Theme 2 – Trees, Woodlands and Woody Habitats

Action	Datasets used	Selection criteria	Exclusion criteria
A7.1 Identify, appropriately manage and safeguard the future of veteran trees	Ancient Tree Inventory (primary) and validated Shropshire Council survey data	Ancient Tree Inventory and survey data merged. Point data buffered 15 m to create polygons (30 m diameter). All ancient tree polygons added to the map, whether inside or outside the Priority Network	None
A8.1 Connect and buffer ancient semi-natural woodland	AGILE Habitat and PHI layers; Ancient Woodland Inventory (locally designated APIBs)	Existing broadleaf and ancient semi-natural woodland habitats within the Priority Network	Other existing priority habitats
A8.2 Improve condition of deciduous, mixed and wet woodlands	AGILE Habitat and PHI layers (including coniferous woodland where enhancement is possible)	Woodland habitats identified from AGILE and PHI as deciduous, mixed, wet, or coniferous woodland	None beyond dataset classification
A8.3 Restore plantation on ancient woodland sites (PAWS)	Ancient Woodland Inventory PAWS layer (primary)	All Ancient Woodland Inventory-listed PAWS sites	None
A8.4 Create new woodlands	AGILE Habitat and Opportunity Priority fields; PHI data for context	Suitable non-wooded land identified from AGILE opportunity priority and habitat fields	Existing woodland; open water; wetland; urban and built land; polygons with mapped Curlew species actions
A9.1 Restore and expand wood pasture	Priority Habitat Inventory (Wood-pasture and parkland); Historic Parks and Gardens (Historic England Register); AGILE Habitat layer	Polygons classified as wood-pasture and parkland in PHI, excluding areas identified as historic parkland. Additional polygons selected where scattered tree habitat types coincided with pasture or other suitable grassland habitats	Arable land, dense woodland, urban and built land, wetland, open water, and other existing priority habitats

Action	Datasets used	Selection criteria	Exclusion criteria
A9.2 Restore parkland	Priority Habitat Inventory (Wood-pasture and parkland); Historic Parks and Gardens (Historic England Register); Historic Landscape Character (HLC); AGILE Habitat layer	Polygons identified as historic parkland from the Historic Parks and Gardens Register and HLC 'Parks and Gardens', including former parkland converted to arable or improved grassland but retaining mature trees or parkland features	Dense woodland, wetland, open water, urban and built land, and other existing priority habitats
A9.3 Plant and manage mosaics of scrub	AGILE Habitat and Opportunity Priority fields	Existing scrub habitats identified from AGILE. Additional polygons selected where land was within 200 m of both woodland and grassland habitats, or where AGILE opportunity scoring indicated balanced potential for woodland and grassland creation	Other existing priority habitats; urban and built land; open water
A9.4 Establish new, and safeguard traditional, orchards	AGILE Opportunity Priority field	Polygons identified by AGILE as existing orchard habitat or orchard creation opportunities	Urban and built land; woodland; wetland; open water; arable land

Theme 3 – Grasslands

Action	Datasets used	Selection criteria	Exclusion criteria
A10.2 Safeguard and enhance traditional hay meadows and other existing species-rich grasslands	AGILE and PHI data (primary)	Existing semi-natural grassland and species-rich grassland identified from AGILE opportunity priority and habitat fields	Arable land, built surfaces, improved grassland
A10.3 Create and restore species-rich grassland	AGILE Opportunity Priority and Habitat fields; ALC Grades 1–2 exclusion	Grassland opportunity areas identified from AGILE opportunity priority fields excluding ALC Grades 1 and 2	Grade 1 and 2 agricultural land, woodland, peat, heathland and other priority habitats
A10.4 Restore grassland on roadside verges and alongside paths and tracks	Ordnance Survey MasterMap (Roads, Paths, Tracks); AGILE Habitat layer	Roadside verges and linear green infrastructure identified from OS MasterMap, intersecting with the LNRS Network and suitable for grassland restoration or enhancement	Areas already mapped as woodland, scrub, wetland, open water, species-rich grassland, peat, heathland, or other priority habitats; built surfaces

Theme 4 – Open Habitats

Action	Datasets used	Selection criteria	Exclusion criteria
A11.1 Preserve existing heathland	AGILE Habitat layer (Interpreted Habitat, Opportunity Priority); PHI	Polygons identified where AGILE Opportunity Priority = 'Preserve existing heath' and Habitat indicated heathland. PHI polygons for lowland/upland heath included directly	Built land, sealed surfaces, woodland, wetland, open water, and other existing priority habitats
A11.2 Restore heathland where geology allows to increase habitat connectivity	AGILE Opportunity Priority, Op_ Heath, Habitat fields; Cranfield Soils (NSRI); HLC	Heathland restoration polygons identified using AGILE Opportunity Priority and Op_Heath fields, weighted by proximity to existing heath. Cranfield Soils filtered for heathland soil types; polygons cross-checked with HLC to confirm former heathland areas	Built land, sealed surfaces, woodland, wetland, open water, existing heathland, and other existing priority habitats
A12.1 Enhance areas of ffridd habitat	LiDAR slope data; OS Terrain (altitude); AGILE Habitat layer; National Trust ffridd model (adapted for Shropshire)	Areas <350 m elevation and >12° slope identified via LiDAR and topography, filtered to upland zones in western/ southern Shropshire and aggregated to >10 ha networks. LNRS polygons within these areas selected where AGILE habitats indicated characteristic ffridd mosaics (heath/grass, scrub, bracken, semi-natural grassland, scattered trees, or rock).	Built land, sealed surfaces, arable land, open water, wetland, woodland, and other existing priority habitats.
A12.2 Create new areas of ffridd habitat to benefit a wide range of species	LiDAR slope data; OS Terrain (altitude); AGILE Habitat layer; National Trust Stepping Stones ffridd model (adapted for Shropshire)	Potential ffridd creation areas identified using the same spatial criteria as A12.1. Within these, polygons selected where AGILE indicated land cover types suitable for transition to ffridd habitat (e.g. semi-natural grassland, bracken, scrub)	Built land, sealed surfaces, arable, improved grassland, wetland, open water, dense woodland, and other existing priority habitats

Action	Datasets used	Selection criteria	Exclusion criteria
A13.1 Create, enhance and appropriately manage mosaics of open habitats on former coal, mining and post-industrial sites	AGILE Habitat layer; OS MasterMap (mineral, quarry, spoil, industrial polygons); PHI (Open Mosaic Habitats on Previously Developed Land – OMHD)	Polygons identified as former coal, mining and other post-industrial sites were selected from OS MasterMap and intersected with the LNRS Network. All PHI OMHD polygons included directly. AGILE data used to confirm the presence or potential for open mosaic habitats	Built land in active use, sealed surfaces, arable land, wetland, woodland, open water, and other existing priority habitats not forming part of the open mosaic resource
A13.3 Retain the wildlife value of scree	AGILE Habitat layer; OS MasterMap (Rock, Scree and Quarry polygons)	Existing scree habitats identified from AGILE and OS MM rock/scree polygons. Natural and semi-natural scree included; active extraction excluded	Built land, sealed surfaces, active quarries, industrial land, and other existing priority habitats

Theme 5 – Built Environment and Amenity Spaces

Action	Datasets used	Selection criteria	Exclusion criteria
A14.3 Enhance wildlife value of multifunctional green space	OS MasterMap Greenspace (OSMM GS); OS Greenspace (OSGS)	Greenspaces identified from OSMM and OSGS, including accessible public green spaces (such as parks, playing fields, and churchyards/cemeteries) and non-accessible or restricted spaces where management could be compatible with nature recovery (such as school grounds and golf courses)	Built land, sealed surfaces, arable land, wetland, open water, and existing priority habitats. Where accessible urban greenspace polygons in OSMM GS were classified with a primary habitat type (e.g. woodland, scrub, semi-natural grassland, or OMHD) that habitat's mapped action was prioritised over A14.3 to reflect the existing habitat character and ecological value of the site

Species actions

Action	Datasets used	Selection criteria	Exclusion criteria
Dormouse	Shropshire Ecological Data Network, WFD river catchment data.	SEDN records used in combination with detailed river catchment mapping; catchments with 6 or more dormouse records selected. Species action applied to suitable (wooded) habitat types within selected catchments.	N/A – selection criteria identify specific polygons
Pine marten	Shropshire Ecological Data Network	Pine marten records buffered to 4km, suitable wooded habitat polygons selected within these buffer areas	Curlew species polygons
Water vole	Shropshire Ecological Data Network	SEDN records used in combination with detailed river catchment mapping; catchments with 3 or more water vole records selected. Suitable (water) habitats selected. Species action added to selected polygons	N/A – selection criteria identify specific polygons
Curlew	Shropshire Ornithological Society nest site information, County Curlew Bird Atlas Map, Curlew Country sensitivity mapping,	Apply 2km buffer to records of curlew breeding sites; select suitable grassland/ wetland habitat polygons within buffer area	N/A – selection criteria identify specific polygons

3.7 Stage 5: Assessing the benefits (optional further work)

Further manual analysis could be carried out to assess the outcomes of different interventions. This can be achieved by using the Agile maps analysis spreadsheet containing the habitat inventory and a summary of the baseline ecosystem service scores from the maps.

1. Make a copy of the baseline habitat sheet to reflect the post-intervention habitats, and change the areas of different habitats to reflect your planned interventions.
2. Using the Agile ecosystem service scoring matrix, calculate the new ecosystem service scores resulting from the planned changes and apply any relevant multipliers as described in this document.

It could also be possible to apply Natural England's Environmental Benefits from Nature Tool for this assessment, although only a few of the 40 condition multipliers can usually be applied when using the EBNT at county scale.

Acknowledgements

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6. E.g. see the Stage Zero modelling of potential floodplain reconnection in the Evenlode Catchment by Atkins Réalis.

Appendix 1: Data sources used

All downloaded in late 2024 or early 2025 unless otherwise noted

Type	Details and link
Local Authority boundaries	Created from boundaries for Shropshire and Telford & Wrekin, with Shropshire split into North and South Shropshire along the boundary of the National Character Areas.
Ordnance Survey Mastermap	From August 2024. Provided by Richard Hammerton (Shropshire County Council)
Priority Habitat data	Natural England
CROME	CROME Crop map of England 2022 (provided by Defra as a Large Data Download)
OSMM Greenspace	OSMM GreenSpace
OS Open Greenspace	Downloaded from OS website: OS Open Greenspace
Agricultural Land Class (ALC)	England: Provisional Agricultural Land Classification (ALC)
National Nature Reserves	Natural England Open Data National Nature Reserves
Local Nature Reserves	Natural England Open Data Local Nature Reserves
Sites of Special Scientific Interest	England: Natural England Sites of Special Scientific Interest
Special Areas of Conservation (SACs)	England: JNCC Special Areas of Conservation
Special Protection Areas (SPAs)	England: Special Protection Areas (England)
Potential Special Protection Areas (SPAs)	Natural England Potential Special Protection Areas (England)
Ramsar sites	England: Ramsar sites
Proposed Ramsar sites	Natural England Proposed Ramsar Site
Ancient Woodland	Natural England Open Data Ancient Woodland
AONBs	Defra Data Services Platform Areas of Outstanding Natural Beauty
National Parks	Defra Data Services Platform National Parks
Country Parks	Defra Data Services Platform Country Parks
Heritage Coasts	Defra Data Services Platform Heritage coasts

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Type	Details and link
Green Belt	Ministry of Housing, Communities and Local Government English Local Authority Green Belt Boundaries 2022-2023
Millennium Greens	Defra Data Services Platform Millennium Greens
Doorstep Greens	Natural England Open Data Doorstep Greens
National Trust Open Access Land	National Trust Open Data National Trust Land - Always Open
National Trust Restricted Access Land	National Trust Open Data National Trust Land - Limited Access
Important Bird Areas (IBAs)	RSPB Open Data IBAs UK
RSPB reserves	RSPB Open Data RSPB Reserves
Scheduled Ancient Monuments	Historic England Scheduled Monuments (part of National Heritage List for England)
Historic Parks and Gardens	Historic England Registered Parks and Gardens (part of National Heritage List for England)
World Heritage Sites	Historic England World Heritage Sites (part of National Heritage List for England)
Conservation Areas	Historic England Conservation Areas
Local Wildlife Sites	Provided by Richard Hammerton, Shropshire County Council
CROW open access land	Natural England CRoW Act 2000 – Open Access Mapping Areas
Public Rights of Way (PROW)	https://next.shropshire.gov.uk/outdoor-partnerships/countryside-access-and-public-rights-of-way/the-definitive-map/ https://www.telford.gov.uk/info/20467/public_rights_of_way/946/definitive_map
Sustrans cycle routes	National Cycle Network
National Trails	
Catchment boundaries	WFD Surface Water Operational Catchments Cycle 2
Wetland opportunities	Environment Agency Flood Map for Planning (Rivers and Sea) - Flood Zone 2 and Flood Map for Planning (Rivers and Sea) - Flood Zone 3

Type	Details and link
Slope	OS terrain 5 detailed digital terrain model (DTM) of Great Britain. Height points (not contours) as ASC file(s).
Soil erodibility and soil type (acid, neutral, calcareous)	National Soil Map. Soils Data © Cranfield University (NSRI) and for the Controller of HMSO [2025].
Peat restoration opportunities	England Peat Status Greenhouse Gas and Carbon storage
Woodland for flood prevention opportunities	Environment Agency WWNP Wider Catchment Woodland Potential
Urban areas (for Community Orchards)	OS Open Zoomstack
Habitat networks	Natural England Habitat Networks (Individual)
Woodland Trust Ancient Tree Inventory	Woodland Trust Ancient Tree Inventory
OS Open Rivers	OS Open Rivers
Historic Landscape Character	Shropshire Council
UKCEH Land Cover Plus: Hedgerows 2016-2021 (England)	Broughton, R.K.; Burkmar, R.; McCracken, M.; Mitschunas, N.; Norton, L.R.; Pallett, D.W.; Patton, J.; Redhead, J.W.; Staley, J.T.; Wood, C.M.; Pywell, R.F. (2024). UKCEH Land Cover Plus: Hedgerows 2016-2021 (England). NERC EDS Environmental Information Data Centre. https://doi.org/10.5285/d90a3733-2949-4dfa-8ac2-a88aef8699be © UKCEH. Contains Ordnance Survey data © Crown Copyright 2007, Licence number 100017572. Copyright statement to be placed on any images that include the hedgerow data: Some features of this map are based on digital spatial data licensed from the UK Centre for Ecology & Hydrology, © UKCEH. 'Contains Ordnance Survey data © Crown Copyright 2007, Licence number 100017572.'
Risk of Flooding from Surface Water (RoFSW)	https://www.gov.uk/government/publications/flood-risk-maps-for-surface-water-how-to-use-the-map/risk-of-flooding-from-surface-water-understanding-and-using-the-map

Type	Details and link
Veteran trees	Ancient Tree Inventory (ATI) and validated veteran tree survey data supplied by Shropshire Council
Statutory Heritage Designations	National Heritage List for England (NHLE)
Known archaeological sites and historic features	Shropshire Historic Environment Record (HER)
Dormouse	Species data from Shropshire Ecological Data Network (SEDN)
Pine marten	Species data from Shropshire Ecological Data Network (SEDN)
Water vole	Species data from Shropshire Ecological Data Network (SEDN)
Curlew	Shropshire Ornithological Society nest site information, County Curlew Bird Atlas Map, Curlew Country sensitivity mapping

Agri-environment scheme datasets: the six datasets below are all Open Government License. Attribution statement: © Rural Payments Agency. Contains Ordnance Survey data © Crown copyright and database right 2025.	
Countryside Stewardship Scheme 2016 Management Areas (England)	Areas covered by CS agreements. Downloaded Nov 2024. https://environment.data.gov.uk/dataset/76bfa850-e800-4d9d-bb67-866de623dc3d
Countryside Stewardship Scheme 2016 Management Options (England)	Point data showing which options are included in each agreement area. Downloaded Feb 2025. https://environment.data.gov.uk/dataset/76bfa850-e800-4d9d-bb67-866de623dc3d
Environmental Stewardship Scheme Agreements (England)	Areas covered by ES agreements. This is a legacy scheme, but some agreements were still in force at the time of the analysis. Downloaded Feb 2025 https://environment.data.gov.uk/dataset/f9232afc-9163-491d-9072-eca2c86f8adb
Environmental Stewardship Scheme Options (England)	Point data showing which options are included in each agreement area. Downloaded Feb 2025 https://environment.data.gov.uk/dataset/365af6b5-b7c6-43e3-aa17-671939bff480
Organic Farming Scheme Agreements (England)	Areas covered by organic agreements. This is a legacy scheme, but some agreements were still in force at the time of the analysis. Downloaded Feb 2025 from https://dsp.agrimetrics.co.uk/dataset/26acf66f-ce0d-4466-86f3-2e035b2a8229
Organic Farming Scheme Options (England)	Point data showing which options are included in each agreement area. Downloaded Feb 2025 https://dsp.agrimetrics.co.uk/dataset/6cb95720-0bcb-4293-a20a-81e9db700432

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 7: Summary of key pressures

Appendix 7: Summary of key pressures

Shropshire's natural environment is under pressure. Natural systems are increasingly fragmented, depleted and negatively impacted. Many of the systems that are under threat are key to maintaining the provision of ecosystem services, such as flood water storage, pollination, carbon storage, healthy soils and heat alleviation.

Key pressures

- Climate change
- Habitat loss, degradation and fragmentation
- Water pollution
- Flood, drought and soil erosion
- Carbon release and reduced sequestration
- Air quality
- Afforestation
- Invasive non-native species
- Pathogens
- Light pollution
- Development
- Soil pollution

Climate change

Like all parts of the world, Shropshire is increasingly impacted by climate change. Continued emissions in greenhouse gases, which retain solar heat energy in the atmosphere, continue to drive up temperatures around the world, resulting in increasingly frequent and extreme weather events and disrupting the stable climate patterns on which humans and ecosystems have relied for millennia. Data comparing each year's average temperature to previous years (from 1850–2023) shows that temperatures in the Shropshire and Telford & Wrekin LNRS area are increasingly warmer than they have been historically.

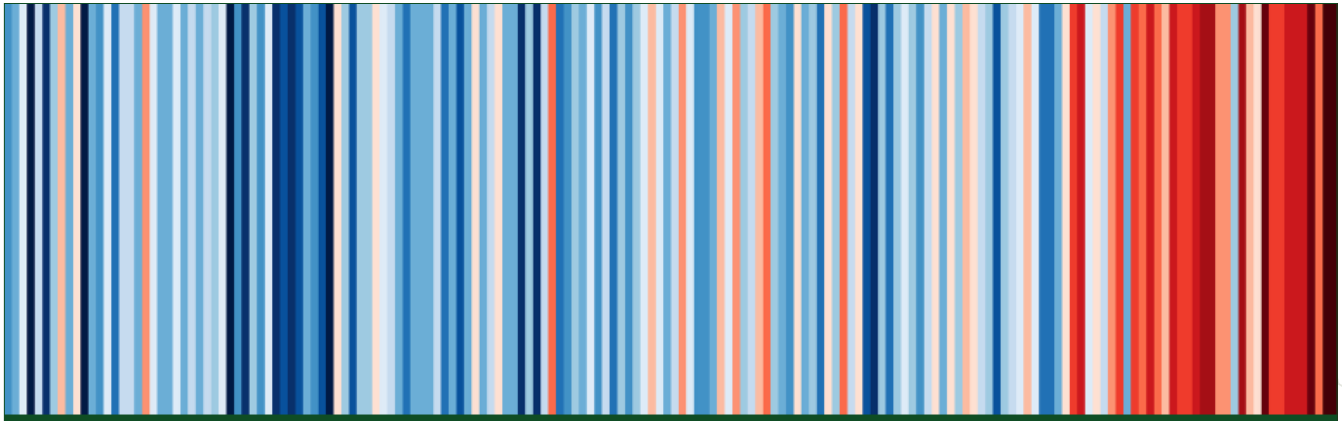

Figure 1: Climate Stripe for the strategy area comparing average annual temperature to historical averages.[1]

Recent climate projections from the UK Met Office predict that winter and summer precipitation levels for the Shropshire LNRS area will increase and decrease respectively as average global temperatures rise relative to 1981–2000 baseline levels.[2]

Many parts of Shropshire often experience flooding during colder months, and these events are likely to increase in frequency and severity in the future as we see higher amounts of seasonal rainfall and associated heavy precipitation events. These events bring significant challenges: damage to homes and infrastructure; soils erosion; nutrient and sediment runoff into watercourses; and the destabilising of tree roots.

Drier conditions in summer are likely to increase the probability of drought conditions, as extreme temperature days (>35° C) are projected to increase in frequency in the coming decades.[4] The highest temperature on record for Shropshire (35.7° C) was recorded in July 2022, and with the next milestone in global warming (1.5° C above pre-industrial levels) the number of extreme summer days is expected to be 35% higher than present-day levels. This trend is likely to cause further drying of ponds and rivers, loss of trees to drought, decreased resilience of vegetation to pests and pathogens, and increased incidence of wildfire.

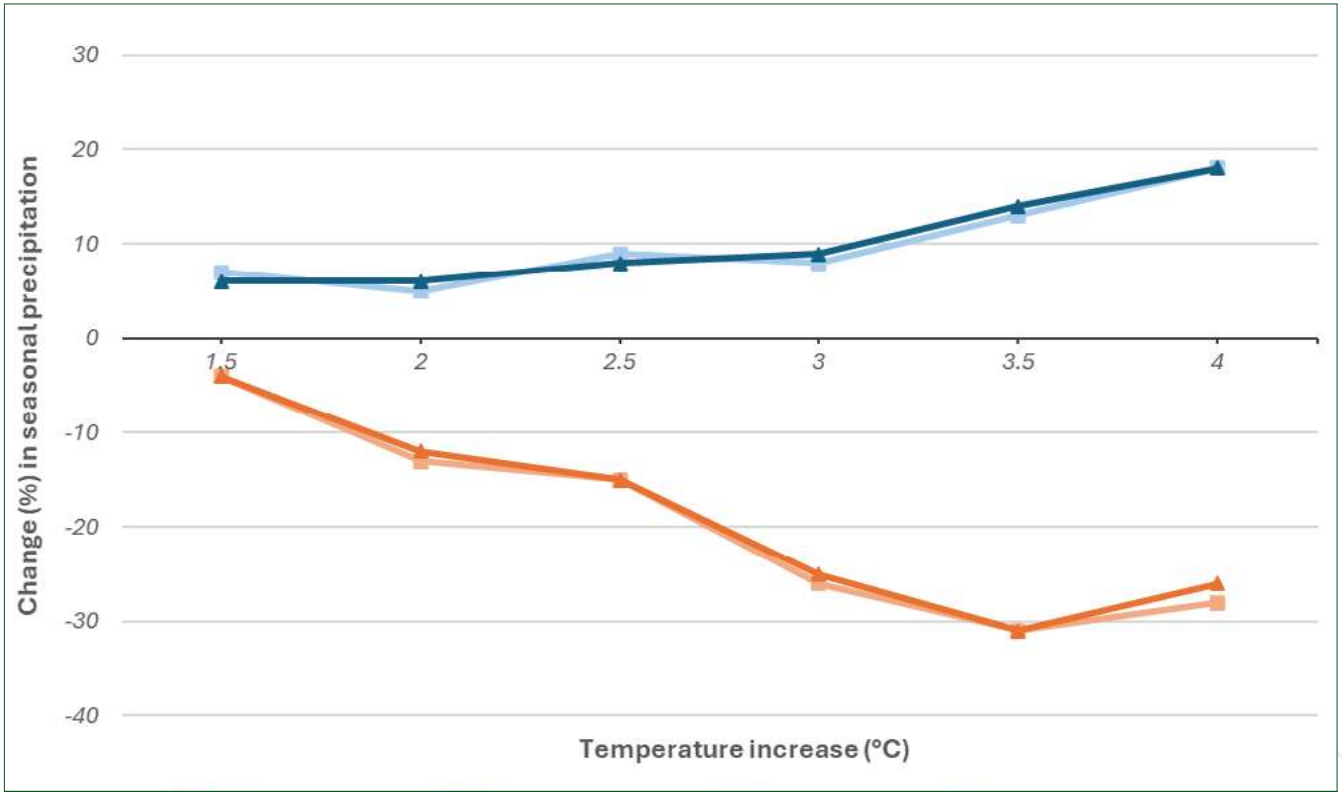

Figure 2: Met Office UKCP18 projections representing percentage change in seasonal precipitation over the 1981–2000 baseline for Shropshire Council (S.C.) and Telford & Wrekin Council (T&W) local authority areas.[3]

These climate and weather changes are also likely to be a key factor in the increase in reported natural disasters annually over time (Figure 3), although it should be noted that this also reflects an increase in reporting over the period.

Evidence suggests that the general warming of the atmosphere will continue to cause significant variations in the timing of seasonal events for many species, such as egg laying and migration.[5] While many species are experiencing earlier seasonal changes, some species in certain habitats are lagging, resulting in natural biological cycles that are out of step. Ecosystem responses are likely to become less predictable as result, leading to greater challenges for future habitat conservation and management.

Changes in climate conditions may also make Shropshire more susceptible to damaging non-native invasive species (e.g. Himalayan Balsam, Japanese Knotweed) that are accustomed to a warmer climate, conversely reducing the viability of less well-accustomed native plant communities. New pests and pathogens are also likely. Agricultural practices may also have to undergo significant adaptations (e.g. introduction of new and climate resilient crop types) to retain current levels of farm production.

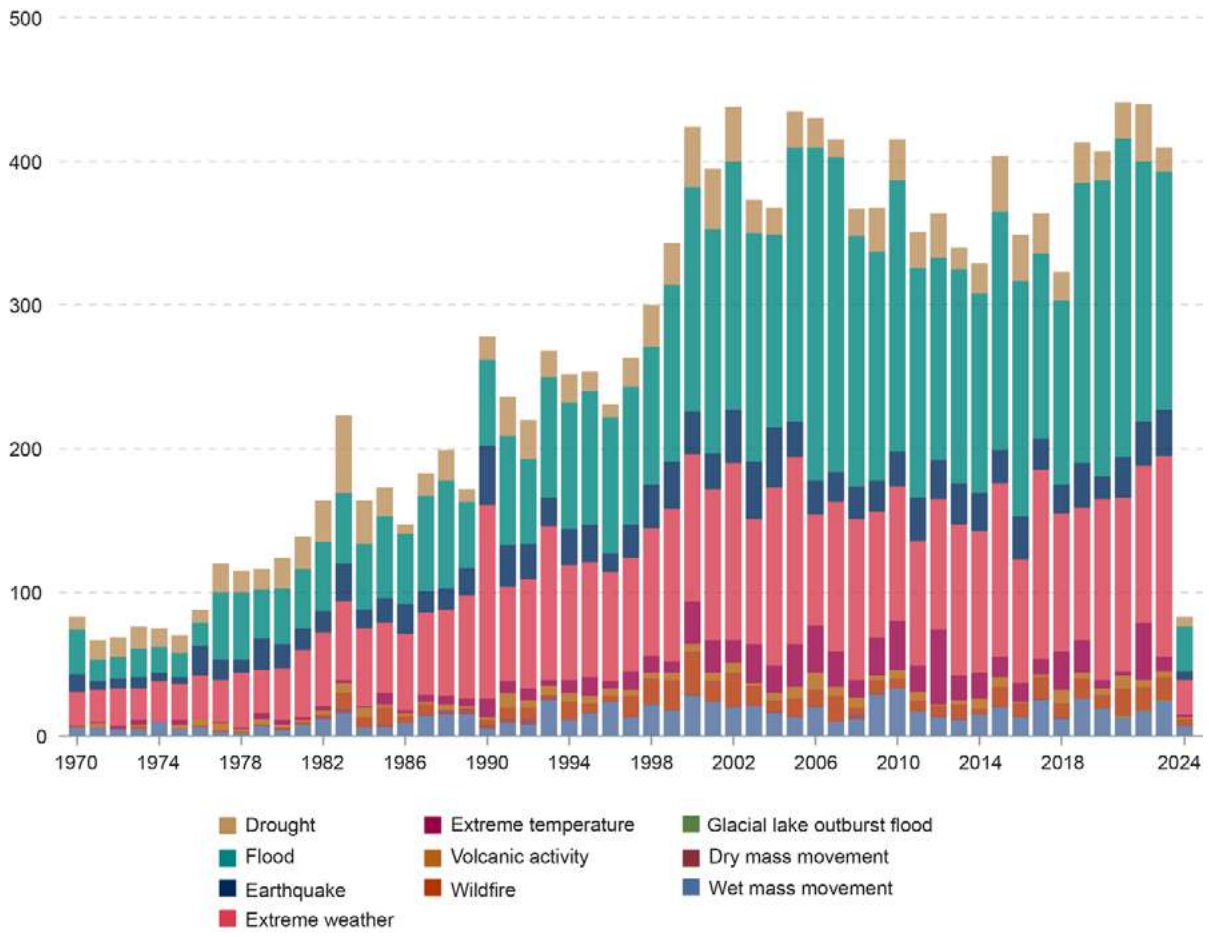

Figure 3 shows the annual reported number of natural disasters globally, by disaster type, 1970–2024 (up to April 2024). The data reflects increases in data reporting, and should not be used to assess the total number of events. Source: EM-DAT, CRED/UCLouvain (2024) OurWorldinData.org/natural-disasters. CC-BY.

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Habitat loss, degradation and fragmentation

Loss and degradation of natural habitats is a threat to the vast majority of all species on the IUCN's global red list[6] and is a major cause of biodiversity loss throughout the UK. As high-value habitats are replaced, or degraded, to make way for more economically productive land uses, the overall area for wildlife habitation is reduced.

The break-up, or fragmentation, of continuous tracts of habitat into ever decreasing pockets impacts dependent wildlife, which may rely on a minimum area and quality of habitat to provide the food and shelter required to sustain a viable population. Fragmentation reduces connectivity and results in increased local extinctions as there is less breeding between population groups, resulting in isolated populations that are more vulnerable to inbreeding, diseases and other environmental threats. Fragmentation also increases the challenges associated with habitat restoration and species recovery.

Within Shropshire, key habitats have experienced significant declines in extent and condition mirroring larger trends across England and Wales. Over 97% of species-rich grasslands have been lost nationally in less than a century, and grasslands continue to degrade locally.[7] Heathland has been impacted by over-grazing and afforestation, with losses in upland heathland in particular resulting from efforts to improve upland land for agriculture since the mid 20th century, mirroring a national 27% decline (up to 1980).[8] Hedgerows also continue to decline in quality and extent across the county – through outright removal or inappropriate management practice. Shropshire's river valleys were once home to significant areas of wet grassland and grazing marsh, and these habitats have declined by at least a fifth in the past 40 years.[9]

The main drivers of habitat loss include intensification of agriculture, growing urbanisation and, to some degree, afforestation. Nature recovery efforts should therefore focus on reducing and reversing the harmful effects of these processes where possible in order to re-establish, as a minimum, pre-existing habitat pockets, which form stepping stones in a wider nature recovery network. Organic farming and regenerative agriculture seeks to integrate agriculture with natural systems for the benefit of both and this approach has potential to deliver significant nature recovery while maintaining viable and productive farm businesses. On peat soils re-wetting of current agricultural areas could improve connectivity between bog and other peatland associated habitats, which are currently fragmented across the Shropshire and Telford & Wrekin LNRS area.

Flood, drought and soil erosion

Climate change is, undoubtedly, a significant driver of both flood and drought events in the strategy area, and both these conditions result in potential water quality issues.

Significant rainfall events affect water quality, including increased sedimentation. Runoff from agricultural land, of both soils and nutrients, is exacerbated by heavy rain alongside the loss of hedgerows, vegetated field margins and headlands and by changes in arable cropping resulting in bare or freshly ploughed soils at times of heavy rainfall. Heavy rainfall events also carry silt and sediment into watercourses through surface water and highway drains and cause increased incidence of raw sewage entering rivers as combined sewer overflows activate more frequently.

Periods of low flow are already increasing in frequency and will increase further as summer temperatures rise. This can have direct impacts on river ecology. For example, occasionally sections of the upper reaches of the River Teme, which crosses the Shropshire–Herefordshire border, dry out and the Environment Agency rescue populations of salmon and trout from shrinking and rapidly-heating pools. Licenced water extractions and decreased rainfall combine, in these circumstances, to cause a significant threat to both aquatic habitats and species.

Alternating drought and heavy rainfall has an adverse impact upon trees. Lack of water stresses trees, which makes them less resilient to pests and pathogens, and sudden periods of heavy rain cause soils around roots to become waterlogged or to wash away entirely.

High summer temperatures, with little rain, increase risk of heathland and grassland fires.

Water pollution

Water quality is a national environmental objective. Freshwater ecosystems are among the most impacted and poor water quality is a major pressure on species. Eutrophication happens when pollution delivers an excess of nutrients to ecosystems, resulting in decreased biodiversity. Other causes of water pollution include chemicals (e.g. herbicides and pesticides), silts and sediments.

The LNRS aims to help to address water quality issues by identifying and prioritising actions where the creation of habitat – such as wetlands or riparian buffers – can reduce pollution and deliver multiple benefits, including filtering agricultural runoff, reducing nutrient loading and supporting flood mitigation.

Water quality, which is arguably both one of the biggest challenges to, and one of the largest opportunities for, nature recovery will only improve if all potential pollution pathways are considered, investigated and addressed through both cross-industry legislative change and sustained financial investment.

Phosphorus (P) and nitrogen (N) are the main nutrients involved in eutrophication, with phosphorus being the main problem in freshwaters. The sources of phosphorus in our rivers and lakes are mainly waste waters from sewage treatment works and losses from agricultural land.

Climate change is likely to intensify the risks and impacts of eutrophication.[10] Lower summer river flows will reduce dilution while higher temperatures increase the potential for algal growth. Decreased water entering water courses, ongoing inputs such as outflows from small-scale packaged treatment plants serving nearby residences, highways drainage and permitted outflows from waste water treatment works can have a larger negative impact upon water quality than would be expected under normal conditions. Wetter winters are predicted to lead to increased runoff and erosion from agricultural land.

Eutrophication is a key reason for rivers and lakes failing to achieve 'Good Ecological Status'. Improvements to waste water infrastructure are set out in the UK Government's Levelling Up and Regeneration Act 2023 and should result in upgrades, including phosphate stripping at the most polluting works. Furthermore, targets set under the Environment Act 2021 require that nitrogen, phosphorus and sediment pollution from farming should be reduced by 40% by 2038.[11] For the farming sector, agri-environment schemes have many measures that can be employed to reduce runoff to freshwaters.

Excess fine sediment is a serious issue when washed into rivers and streams. Silt blocks the empty spaces between gravels, damaging habitat of freshwater invertebrates and the spawning gravels of salmonid fish, preventing the establishment of juvenile pearl mussels and suffocating adult pearl mussels.

Carbon release and reduced sequestration

Maintaining land and associated ecosystems as a net sink of carbon and other greenhouse gases is vital to achieve goals in reducing global emissions; however, recent studies suggest many of the world's largest carbon storage ecosystems have become a source of net emissions in recent years.[12] Continued conversion of beneficial habitats to more productive land use – such as peat bogs to arable – transforms land that sequesters carbon into a net emission source. Further shocks to the climate system, such as prolonged heat spells and associated drought, can also negatively impact natural vegetation cycles, reducing carbon sequestration functions of associated plants and soil.

The UK, due to its fortunate geographic location and relatively mild climate, has not to date experienced some of the extreme climate events witnessed in other parts of the world. Current estimates for the Shropshire and Telford & Wrekin LNRS area indicate a net-negative balance in total carbon emissions resulting directly from land and associated management practices.[13] Forest and grasslands currently sequester more carbon than they emit, mitigating positive carbon emissions arising from other land uses, and wider socio-economic activities within Shropshire (see Figure 4). However, the balance is fragile and could shift with continued degradation.

Projected rises in temperature will challenge carbon sequestration patterns. Mature and well-developed trees (>100 years) are typically made up of native species whose phenological cycles and sequestration functions may be negatively impacted by warming above accustomed temperature ranges. Raising water tables in peatlands

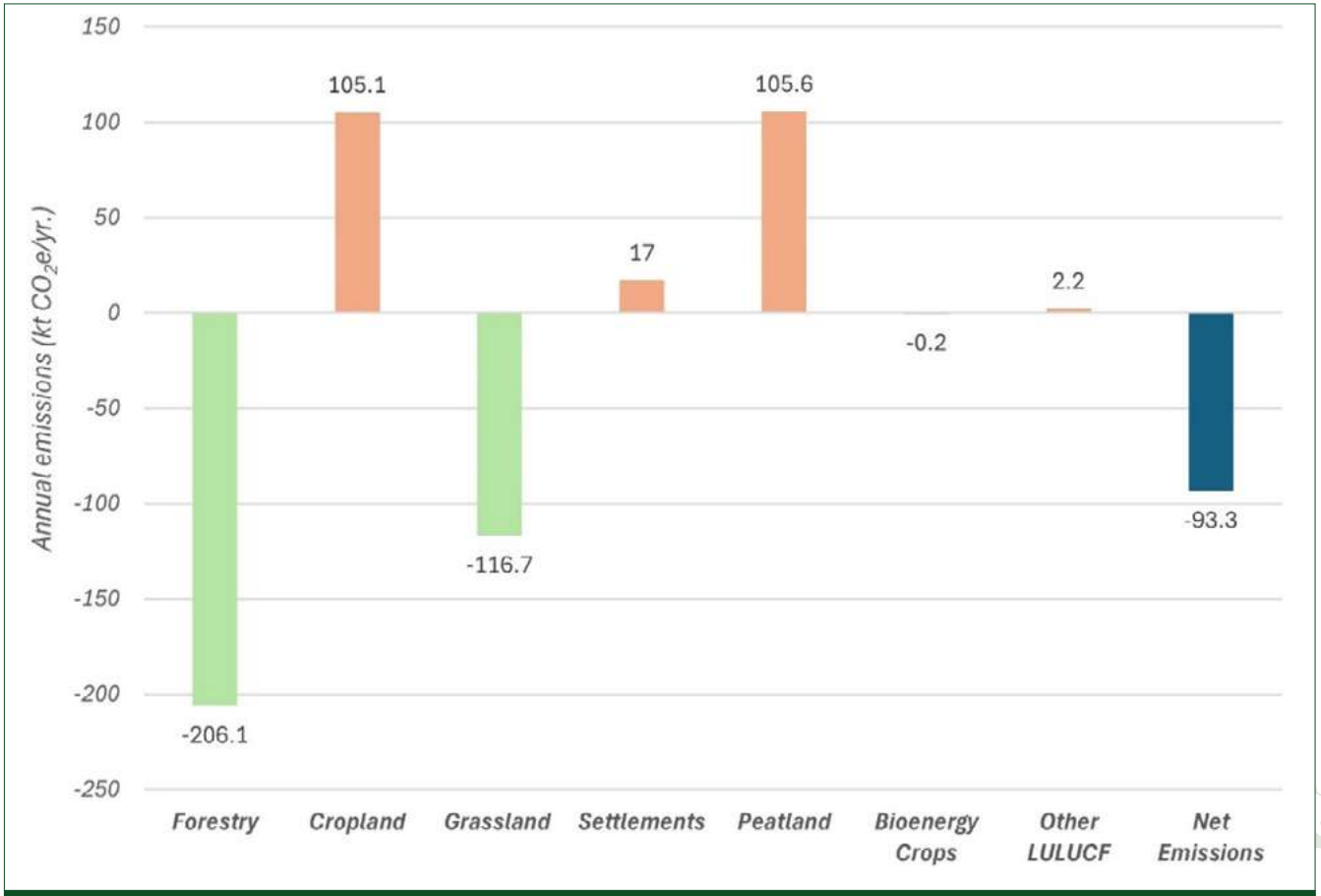

Figure 4: Carbon emission and removal estimates for land use areas within Shropshire.[14] Source: UK National Atmospheric Emissions Inventory (2022) Mapping Carbon Emissions & Removals for the Land Use, Land-Use Change and Forestry Sector (LULUCF).

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can provide significant gains in carbon sequestration and may reverse high levels of greenhouse gas emissions from this land source in Shropshire; however, this may become increasingly difficult to achieve in future due to prolonged warm spells and drought conditions.

Wildfires are not unknown within Shropshire and may increase in frequency and extent. Fire not only immediately releases vast amounts of carbon into the atmosphere but also destroys existing habitat communities that may take decades to regenerate to provide current levels of carbon sequestration. Maintaining and improving carbon sequestration in Shropshire therefore not only requires improvement in the condition and extent of sequestering habitats (while minimising carbon impacts of land use conversion – e.g. urbanisation) but also adapting management practices that improve the resilience of habitats to future climate shocks.

Air quality

Airborne ammonia, along with nitrogen oxides (NOx) and particulate matter from vehicle exhausts and industrial processes, can deposit nitrogen and acid onto land. This pollution can significantly alter plant communities and negatively affect both the type and condition of habitats. In the Shropshire and Telford & Wrekin LNRS area, sources of emissions to air include intensive farming units, industrial processes, vehicles (particularly where heavily used roads run close to sensitive habitats), grazing animals, storage and spreading of manure and other fertilisers, quarrying and mineral extraction (generating particulate matter and dust).

Habitats are assigned a critical level or critical load for all pollutants. Where pollutants are above this level, an ecosystem is at risk from potentially negative effects. Those habitats naturally low in nutrients are at increased risk from atmospheric nitrogen eutrophication. For example, woodlands or wetlands rich in mosses and lichens. Above the critical level for nitrogen deposition in ancient woodlands, nitrogen-sensitive plants such as lichens and bryophytes decline in abundance and eventually disappear, resulting in less diverse woodland communities.

In 2018, 6.3% of land in the UK was exposed to ammonia concentrations above the critical level set to protect higher plants (3 $\mu g/m^{-3}$) and 69.2% was exposed to ammonia at concentrations above the critical level set to protect lichens and mosses (1 $\mu g/m^{-3}$) – exceedances that been rising since 2010.[15] In 2020, 89%–95% of designated sites in England were exposed to ammonia concentrations above 1 $\mu g\ m^{-3}$ – the level at which damage is considered to occur where nitrogen-sensitive species are present. In naturally nutrient-poor habitats such as heathland and wildflower meadows, sensitive species can, under eutrophic conditions, be outcompeted by grasses that better assimilate nitrogen. Studies have shown heathland transformed into grassland in the Netherlands.[16]

According to three-year averages from the Air Pollution Information System (APIS),[17] the background level of ammonia at Fenn's Whixhall, Cadney & Wem Mosses Special Area of Conservation (SAC) is between 3.0 $\mu g/m^3$ and 3.2 $\mu g/m^3$. With the critical level set at 1 $\mu g/m^3$, the site is therefore receiving in excess of its carrying capacity. APIS three-year averages for nitrogen deposition at the same SAC are between 21.4 kg/N/ha/yr and 22.8 kg/N/ha/yr, exceeding the 15 kg/N/ha/yr critical level for fen habitats.

The picture is much the same for designated sites across the Shropshire and Telford & Wrekin LNRS area, with most SACs, Sites of Special Scientific Interest (particularly those with nitrogen-sensitive habitats present), and ancient woodlands receiving considerably above their carrying capacity for aerial ammonia, nitrogen deposition and acid deposition based.[18]

According to APIS, in the UK, 95% of woodland areas – both managed and unmanaged – receive more nitrogen than the critical load they can safely absorb. This is mainly because trees and forests are more effective at capturing airborne pollutants than shorter types of semi-natural vegetation. As a result, woodlands typically experience higher levels of nitrogen deposition compared to other habitats The result of high nitrogen deposition in woodlands includes increased sensitivity to natural stressors including drought and increased temperatures associated with climate change, impacts upon root systems and reduced species diversity. Studies have also shown changes in forest ground flora as a result of enhanced nitrogen deposition near farms,[19] as nitrogen sensitive-plant species are typically scarce at sites receiving over 25 kg/ha/year of nitrogen.

When roads are located close to sensitive habitats, and traffic levels increase near these areas, it can negatively affect plant communities. These impacts can build up gradually over time and may not be linked to a single development project – meaning they often aren't fully considered in a Habitats Regulations Assessment.

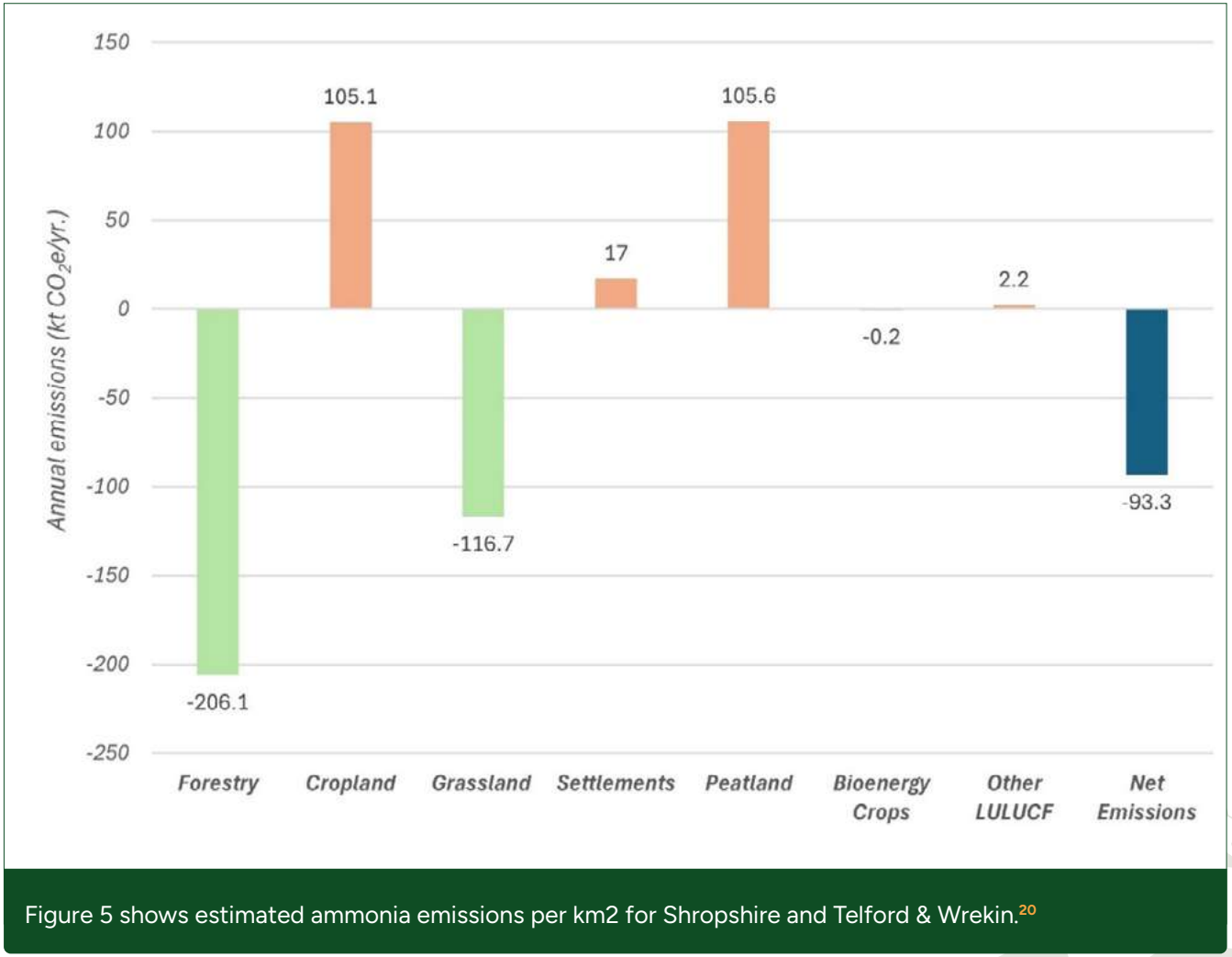

Figure 5 shows estimated ammonia emissions per km2 for Shropshire and Telford & Wrekin.[20]

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Afforestation

Woodland creation is a priority action for achieving carbon net zero targets but the principle of 'right tree in the right place' should be applied. It will be necessary to balance woodland planting with ever increasing demands upon land for other uses such as food, timber production, energy and housing.

Woodland creation is a vital part of any nature recovery strategy but should be approached cautiously. While attractive grants and ambitious targets for forest expansion are important for achieving net-zero carbon goals, they must be balanced with nature recovery priorities. This includes considering the biodiversity value of different types of planted woodland and ensuring that any new planting is compatible with existing land uses.

Non-native conifer plantations, while of value for carbon sequestration and timber production, provide lower nature conservation value when compared to native broadleaved woodland. Balancing the drive for restoration to broadleaf with timber production is necessary; here, mixed woodlands – which integrate timber production from conifer on shorter rotations with the biodiversity value provided by native species – could be a significant tool.

Invasive non-native species

Invasive species can displace or out-compete native species for food and resources. Invasive species are one of the biggest drivers of biodiversity loss in the UK and cost the British economy nearly £1.9bn per year.[21]

In total there are 3248 non-native species on the UK species register, 303 designated as having a negative ecological or human impact.[22]

Shropshire rivers are impacted by the American Signal Crayfish, which as well as out-competing native crayfish are vectors for crayfish plague for which our native species have little defence. The River Onny and the River Teme are particularly affected, and their proximity to the native crayfish in River Clun is cause for concern.

In woodlands, Rhododendron can be a problem as it forms dense thickets, shading and out-competing other plants. It is also a host for *Phytophthora*, a fungal pathogen that affects many other trees and plants.

Invading our riverbanks and wetlands is Himalayan Balsam. The dense shade it creates prevents native wildflowers and grasses from establishing and, when it dies back, it leaves riverbanks bare and at significant risk of erosion from winter floods. Recent surveys of the Clun Catchment have recorded approximately 40 km of river impacted by Himalayan Balsam and, anecdotally, the species appears to be widespread in the rest of the county.

Originally native to North America, American Mink has become a prominent invasive species in the United Kingdom. Its unchecked population growth has caused severe disruption to native wildlife, particularly affecting Water Vole and Kingfisher. Water vole numbers have plummeted by 97% since the 1970s and mink are the main cause.

While the list of invasive non-native aquatic plants is long many have the same impact, in that they spread rapidly, out-compete native species and block sunlight from our ponds and rivers. Many infestations result from the careless disposal of plants.

Pathogens

Woodland and heathland

Promoted by climate change and global trade and travel, an increasingly large number of new woodland pathogens have been detected in the UK over recent years. The most significant threats are:

- Ash dieback *(Hymenoscyphus fraxineus)*, which originated in Asia but is now spreading throughout Europe. Around 80% of ash trees in the UK may die from ash dieback,[23] and the impacts of preventative measures to manage the disease are currently unknown.
- Acute oak decline, which occurs in several regions, including the Welsh borders. This affects all species of oak, with mature native oaks being the most susceptible. It can kill trees within four to six years of the onset. Disease can be more prevalent in areas with high levels of airborne nitrogen pollution.
- *Phytophthora spp*. affects many plants and trees but its main impact in Shropshire is from *Phytophthora alni* causing the high mortality of riparian alder, particularly on floodplains.
- *Phytophthora ramorum* affects a range of broadleaf tree species, including beech, oak, Sweet Chestnut and Horse Chestnut. It also affects important commercial conifer species, in particular Larch. Large-scale tree felling is undertaken to limit its spread.
- *Phytophthora kernoviae* affects heathland and rhododendron, and areas of bilberry (Winberry) in south-west England and Scotland have been severely affected.
- Red band needle blight particularly affects pines, including native Scots Pine.

Birds

Avian flu, or bird flu, affects poultry and wild birds. The recent Highly Pathogenic Avian Influenza (HPAI) is the most serious the UK has ever recorded. A virulent form, H5N5 has been affecting bird populations in the UK since 2021. It causes severe disease and high mortality. This strain has severely impacted UK wild bird populations, especially seabirds, since summer 2021. This is an evolving situation and the impact on other bird species (and other animals) is yet to be understood.

Light pollution

There is no part of the Shropshire and Telford & Wrekin LNRS area that does not receive significant levels of light pollution. Even the relatively dark and rural areas of the county are relatively well-lit at night compared to neighbouring darker-skied areas – particularly into Wales.

Light pollution has significant impacts upon nocturnal wildlife. Artificial light can act as a barrier to some species of bats moving through lit landscapes and can change the behaviour of night-flying invertebrates on which they feed. Nocturnal bird species and their small mammal prey are also adversely impacted. Nocturnal mammals in urban environments may adapt, to some extent, but are none the less affected.

Nighttime light has adverse impacts upon human health and sleep cycles as well as on the wildlife around us.

Light pollution has a range of sources including street lighting, security and safety lighting, floodlights and access lighting on private dwellings. Lighting can be functional, in some cases may be required by law or best practice and can increase our feelings of safety as we move through night-time environments. Lighting should always be appropriate, focused where it is needed, downward facing and cowled to minimise light spill, and on movement sensors and timers where possible.

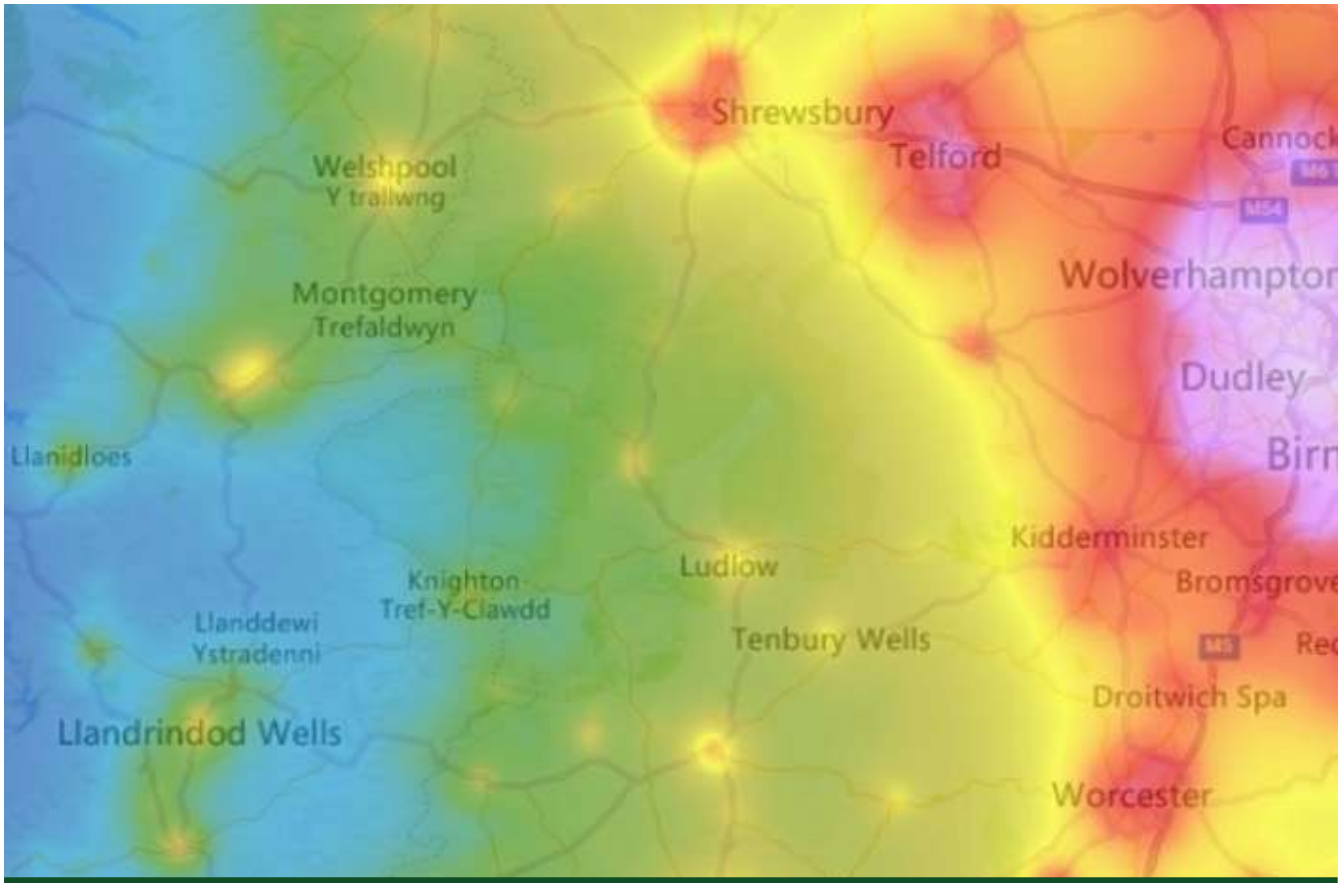

Figure 6 is a map showing light pollution in Shropshire and Telford & Wrekin.
Source: www.lightpollutionmap.info

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Development

Shropshire Council's administrative area includes the county town of Shrewsbury and 17 other market towns and key settlements. The adopted Shropshire Core Strategy (2011) sets out a growth requirement of 27,000 new homes between 2006 and 2026. Significant urban extensions are currently underway. Additional pressure came with the updated National Planning Policy Framework (published in Dec 2024), which increased the assessment of local housing need in Shropshire by 924 dwellings per year – the largest numerical increase across the West Midlands and an 86% increase on the county's previous assessment.[24]

Telford & Wrekin Council's administrative area includes the New Town of Telford and the market towns of Wellington and Newport. The adopted Local Plan 2011–2031 sets out a need for 17,280 new dwellings over the plan period. Construction at Lawley, on the western side of Telford, is now entering its final phase, and significant regeneration projects in central Telford and Wellington are underway.

In addition to the requirements for new homes the strategic plans set out requirements for new areas of employment land and for other land uses including ongoing sand and gravel quarrying and renewable energy including solar. Changes in agricultural land uses, including diversification, intensive livestock rearing and other changes in farming methods, also drive development.

Soil pollution

Soil pollution is an escalating environmental challenge with profound consequences for biodiversity and human health. Contaminants such as pesticides, herbicides and veterinary medicines accumulate in the soil, disrupting its natural balance and degrading its ability to support life. These chemicals, while intended to protect crops and livestock, often persist in the environment, harming beneficial microorganisms and invertebrates that underpin soil fertility. The result is a breakdown in nutrient cycling, reduced carbon storage and a decline in soil resilience.

This soil pollution has broad impacts across entire ecosystems, extending far beyond the soil surface. Pollutants absorbed by plants enter the food chain, leading to bioaccumulation and biomagnification, where toxin concentrations increase at higher trophic levels. This not only threatens wildlife but also compromises food quality and safety for humans. Veterinary pharmaceuticals, such as antibiotics and antiparasitic drugs, add another layer of risk by altering microbial diversity and nutrient dynamics when they enter soils via manure or run-off. Together, these pressures undermine agricultural productivity and pose a serious threat to global food security.

Addressing soil pollution requires urgent action. Strategies such as integrated pest management, reduced chemical inputs and organic and regenerative farming can help restore soil health. Bioremediation techniques and stricter regulation of agrochemicals and veterinary drugs are also critical to safeguarding the foundation of terrestrial life. Healthy soils are the bedrock of ecosystems and food systems worldwide.

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< Return to previous page

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Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 8: Species longlist

Taxon group	Scientific name	Common name(s)
amphibians	*Bufo bufo*	Common Toad
amphibians	*Lissotriton helveticus*	Palmate Newt
amphibians	*Lissotriton vulgaris*	Smooth Newt
amphibians	*Rana temporaria*	Common Frog
amphibians	*Triturus cristatus*	Great Crested Newt
birds	*Acanthis cabaret*	Lesser Redpoll
birds	*Accipiter nisus*	Sparrowhawk
birds	*Acrocephalus schoenobaenus*	Sedge Warbler
birds	*Actitis hypoleucos*	Common Sandpiper
birds	*Alauda arvensis*	Sky Lark
birds	*Alcedo atthis*	Kingfisher
birds	*Anas crecca*	Teal
birds	*Anas platyrhynchos*	Mallard
birds	*Anthus pratensis*	Meadow Pipit
birds	*Anthus trivialis*	Tree Pipit
birds	*Apus apus*	Swift
birds	*Ardea cinerea*	Grey Heron
birds	*Asio otus*	Long-eared Owl
birds	*Caprimulgus europaeus*	Nightjar
birds	*Certhia familiaris*	Treecreeper
birds	*Chloris chloris*	Greenfinch
birds	*Chroicocephalus ridibundus*	Black-headed Gull
birds	*Cinclus cinclus*	Dipper
birds	*Corvus frugilegus*	Rook

Taxon group	Scientific name	Common name(s)
birds	*Coturnix coturnix*	Quail
birds	*Cuculus canorus*	Common Cuckoo
birds	*Delichon urbicum*	House Martin
birds	*Dryobates minor*	Lesser Spotted Woodpecker
birds	*Emberiza calandra*	Corn Bunting
birds	*Emberiza citrinella*	Yellowhammer
birds	*Emberiza schoeniclus*	Reed Bunting
birds	*Falco tinnunculus*	Kestrel
birds	*Ficedula hypoleuca*	Pied Flycatcher
birds	*Fringilla coelebs*	Chaffinch
birds	*Fulica atra*	Coot
birds	*Gallinago gallinago*	Snipe
birds	*Gallinula chloropus*	Moorhen
birds	*Haematopus ostralegus*	Oystercatcher
birds	*Hirundo rustica*	Swallow
birds	*Lagopus lagopus*	Red Grouse
birds	*Larus fuscus*	Lesser Black-Backed Gull
birds	*Linaria cannabina*	Linnet
birds	*Locustella naevia*	Grasshopper Warbler
birds	*Motacilla cinerea*	Grey Wagtail
birds	*Motacilla flava*	Yellow Wagtail
birds	*Muscicapa striata*	Spotted Flycatcher
birds	*Numenius arquata*	Curlew
birds	*Oenanthe oenanthe*	Wheatear

Taxon group	Scientific name	Common name(s)
birds	*Passer domesticus*	House Sparrow
birds	*Passer montanus*	Tree Sparrow
birds	*Perdix perdix*	Grey Partridge
birds	*Phoenicurus phoenicurus*	Redstart
birds	*Phylloscopus sibilatrix*	Wood Warbler
birds	*Phylloscopus trochilus*	Willow Warbler
birds	*Picus viridis*	Green Woodpecker
birds	*Podiceps cristatus*	Great Crested Grebe
birds	*Poecile montanus*	Willow Tit
birds	*Poecile palustris*	Marsh Tit
birds	*Prunella modularis*	Dunnock; Hedge Accentor
birds	*Pyrrhula pyrrhula*	Bullfinch
birds	*Riparia riparia*	Sand Martin
birds	*Saxicola rubetra*	Whinchat
birds	*Scolopax rusticola*	Woodcock
birds	*Spatula clypeata*	Shoveler
birds	*Streptopelia decaocto*	Collared Dove
birds	*Strix aluco*	Tawny Owl
birds	*Sturnus vulgaris*	Starling
birds	*Sylvia borin*	Garden Warbler
birds	*Tadorna tadorna*	Shelduck
birds	*Turdus philomelos*	Song Thrush
birds	*Turdus viscivorus*	Mistle Thrush
birds	*Tyto alba*	Barn Owl

Taxon group	Scientific name	Common name(s)
birds	*Vanellus vanellus*	Lapwing
Bryophyte	*Barbilophozia kunzeana*	Bog Pawwort
Bryophyte	*Biantheridion undulifolium*	Marsh Flapwort; Marsh Earwort
Bryophyte	*Bryum (Anomobryum) concinnatum*	
Bryophyte	*Bryum canariense*	Canary Threadmoss
Bryophyte	*Bryum creberrimum*	Tight-tufted Threadmoss
Bryophyte	*Bryum gemmilucens*	Yellow-bud Bryum
Bryophyte	*Bryum kunzei (funkii)*	Funk's Bryum
Bryophyte	*Bryum weigelii*	Duval's Threadmoss
Bryophyte	*Buxbaumia aphylla*	Brown Shield-moss
Bryophyte	*Cephalozia pleniceps*	Blunt Pincerwort
Bryophyte	*Cephaloziella elachista*	Spurred Threadwort
Bryophyte	*Cinclidotus riparius*	Fountain Lattice-moss
Bryophyte	*Conardia compacta*	Compact Feather-moss
Bryophyte	*Dicranum leioneuron*	
Bryophyte	*Dicranum undulatum*	Waved Fork-moss
Bryophyte	*Didymodon tomaculosus*	Sausage Beardmoss
Bryophyte	*Ditrichum pusillum*	Brown Ditrichum
Bryophyte	*Entosthodon muhlenbergii*	Muhlenberg's Cord-moss
Bryophyte	*Fissidens fontanus*	Fountain Pocketmoss
Bryophyte	*Fissidens rivularis*	River Pocketmoss
Bryophyte	*Fissidens rufulus*	Beck Pocketmoss
Bryophyte	*Fossombronia caespitiformis*	Spanish Frillwort
Bryophyte	*Grimmia incurva*	Black Grimmia

Taxon group	Scientific name	Common name(s)
Bryophyte	*Grimmia laevigata*	Hoary Grimmia
Bryophyte	*Grimmia montana*	Sun Grimmia
Bryophyte	*Grimmia orbicularis*	Round-fruited Grimmia
Bryophyte	*Hamatocaulis vernicosus*	Varnished Hook-moss; Slender Green Feather-moss
Bryophyte	*Hedwigia ciliata s.s.*	Fringed Hoarmoss
Bryophyte	*Myrinia pulvinata*	Flood-moss
Bryophyte	*Nardia geoscyphus*	Earth-cup Flapwort
Bryophyte	*Odontoschisma (Cladopodiella) francisci*	Holt Notchwort
Bryophyte	*Orthodontium gracile*	Slender Threadmoss
Bryophyte	*Phaeroceros carolinianus*	Carolina Hornwort
Bryophyte	*Plasteurhynchium striatulum*	Lesser Striated Feathermoss
Bryophyte	*Pottiopsis caespitosa*	Round-fruited Pottia
Bryophyte	*Pterygoneurum ovatum*	Oval-leaved Pottia
Bryophyte	*Rhynchostegiella curviseta*	Curve-stalked Feathermoss
Bryophyte	*Riccia canaliculata*	Channelled Crystalwort
Bryophyte	*Scapania cuspiduligera*	Untidy Earwort
Bryophyte	*Scapania paludicola*	
Bryophyte	*Seligeria donniana*	Donn's Rock-bristle
Bryophyte	*Seligeria pusilla*	Dwarf Rock-bristle
Bryophyte	*Serpoleskia (Amblystegium) confervoides*	
Bryophyte	*Sphagnum platyphyllum*	Flat-leaved Bogmoss
Bryophyte	*Sphagnum pulchrum*	Golden Bogmoss
Bryophyte	*Sphagnum subsecundum s.s.*	Slender Cow-horn Bogmoss
Bryophyte	*Syntrichia princeps*	Brown Screwmoss

Taxon group	Scientific name	Common name(s)
Bryophyte	*Targionia hypophylla*	
Bryophyte	*Tortula freibergii*	
Bryophyte	*Weissia rostellata*	Beaked Beardless-moss
Bryophyte	*Weissia squarrosa*	Spreading-leaved Beardless-moss
fish	*Alosa alosa*	Allis Shad
fish	*Alosa fallax*	Twaite Shad
fish	*Anguilla anguilla*	European Eel
fish	*Carassius carassius*	Crucian Carp
fish	*Lampetra fluviatilis*	River Lamprey
fish	*Lampetra planeri*	Brook Lamprey
fish	*Petromyzon marinus*	Sea Lamprey
fish	*Salmo salar*	Atlantic Salmon
fish	*Salmo trutta*	Brown Trout
fish	*Thymallus thymallus*	Grayling (fish)
fungi	*Aureoboletus gentilis*	Gilded Bolete
fungi	*Battarrea phalloides*	Sandy Stiltball
fungi	*Clavaria zollingeri*	Violet Coral
fungi	*Cotylidia pannosa*	Woolly Rosette
fungi	*Entoloma griseocyaneum*	Felted Pinkgill
fungi	*Entoloma porphyrophaeum*	Lilac Pinkgill
fungi	*Entoloma prunuloides*	Mealy Pinkgill
fungi	*Geoglossum difforme*	a Fungus; or Lichen
fungi	*Hygrocybe citrinovirens*	Citrine Waxcap
fungi	*Hygrocybe ingrata*	Dingy Waxcap

Taxon group	Scientific name	Common name(s)
fungi	*Hygrocybe ovina*	Blushing Waxcap
fungi	*Hygrocybe punicea*	Crimson Waxcap
fungi	*Hygrocybe spadicea*	Date Waxcap
fungi	*Hygrocybe splendidissima*	Splendid Waxcap
fungi	*Porphyrellus porphyrosporus*	Dusky Bolete
fungi	*Porpolomopsis calyptriformis (Hygrocybe calyptriformis)*	Pink Waxcap
fungi	*Stephanospora caroticolor*	Carroty False Truffle
fungi	*Strobilomyces strobilaceus*	Old Man of the Woods
invertebrates	*Abdera quadrifasciata*	a Beetle
invertebrates	*Adscita statices*	The Forester
invertebrates	*Agabus labiatus*	a Water Beetle
invertebrates	*Agabus uliginosus*	a Water Beetle
invertebrates	*Agathomyia lundbecki*	a Platypezid Fly
invertebrates	*Agrochola helvola*	Flounced Chestnut
invertebrates	*Agrochola lychnidis*	Beaded Chestnut
invertebrates	*Amphipyra tragopoginis*	Mouse Moth
invertebrates	*Anania fuscalis*	Cinerous Pearl
Invertebrates	*Ancylis tineana*	a Micro-moth
invertebrates	*Antitype chi*	Grey Chi
invertebrates	*Apamea anceps*	Large Nutmeg
invertebrates	*Arctia caja*	Garden Tiger
invertebrates	*Arctoconopa melampodia*	a Cranefly
invertebrates	*Argyra grata*	a Long-legged Fly

Taxon group	Scientific name	Common name(s)
invertebrates	*Asteroscopus sphinx*	Sprawler
invertebrates	*Atylotus plebeius*	a Horse Fly
invertebrates	*Austropotamobius pallipes*	White-clawed Crayfish; Atlantic Stream Crayfish
invertebrates	*Boloria euphrosyne*	Pearl-bordered Fritillary
invertebrates	*Boloria selene*	Small Pearl-bordered Fritillary
invertebrates	*Bombus monticola*	Bilberry Bumblebee
invertebrates	*Brachylomia viminalis*	Minor Shoulder-knot
invertebrates	*Callophrys rubi*	Green Hairstreak
invertebrates	*Calositticus floricola*	a Jumping Spider
invertebrates	*Cantharis obscura*	a Soldier Beetle
invertebrates	*Carabus monilis*	Necklace Ground Beetle
invertebrates	*Carorita limnaea*	a Spider
invertebrates	*Ceramica pisi*	Broom Moth
invertebrates	*Chalcosyrphus eunotus*	a Hoverfly
invertebrates	*Cheilosia semifasciatus*	a Hoverfly
invertebrates	*Chesias rufata*	Broom-tip
invertebrates	*Chiasmia clathrata*	Latticed Heath
invertebrates	*Cirrhia gilvago*	Dusky-lemon Sallow
invertebrates	*Cirrhia icteritia*	Sallow Moth
invertebrates	*Clubiona caerulescens*	a Spider
invertebrates	*Clubiona neglecta*	a Sac Spider
invertebrates	*Coccinella quinquepunctata*	Five-spot Ladybird
invertebrates	*Coenagrion pulchellum*	Variable Damselfly
invertebrates	*Coenonympha pamphilus*	Small Heath
invertebrates	*Coenonympha tullia*	Large Heath
invertebrates	*Cordulegaster boltonii*	Golden-Ringed Dragonfly

Taxon group	Scientific name	Common name(s)
invertebrates	*Cordulia aenea*	Downy Emerald
invertebrates	*Cryptocephalus decemmaculatus*	Ten-spotted Pot Beetle
invertebrates	*Dicranocephalus medius*	Wood-spurge Bug
invertebrates	*Dicranomyia omissinervis*	a Cranefly
invertebrates	*Dolichopus argyrotarsis*	a Fly
invertebrates	*Dolomedes fimbriatus*	Raft Spider
invertebrates	*Dryops auriculatus*	a Water Beetle
invertebrates	*Ellipteroides alboscutellatus*	a Cranefly
invertebrates	*Ennomos erosaria*	September Thorn
invertebrates	*Ennomos fuscantaria*	Dusky Thorn
invertebrates	*Erannis defoliaria*	Mottled Umber
invertebrates	*Eriogaster lanestris*	Small Eggar
invertebrates	*Erynnis tages*	Dingy Skipper
invertebrates	*Eubria palustris*	a Water Beetle
invertebrates	*Eugnorisma glareosa*	Autumnal Rustic
invertebrates	*Eulithis mellinata*	Spinach
invertebrates	*Euphydryas aurinia*	Marsh Fritillary
invertebrates	*Eupithecia icterata*	Tawny Speckled Pug
invertebrates	*Eupithecia inturbata*	Maple Pug
invertebrates	*Eupithecia lariciata*	Larch Pug
invertebrates	*Eupithecia linariata*	Toadflax Pug
invertebrates	*Eupithecia pusillata*	Juniper Pug
invertebrates	*Eupithecia satyrata*	Satyr Pug
invertebrates	*Eupithecia subfuscata*	Grey Pug

Taxon group	Scientific name	Common name(s)
invertebrates	*Eupithecia succenturiata*	Bordered Pug
invertebrates	*Eupithecia tripunctaria*	White-spotted Pug
invertebrates	*Euthyneura albipennis*	a Fly
invertebrates	*Euxoa nigricans*	Garden Dart
invertebrates	*Euxoa tritici*	White-line Dart
invertebrates	*Formica rufa*	Southern Wood Ant
invertebrates	*Glyphesis cottonae*	a Spider
invertebrates	*Gnorimus nobilis*	Noble Chafer Beetle
invertebrates	*Gomphus vulgatissimus*	Club-tailed Dragonfly
invertebrates	*Gongylidiellum murcidum*	a Money Spider
invertebrates	*Graphiphora augur*	Double Dart
invertebrates	*Hagenella clathrata*	Window-winged Sedge; a Caddisfly
invertebrates	*Haplodrassus silvestris*	a Ground Spider
invertebrates	*Hecatera bicolorata*	Broad-Barred White
invertebrates	*Heliophanus dampfi*	a Sun-jumper Spider
invertebrates	*Helochares obscurus*	a Water Beetle
invertebrates	*Hepialus humuli*	Ghost Moth
invertebrates	*Hipparchia semele*	Grayling (Butterfly)
invertebrates	*Hister bissexstriatus*	a Clown Beetle
invertebrates	*Hydraena pulchella*	a Minute Moss Beetle
invertebrates	*Hydrochara caraboides*	Lesser Silver Water Beetle
invertebrates	*Hydrochus brevis*	a Water Beetle
invertebrates	*Hydrochus elongatus*	a Water Beetle
invertebrates	*Hydrocyphon deflexicollis*	a Marsh Beetle

Taxon group	Scientific name	Common name(s)
invertebrates	*Hydrophorus albiceps*	a Long-Legged Fly
invertebrates	*Hydroptila lotensis*	a Caddisfly
invertebrates	*Idioptera linnei*	a Cranefly
invertebrates	*Ischnomera sanguinicollis*	a Beetle
invertebrates	*Ischnura pumilio*	Scarce Blue-tailed Damselfly
invertebrates	*Isogenus nubecula*	a Stonefly
invertebrates	*Laccornis oblongus*	a Water Beetle
invertebrates	*Lampyris noctiluca*	Glow Worm
invertebrates	*Lasiommata megera*	Wall
invertebrates	*Leptidea sinapis*	Wood White
invertebrates	*Leptocerus interruptus*	a Caddisfly
invertebrates	*Leucorrhinia dubia*	White-faced Darter
invertebrates	*Limenitis camilla*	White Admiral
invertebrates	*Lipsothrix nervosa*	Southern Yellow Splinter
invertebrates	*Lipsothrix nigristigma synonym of L. nobilis*	Scarce Yellow Splinter
invertebrates	*Lithobius lapidicola*	a Centipede
invertebrates	*Litoligia literosa*	Rosy Minor
invertebrates	*Lycophotia porphyrea*	True Lover's Knot
invertebrates	*Lygephila pastinum*	Blackneck
invertebrates	*Macaria wauaria*	V-Moth
invertebrates	*Macronychus quadrituberculatus*	a Riffle Beetle
invertebrates	*Malachius aeneus*	Scarlet Malachite Beetle
invertebrates	*Malacosoma neustria*	Lackey
invertebrates	*Margaritifera margaritifera*	Freshwater Pearl Mussel

Taxon group	Scientific name	Common name(s)
invertebrates	*Megalonotus dilatatus*	
invertebrates	*Melanargia galathea*	Marbled White
invertebrates	*Meloe proscarabaeus*	Black Oil Beetle
invertebrates	*Meloe violaceus*	Violet Oil Beetle
invertebrates	*Minoa murinata*	Drab Looper
invertebrates	*Neomochtherus pallipes*	Devon Red-legged Robberfly
invertebrates	*Neriene radiata*	a Spider
invertebrates	*Oecetis notata*	a Caddisfly
invertebrates	*Oedostethus quadripustulatus*	a Beetle
invertebrates	*Omphiscola glabra*	Slender Mud Snail
invertebrates	*Oreodytes davisii*	a Water Beetle
invertebrates	*Orthetrum coerulescens*	Keeled Skimmer
invertebrates	*Oxycera terminata*	a Soldierfly
invertebrates	*Paradelphacodes paludosa*	a Planthopper
invertebrates	*Paradelphomyia ecalcarata*	a Cranefly
invertebrates	*Pechipogo strigilata*	Common Fan-foot
invertebrates	*Pelurga comitata*	Dark Spinach
invertebrates	*Phigalia pilosaria*	Pale Brindled Beauty
invertebrates	*Philodromus emarginatus*	a Spider
invertebrates	*Phylidorea heterogyna*	a Cranefly
invertebrates	*Plebejus argus*	Silver-studded Blue
invertebrates	*Polia bombycina*	Pale Shining Brown
invertebrates	*Polychrysia moneta*	Golden Plusia
invertebrates	*Polyploca ridens*	Frosted Green

Taxon group	Scientific name	Common name(s)
invertebrates	*Potamanthus luteus*	Yellow Mayfly
invertebrates	*Prionocera pubescens*	a Cranefly
invertebrates	*Psallus albicinctus*	a Plant Bug
invertebrates	*Psallus flavellus*	a Mirid Bug
invertebrates	*Psallus lepidus*	a Mirid Bug
invertebrates	*Pseudanodonta complanata*	Depressed River Mussel
invertebrates	*Pseudoloxops coccineus*	a Mirid Bug
invertebrates	*Psyllopsis discrepans*	a Psyllid
invertebrates	*Psyllopsis fraxini*	a Psyllid
invertebrates	*Psyllopsis fraxinicola*	a Psyllid
invertebrates	*Pyrgus malvae*	Grizzled Skipper
invertebrates	*Rheumaptera hastata*	Argent and Sable
invertebrates	*Rhizophagus oblongicollis*	a Beetle
invertebrates	*Rhyparochromus pini*	a Ground Bug
invertebrates	*Riolus nitens*	a Riffle Beetle
invertebrates	*Saturnia pavonia*	Emperor Moth
invertebrates	*Satyrium w-album*	White-letter Hairstreak
invertebrates	*Scenopinus niger*	Forest Window Fly
Invertebrates	*Schiffermuellaria grandis*	a Micro-moth
invertebrates	*Scotopteryx mucronata*	Lead Belle
invertebrates	*Setodes punctatus*	a Caddisfly
invertebrates	*Siphlonurus armatus*	a Mayfly
invertebrates	*Speyeria aglaja*	Dark Green Fritillary
invertebrates	*Sphaerius acaroides*	a Water Beetle

Taxon group	Scientific name	Common name(s)
invertebrates	*Stenelmis canaliculata*	a Riffle Beetle
Invertebrates	*Sterrhopterix fusca*	a Micro-moth
invertebrates	*Stictonectes lepidus*	a Water Beetle
Invertebrates	*Stigmella mespilicola*	a Micro-moth
invertebrates	*Stilbia anomala*	Anomalous
invertebrates	*Sympetrum danae*	Black Darter
invertebrates	*Tetratoma desmarestii*	a Beetle
invertebrates	*Theria primaria*	Early Moth
invertebrates	*Tholera cespitis*	Hedge Rustic
invertebrates	*Tinodes pallidulus*	a Caddisfly
invertebrates	*Trichiura crataegi*	Pale Eggar
invertebrates	*Trichius fasciatus*	a Beetle
invertebrates	*Vertigo lilljeborgi*	Lilljeborg's Whorl Snail
invertebrates	*Vertigo moulinsiana*	Desmoulin's Whorl Snail
invertebrates	*Watsonalla binaria*	Oak Hook-tip
invertebrates	*Xanthorhoe decoloraria*	Red Carpet
invertebrates	*Xanthorhoe ferrugata*	Dark-barred Twin-spot Carpet
invertebrates	*Xyletinus longitarsis*	a Beetle
invertebrates	*Xysticus luctuosus*	a Crab Spider
invertebrates	*Zora nemoralis*	a Ghost Spider
Lichen	*Anaptychia ciliaris subsp. ciliaris*	
Lichen	*Bellicidia(Bacidia) incompta*	
Lichen	*Biatora (Catillaria) veteranorum*	
Lichen	*Caloplaca lucifuga*	

Taxon group	*Scientific name*	Common name(s)
Lichen	*Caloplaca luteoalba*	
Lichen	*Caloplaca phlogina*	
Lichen	*Catillaria aphana*	
Lichen	*Chaenotheca chlorella*	
Lichen	*Chaenothecopsis savonica*	
Lichen	*Cladonia novochlorophaea*	
Lichen	*Cladonia phyllophora*	
Lichen	*Inoderma byssaceum*	
Lichen	*Lecanora horiza*	
Lichen	*Lichenopeltella peltigericola*	
Lichen	*Myriquidica (Protoparmelia) atriseda*	
Lichen	*Phlyctis agelaea*	
Lichen	*Ramboldia insidiosa*	
Lichen	*Schismatomma ricassolii (graphidioides)*	
Lichen	*Scutula (Bacidia) circumspecta*	
Lichen	*Umbilicaria cylindrica*	
Lichen	*Umbilicaria hirsuta*	
Lichen	*Umbilicaria polyrrhiza*	
Lichen	*Usnea articulata*	
Lichen	*Usnea florida*	
Liverwort	*Riccia canaliculata - Channelled Crystalwort*	Brown Moss
mammals	*Arvicola amphibius*	Water Vole
mammals	*Barbastella barbastellus*	Barbastelle
mammals	*Eptesicus serotinus*	Serotine

Taxon group	Scientific name	Common name(s)
mammals	*Erinaceus europaeus*	Hedgehog
mammals	*Martes martes*	European Pine Marten
mammals	*Micromys minutus*	Harvest Mouse
mammals	*Muscardinus avellanarius*	Dormouse
mammals	*Myotis bechsteinii*	Bechstein's Bat
mammals	*Myotis brandtii*	Brandt's Bat
mammals	*Myotis daubentonii*	Daubenton's Bat
mammals	*Myotis mystacinus*	Whiskered Bat
mammals	*Myotis nattereri*	Natterer's Bat
mammals	*Nyctalus leisleri*	Leisler's Bat
mammals	*Nyctalus noctula*	Noctule Bat
mammals	*Pipistrellus nathusii*	Nathusius's Pipistrelle
mammals	*Pipistrellus pipistrellus*	Common Pipistrelle
mammals	*Pipistrellus pygmaeus*	Soprano Pipistrelle
mammals	*Plecotus auritus*	Brown Long-eared Bat
mammals	*Rhinolophus ferrumequinum*	Greater Horseshoe Bat
mammals	*Rhinolophus hipposideros*	Lesser Horseshoe Bat
mammals	*Sciurus vulgaris*	Red Squirrel
plants	*Allium oleraceum*	Field Garlic
plants	*Anacamptis morio*	Green-winged Orchid
plants	*Anthemis arvensis*	Corn Chamomile
plants	*Anthemis cotula*	Stinking Chamomile
plants	*Baldellia ranunculoides*	Lesser Water-plantain
plants	*Botrychium lunaria*	Moonwort

Taxon group	Scientific name	Common name(s)
plants	*Caltha palustris*	Marsh-marigold
plants	*Campanula patula*	Spreading Bellflower
plants	*Cardamine impatiens*	Narrow-leaved Bitter-cress
plants	*Carex elongata*	Elongated Sedge
plants	*Carex lasiocarpa*	Slender Sedge
plants	*Carex muricata muricata*	Scarce Prickly-sedge
plants	*Catabrosa aquatica*	Water Whorl-grass
plants	*Chenopodium bonus-henricus*	Good-King-Henry
plants	*Coeloglossum viride*	Frog Orchid
plants	*Colchicum autumnale*	Meadow Saffron
plants	*Cryptogramma crispa*	Parsley Fern
plants	*Cynoglossum officinale*	Hound's Tongue
plants	*Dactylorhiza fuchsii*	Common Spotted-orchid
plants	*Dianthus deltoides*	Maiden Pink
plants	*Eriophorum angustifolium*	Common Cotton-grass
plants	*Euphorbia exigua*	Dwarf Spurge
plants	*Fumaria purpurea*	Purple Ramping-fumitory
plants	*Gagea lutea*	Yellow Star of Bethlehem
plants	*Galeopsis angustifolia*	Red Hemp-nettle
plants	*Galeopsis speciosa*	Large-flowered Hemp-nettle
plants	*Genista anglica*	Petty Whin
plants	*Genista tinctoria*	Dyer's Greenweed
plants	*Gnaphalium sylvaticum*	Heath Cudweed
plants	*Hydrocharis morsus-ranae*	Frogbit

Taxon group	Scientific name	Common name(s)
plants	*Hypericum elodes*	Marsh St John's-wort
plants	*Hypericum montanum*	Pale St John's-wort
plants	*Hypopitys monotropa*	Yellow Bird's-nest
plants	*Impatiens noli-tangere*	Touch-me-not Balsam
plants	*Jasione montana*	Sheep's-bit
plants	*Luronium natans*	Floating Water-plantain
plants	*Lycopodium clavatum*	Stag's-horn Clubmoss
plants	*Moenchia erecta*	Upright Chickweed
plants	*Neottia nidus-avis*	Bird's-nest Orchid
plants	*Nuphar pumila*	Least Water-lily
plants	*Oenanthe fistulosa*	Tubular Water-dropwort
plants	*Ophioglossum vulgatum*	Adder's-tongue Fern
plants	*Orobanche rapum-genistae*	Great Broomrape
plants	*Paris quadrifolia*	Herb-paris
plants	*Parnassia palustris*	Grass-of-Parnassus
plants	*Persicaria minor*	Small Water-pepper
plants	*Pinguicula vulgaris*	Butterwort
plants	*Platanthera bifolia*	Lesser Butterfly-orchid
plants	*Platanthera chlorantha*	Greater Butterfly-orchid
plants	*Populus nigra*	Black Poplar
plants	*Potamogeton alpinus*	Red Pondweed
plants	*Potamogeton compressus*	Grasswrack Pondweed
plants	*Potamogeton friesii*	Flat-stalked Pondweed
plants	*Potentilla argentea*	Hoary Cinquefoil

Taxon group	Scientific name	Common name(s)
plants	*Ranunculus fluitans*	River Water-crowfoot
plants	*Sagina nodosa*	Knotted Pearlwort
plants	*Saxifraga granulata*	Meadow Saxifrage
plants	*Scleranthus annuus*	Annual Knawel
plants	*Sorbus anglica*	English Whitebeam
plants	*Sorbus domestica*	Service Tree
plants	*Sorbus torminalis*	Wild Service Tree
plants	*Spergula arvensis*	Corn Spurrey
plants	*Spiranthes spiralis*	Autumn Lady's-tresses
plants	*Stellaria palustris*	Marsh Stitchwort
plants	*Succisa pratensis*	Devil's-bit Scabious
plants	*Teesdalia nudicaulis*	Shepherd's Cress
plants	*Utricularia minor*	Lesser Bladderwort
plants	*Vaccinium vitis-idaea*	Cowberry
plants	*Viola canina*	Heath Dog-violet
plants	*Viola lutea*	Yellow Mountain Pansy
plants	*Viola palustris*	Marsh Violet
plants	*Viola tricolor*	Wild Pansy
plants	*Wahlenbergia hederacea*	Ivy-leaved Bellflower
reptiles	*Anguis fragilis*	Slow Worm
reptiles	*Natrix natrix*	Grass Snake
reptiles	*Vipera berus*	Adder
reptiles	*Zootoca vivipara*	Common Lizard

Nature Recovery Shropshire and Telford & Wrekin

Shropshire and Telford & Wrekin Local Nature Recovery Strategy.
April 2026

Appendix 9: Species shortlisting methodology

Appendix 9: Species shortlisting methodology

Introduction

Local nature recovery strategies (LNRS) are set out in the Environment Act 2021. LNRS are produced by an assigned Responsible Authority in partnership with a large range of environmental and community stakeholders.

Shropshire Council is the Responsible Authority for the LNRS for Shopshire and Telford & Wrekin. Telford & Wrekin Council and Natural England act as Supporting Authorities within the process.

This document sets out the process by which species relevant to the LNRS were shortlisted and their associated actions were developed.

The LNRS Steering Group is very grateful to the input from the team of local taxonomic and species experts who have given their time to work through the process in line with the Department for Environment, Food & Rural Affairs (Defra) guidance.

Approach

LNRS work is focused on the Lawton principles set out in the 2010 Making Space for Nature report. These key principles are that nature recovery requires "more, bigger, better and better connected" habitats.

When considering species within LNRS if a species only requires those key elements of either better quality habitat, more habitat, more connected habitat or larger areas of habitat in order to recover then it is not, for the most part, specifically named within the overall LNRS priorities and actions.

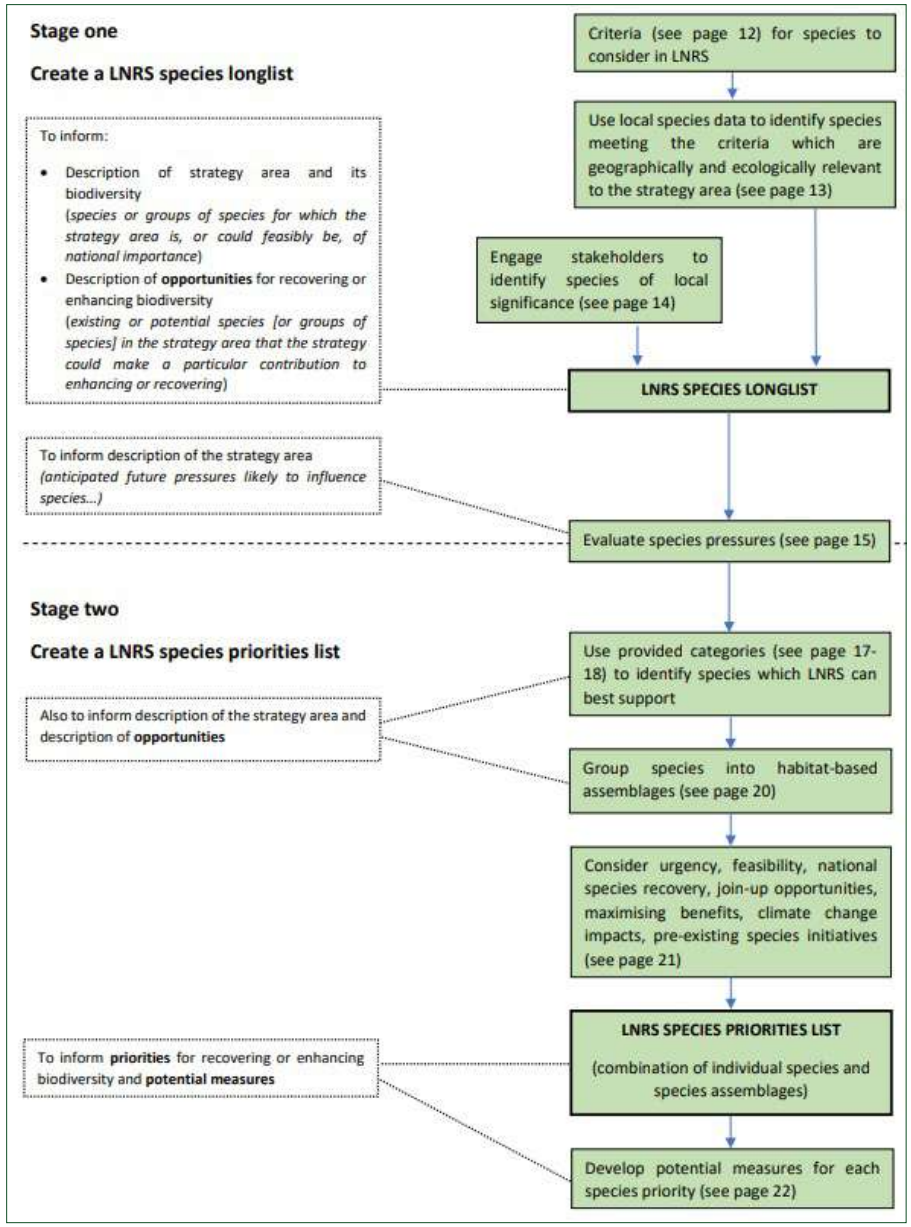
Species and species assemblages that require specific action (or specific groups of actions) beyond those basic principles are named in the section on 'Species', with actions attributed to them.

Methodology

The methodology for species longlisting and shortlisting is set out in the 'Species Recovery within Local Nature Recovery Strategies: Advice for Responsible Authorities' (UK Department for Environmental, Food & Rural Affairs, August 2023).

Figure 1 summarises the process for setting species priorities within local nature recovery strategies. Source: Reproduced from the advice (Defra, 2023).

Figure 1



Species longlist

The species longlist was developed by local and national species experts using the following criteria:

Critical to consider species

- Any native species which have been assessed as Red List Threatened against IUCN criteria.
- Any native species which have not been formally assessed against IUCN Red List criteria but where strong evidence is provided to show that they would meet the criteria for Threatened status.
- Any native species considered to be nationally extinct that re-establish themselves or are rediscovered.

Important to consider species

- Any native species which have been assessed as Red List Near Threatened against IUCN criteria.
- Any native species which Natural England suggest as suitable candidates for conservation translocation, or any native species already subject to translocation efforts (aligning with 'Reintroductions and other conservation translocations: Code and guidance for England') that, on Natural England's advice, need to be scaled up to maximise success.

The species longlist for Shropshire and Telford & Wrekin can be found in Appendix 8 of the LNRS.

Shortlisting species

The species longlist was considered against seven criteria (A–G), set out in the Defra guidance (August 2023), by local species experts with support from Natural England, Environment Agency and Species Recovery Trust staff. See Table 1.

Species identified as criteria B, C and D were carried forward to the species shortlist.

Species identified as criteria A were considered to be covered by the habitat-based priorities and actions.

Species identified as criteria E, F and G were not shortlisted.

Local species experts lead the shortlisting process for their taxon. An approach was adapted from another county (Greater Manchester) to support the decision making process. A set of criteria (urgency, deliverability, national significance, biodiversity co-benefits, environmental co-benefits climate impacts and pre-existing initiatives) were provided to help compare species to refine the list. Not all taxon leads found this approach useful so used other mechanisms. For example, the priorities for Birds are based on the Red and Amber Lists of *Breeding Birds of Conservation Concern in Shropshire* (Shropshire Ornithological Society, 2020), which reflect a 50% or 25% population decline respectively, shown by comparing systematic County bird atlas results from fieldwork carried out between 1985 and 1990 and repeated for 2008 to 2013.

Given that the data are different for each taxa and people work in different ways, it was appropriate for the lead for each taxa determine the best approach for them / their taxa.

Table 1: Species shortlisting categories, reproduced from the Advice for Responsible Authorities (Defra, August 2023). Continues over page.

Category	Description	Benefit from LNRS?	Suitable LNRS species priorities?
A: Needs more / bigger / better-connected habitat	• Species likely to markedly benefit from general creation, expansion, and improved connectivity of good quality habitats in the strategy area • Species with high recovery potential that do not require specific or targeted recovery measures	Yes	Probably not – species are likely to benefit from LNRS measures generally and do not need to be singled out for specific LNRS measures
B: Needs targeted habitat management	• Species with specific requirements for habitat quality, structure, conditions, or processes above and beyond category A • Species may require specific configurations or complexes of connected or nearby habitat/s, either at site level or across large areas / multiple sites. This may include habitat connectivity measures for species needing support to track climate change. • Causes of decline can be addressed with new or improved management practices	Yes	Yes
C: Needs improvements in environmental quality	• Species primarily limited by one or more pressures beyond site level that can be mitigated at LNRS scale or wider scales through collaboration with neighbouring Ras • For example, better catchment water quality, improved spatial planning of air pollution sources, mitigation of recreational disturbance	Yes	Yes

Table 1 continued from previous page.

D: Needs bespoke conservation action/s	• Species requiring additional, tailored measures which can be spatially indicated on the local habitat map • Species may need multiple coordinated actions to bring about recovery, including combinations of local actions and national actions, where LNRS could address the former • Examples of bespoke, spatially targetable local actions include conservation translocations (such as assisted colonisation for climate change adaptation), control of invasive species, and localised surveys NB. Species requiring bespoke measures which cannot be mapped should be assigned to category E)	Yes	Yes
E: Needs better evidence base / on-the-ground action is not a priority	• Species for which there is insufficient evidence or understanding regarding drivers of decline, required recovery actions, and range / population levels • Species for which the current priority is other than on-the-ground action, for example research or ex-situ conservation	Unknown	No
F: Needs action outside England	• Species with low (or very low) recovery potential due to factors constraining recovery beyond English borders • Evidence shows that action in England is highly unlikely to improve species' prospects • This category is likely to apply only to migratory species (e.g., Afro-Palearctic migratory birds affected by hunting)	No	No
G: Vagrants / occasional visitors	• Species currently outside their normal breeding or wintering range or normal migration route, without an extant population in the strategy area, and which are not suitable for conservation translocation	No	No

Species assemblages

A species assemblage is a group of species that share similar habitat requirements or ecological functions. In the LNRS context, assemblages help streamline recovery planning by grouping species that can benefit from similar conservation actions. Assemblages should reflect shared habitat needs or recovery actions. Some species require standalone actions so are left as individual species on the shortlist.

Shortlisted species in the LNRS

The species shortlist for Shropshire and Telford & Wrekin includes 159 species; 29 individual species, and the rest grouped into 9 assemblages. These species can be found within the Shropshire and Telford & Wrekin LNRS.

Shortlisted species are represented in the written strategy in three ways:

- Species may be found in a specific action within the relevant habitat section, species benefiting from this action will be named within the action wording and the action will be marked by the species icon – a butterfly
- Species may be considered a priority in their own right where they do not fit clearly into one habitat section.
- Species may be grouped together into a species assemblage. Assemblages will then have specific, clearly labelled actions within the species section

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