Gloucestershire Wildlife Trust

Let nature help

Natural solutions to tackle the climate emergency

The time is now

To deal with climate crisis, we must bring nature back on an ambitious scale

As world leaders meet at the UN Convention on Climate Change in Glasgow, it's clear that we cannot tackle the climate crisis without a similar ambition to meet the nature crisis head on. The climate and ecological emergencies are inextricably linked. We can't solve the climate crisis without restoring nature at the same time.

Our impact continues to devastate the natural environment. Nature is disappearing faster than at any point in human history, and the implications of the climate emergency have never been so stark. Climate change is driving nature's decline, and the loss of wildlife and wild places leaves us ill-equipped to reduce carbon emissions and adapt to change.

Without urgent action to reverse this, we risk bearing an unimaginable cost. Rapid cuts in our emissions must be matched with determined action to fix our broken ecosystems. The UK is one of the most nature depleted countries in the world, so what better place to start than here at home, in Gloucestershire.

What we choose to do next could change everything.

This is our opportunity to forge an ambitious green recovery plan which recognises the role of natural solutions to tackle climate change – creating new green jobs, levelling-up local communities and securing the survival and prosperity of future generations.

But we're currently way-off track. The amount we spend on activities which damage nature and the climate still far outstrips our spending to restore nature and tackle the climate emergency. Continuing with business as usual, investing in the polluting infrastructure of the past and stripping back environmental protections will erode the very foundations of our economy and wellbeing.

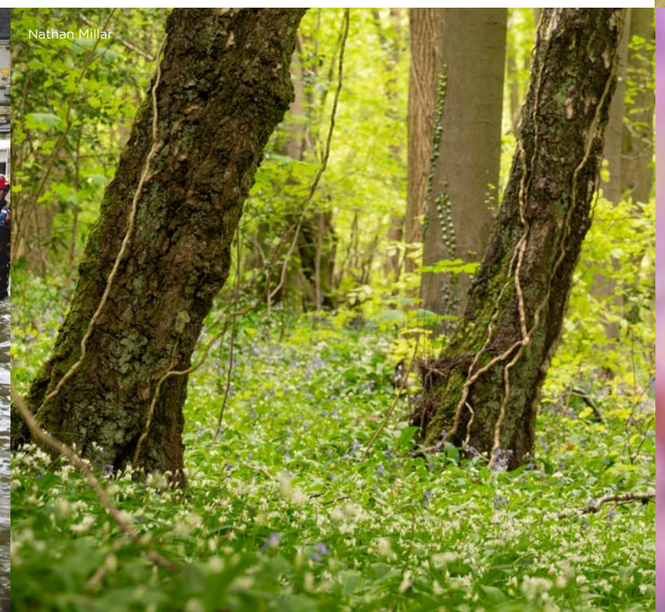
"We cannot afford to continue as normal. If action is delayed by just 10 years, the cost to society will double."

As the recent Dasgupta Review for the UK Government shows, we can no longer afford to continue as normal. If action is delayed by just 10 years, the cost to society will double. The time is now to step up and create a wilder future.

In this report we want to highlight the fact that Gloucestershire has led the way as a county in testing natural solutions to tackling the climate emergency. It's time to scale up their use and put nature at the heart of a green recovery.

Roger Mortlock, Chief Executive

PA Wire/PA Images



Nathan Millar

Beth Priday

Getty Images

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Let nature help

Contents

The size of the task

35%
of species in England have suffered population decrease since 1970

70%
of traditional orchards in Gloucestershire are lost, and only small fragments of our wildlife-rich meadows remain

1 in 8
species in England are threatened with extinction from Great Britain

8%
of England protected as a Site of Special Scientific Interest – our best sites for wildlife

£335m
UK Government spending on biodiversity in England for 2018/19

33%
decrease in Government spending on biodiversity in England over the previous 5 years

£3bn
a year needed to support farmers to restore nature and tackle climate change on their land

£1bn
UK Govt investment needed per year to help meet the 25 Year Environment Plan goals

Let's get nature into recovery

We can start to tackle the climate emergency by putting 30% of our land and sea into recovery by 2030.

For too long we have failed to recognise the critical role nature plays in our health, society, economy – and in tackling the climate emergency.

We need to take a new and transformational approach that puts nature at the heart of a sustainable, green recovery – and that starts with managing and protecting at least 30% of our land and sea for nature by 2030.

To deliver this, we need more investment in nature-based solutions and more climate and nature-positive planning.

It means a Nature Recovery Network to join up initiatives to restore what we have lost, create more nature, and ensure we live within the means of the natural world.

What these terms mean

Nature Recovery Network
A national system of interlinked places that allows nature to recover and thrive across the country.

Green prescribing
GPs using contact with nature to improve patients' mental or physical health.

Nature-based solutions
Natural responses to challenges such as development, climate change, food and water security, and emergency risk management.

Biodiversity net gain
Ensuring developers' activities measurably improve the natural world.

Environmental Land Management
A new agricultural subsidy system based on 'public money for public goods' – e.g. for protecting soils to store carbon, or restoring uplands to hold water.

Natural capital investment plans
A plan setting out actions to achieve and maintain healthy natural assets.

Wildbelt
A new landscape designation to protect land being managed for nature's recovery.

1 in 4 people
The Wildlife Trusts' ambition to get 1 in 4 of us taking action to support nature.

Local Nature Recovery Strategies
A new system of spatial strategies for nature in England, to help support a Nature Recovery Network.

A chance to build back better

Development doesn't have to destroy nature. It can help nature recover and support how we adapt to climate change.

Illustration: www.hilliard.design

During the pandemic people found solace in their gardens and local green spaces like never before. The UK's housing challenge is not just about building new homes. It's about building places where people want to live and work, where they can lead happier, healthier lives. Changes to the planning system must help us plan nature's recovery and tackle the climate crisis – not come at the expense of the environment.

There are some examples of well-sited and well-designed developments delivering real benefits for nature and the climate, but this is not the norm.

"There are many well-sited and well-designed developments delivering real benefits for nature."

Too often housing and infrastructure worsens nature's decline and contributes to climate change. We need a positive vision for new development that puts the natural environment at its heart. By integrating nature into new developments everywhere, we can provide people with access to green space where they live and work. We know that this can also help to halt and reverse wildlife declines.

Green infrastructure includes parks, play areas, nature reserves and street trees, as well as rivers, ponds and other water features – all the natural elements that make a place worth living in.

Every year, GWT influences planning applications to benefit both wildlife and people. We believe the planning system should not only deliver green infrastructure for communities but also enable long term, sustainable decision-making to ensure we live within our environmental limits and bring back wildlife.

Case study: The Steadings, Cirencester

Building with Nature

Across Gloucestershire, developers are embracing voluntary standards that include nature.

The Steadings development, brought forward by Bathurst Development Ltd, is a mixed-use development comprised of 2,350 new homes, 705 of which are affordable housing with 60 for the elderly community. The development will also provide nine hectares of employment land for commercial and community facilities, green cycle links and multi-use greenspace.

The incorporation of green infrastructure supports GWT's ambition for all strategic housing allocations in the county to protect and enhance nature and deliver biodiversity net gain. The Steadings promotes wild places as an integral part of the development, helping residents to value and enjoy wildlife as part of their daily life, connecting people to nature and benefitting mental health and wellbeing.

"So far more than 30,000 homes have been accredited using the Building with Nature standards."

Westmorland Limited

Gloucester Services on the M5 have achieved a 'Good' accreditation under the scheme

How the scheme works

Building with Nature is a voluntary approach that enables developers to create places that really deliver for people and wildlife. It recognises high quality green infrastructure in policy, planning, design, delivery, and long-term management and maintenance. It has been developed by practitioners and policy makers, academic experts and end-users, and has been tried and tested in multiple schemes from Cornwall to Scotland.

There are three levels of accreditation:

DESIGN

High quality green infrastructure demonstrated at the planning and design stage

GOOD

High quality green infrastructure delivering benefits within the boundary of the scheme

EXCELLENT

Exemplary green infrastructure, delivering benefits within and beyond the boundary of the scheme

"We wish to address the impact of climate change through the creation of landscapes of green infrastructure."

"With the Steadings we want to create a space for a new community that is integrated into the town of Cirencester, somewhere where people will wish to live and work, with green infrastructure that people can get outside and enjoy. We also wish to address the impact of climate change through the creation of landscapes of green infrastructure. For example, planting the right trees in the right places for the right reasons.

Having a Building with Nature award is great because it gave us a guideline as to what we need to be doing, who we should be consulting with, and what steps we needed to take to create a development that is friendly to nature. With this extra guidance we have been able to introduce a huge amount of green infrastructure, which will be managed in the long-term through a Community Management Trust."

Lord Bathurst, Bathurst Development Ltd

Bathurst Development Ltd

Slowing the flow

Nick Turner

While flooding is a natural process, climate change is causing an increase in extreme weather events.

Natural flood management – what can it include?

River floodplain restoration restores the hydrological connectivity between the river and floodplain, which encourages more regular floodplain inundation and flood water storage.


Nick Turner

Leaky barriers are an effective method of sustainable flood alleviation as they help attenuate flood flows by slowing and deflecting water out of the channel and onto the floodplain. Woody material in watercourses increases flow variability, with faster flowing water cleaning gravels which is important for spawning fish.

Offline storage areas are areas of floodplain which have been adapted (with a containment bund, inlet, outlet and spillway) to store and then release flood waters in a controlled manner. They provide temporary flood storage which can reduce peak flow.

Catchment woodland can intercept, slow, store and filter water. This can help reduce flood peaks, flood flows (from 3 to 70%) and flood frequency.

Floodplain woodlands can slow floodwaters and increase water depth on the floodplain. This can help reduce flood peaks (0-6%), delay peak timing (2 hours or more), desynchronise flood peak and reduce peak height. It can also enhance sediment deposition on the floodplain.

Run-off pathway management techniques include swales, ponds and sediment traps. These interventions can delay and reduce peak flows locally for small flood events by intercepting, slowing and filtering surface water runoff.

Storms are set to become more intense, and the total rainfall in the UK will increase during winter. Gloucestershire is no stranger to flooding and climate change looks set to worsen its impact on the county.

In order to better manage flood risk and reduce the devastation flood events cause to communities, it is important to recognise the factors that contribute to increased flood risk.

Some land management practices can exacerbate flooding. When soils are compacted, they lose their capacity to store water and when rivers are straightened and dredged, they move water more quickly through a catchment and downstream towards towns and villages. When natural floodplains have been built or developed on, water has nowhere else to go and causes properties to flood.

GWT have been leading on Natural Flood Management practices - an approach that seeks to store flood water and 'slow the flow' of water reaching the river channel by altering or restoring through the landscape.

Natural Flood Management techniques provide enhanced water storage during a storm event, using natural materials to engineer structures that temporarily hold rainwater in the headwaters.

With careful design and planning, soft engineered structures can have minimal impact on current land use whilst offering a sustainable, cost-effective solution to mitigate flooding in addition to storing carbon and providing habitat opportunities for wildlife.


Sam Stafford/WWT

Working with natural processes can also include large-scale realignment of rivers and the estuary, like this example at the Steart Marshes in Somerset, now managed by the Wildfowl and Wetlands Trust.

Farming for climate and wildlife

Over 70% of the land in Gloucestershire is dedicated to farming, and what we eat and the way we farm plays a central role in tackling the climate emergency.

The next few years will see seismic changes in the way we farm and use land, underpinned by huge changes in the support farmers receive from Government.

The Government wants to redesign its approach to agriculture, moving away from the direct farm subsidies paid under the EU's Common Agricultural Policy, replacing them with 'public money for public goods' which include mitigating and adapting to climate change.

GWT's Senior Wildlife and Farming Manager Tim Bevan has been working with farmers in the county to find out more about the 'public goods' they are able to deliver, supporting them to tackle the climate and ecological emergencies. For example that could include managing fields alongside rivers as permanent pasture rather than arable. This locks carbon into the land and provides a buffer to the nutrient residues from arable crops. Other options include sowing pollen and nectar-rich wildflower margins, winter bird food mixes, planting trees, managing hedgerows and improving soil quality to aid water retention and reduce the risk of both flooding and drought.

"There is a great opportunity for farmers to be the heroes of the climate emergency."

Matt Jarvis

Conservation farming in action

One of the farmers working with GWT is Charles Mann, who with his son Will, farms near Lechlade.

The farm converted to organic farming in 2007, and until recently grew around 120 acres of organic cereal crops. This has now been converted to herb-rich grassland to extend the grazing area, fixing considerable quantities of carbon in both the soil and the vegetation.

From 2021 no ploughing is carried out on the farm, reducing releases of carbon from the soil and the amount of diesel used. The grassland is grazed extensively with a traditional herd of cows, certified by the Pasture fed Livestock Association which means that no cereal is fed to the animals. The extensive grazing reduces the risk of soil compaction caused by the cattle and enhances climatic resilience in the case of drought or wet winters.

"Having begun farming in the mid-70s when production-at-all-costs was the mantra, we embarked on the original Countryside Stewardship scheme in 1996 and have progressively embraced conservation since then, converting to organic in 2007 as a financial decision but now would not look back," explain Charles. "The whole farm is alive with wildlife, birds, bees, butterflies and insects. The need to reduce our energy consumption whilst at the same time providing healthy tasty food, sequestering carbon and providing clean air, water and healthy soil and generating renewable energy is becoming ever more apparent."

The farm boasts 75 acres of clover and grass leys, 50 acres of magnificent flower-rich grassland established 13 years ago, 85 acres of ancient ridge and furrow pasture, 50 acres of traditional water meadows, 400 acres of recently established herb-rich leys, 75 acres of woodland, 70 acres of Stewardship options and 20km of hedges. The hedges and grassland sequester carbon from the atmosphere into the above-ground biomass and the soil below. The woodland includes 25 acres planted in 2014. It is all actively managed to provide fuel for a biomass boiler. This provides heat for 11 properties and offices, including the Oxleaze Barn wedding and events venue. Hedges are allowed to grow tall and wide and cut on a three-year cycle. Fallen dead wood is left on the ground.

The water meadows are managed by grazing and the water levels can be controlled by a sluice from the River Leach. Such wet grasslands appropriately managed are good carbon sinks.

Paul Harris/2020VISION

Nathan Millar

Wilder carbon

We know that we need to reduce our emissions and that restoring nature can help soak up significant amounts of carbon.

Our habitats on land have a huge role to play in addressing climate change. Globally, plants have removed 29% of human-made carbon emissions, whilst our soils contain more carbon than is stored in those plants and the atmosphere combined.

Existing woodland cover in Gloucestershire stores an estimated 3-6 million tonnes of carbon. It captures at least 172,000 tonnes of carbon per year, which is equivalent to the carbon footprint of 33,000 people. Increasing Gloucestershire' native woodland cover by 10% by 2030 would store significant amounts of additional carbon.

Our woodlands in Gloucestershire soak up carbon from the atmosphere, making them an important natural solution to the climate crisis. Woodlands are well known for their carbon storage potential, but less well known for their potential to limit flooding.

Tree planting gets much of the attention, yet there are many other native habitats that when restored, capture carbon whilst providing benefits to wildlife and local communities. Permanent grassland in Gloucestershire, for example, captures at least 123,000 tonnes of carbon per year, which is equivalent to the carbon footprint of 24,000 people.

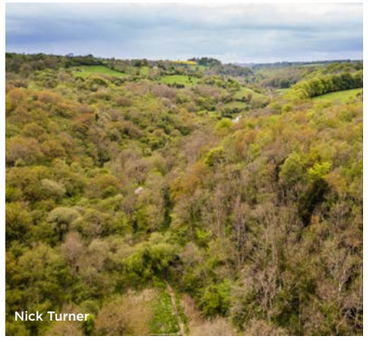
Large-scale restoration of ecosystems across the UK will create wildlife-rich, climate-resilient landscapes that lock up carbon paving the way for nature's recovery.

Severn Treescapes

Severn Treescapes is a partnership that has identified a huge cross boundary region for woodland creation and enhancement, including around 300km² in Gloucestershire. At the heart of the idea is a natural capital approach that aims to harness the multiple benefits of woodland.

This region straddles the England-Wales border, including the Forest of Dean, lower Wye Valley woodlands and Wentwood Forest. As one of the largest broadleaf semi-natural woodland landscapes in the UK, it is incredibly important for wildlife and contains many internationally and nationally designated sites and threatened species. It also plays an important role for people, providing natural recreation space and supporting economic activity.

To the north, intensively farmed land has separated this area from



Nick Turner

important woodlands around Dymock and across the border in the Malverns and Wyre Forest. This is a critical gap in the spatial plan for nature's recovery (Nature Recovery Network) and holds significant potential for new carbon storage. A 5% increase in woodland cover within Severn Treescapes could result in 3 million new trees, which would capture thousands of tonnes of carbon per year and deliver the County Council's tree target.

Severn Treescapes can also help to build a resilient network of woodlands for Gloucestershire by 2030, which is estimated to require tens of millions of new trees. Ensuring these woodlands are cared for will secure a future for the large number of threatened species associated with them. There is also the potential to create valuable new natural greenspace for people to visit.

Unlocking access to land and developing a viable financial model for planting and managing substantial areas of new woodland is key. The partnership is in the early stages of development, building its relationships with landowners and farmers and developing a financial model to deliver new woodland on an epic scale.

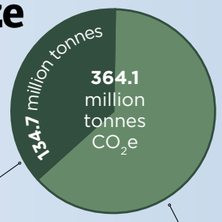
Susan Cook

Nature-based Solutions

The UK has a target of Net Zero greenhouse gas emissions by 2050. Nature can make a massive contribution to achieving this, or an even more ambitious target — but only if we restore our damaged ecosystems. Here are the main areas that need attention.

The size of the prize

37% Restoring our natural systems could provide 37% of the CO_2 mitigation needed by 2030 to meet the Paris Agreement



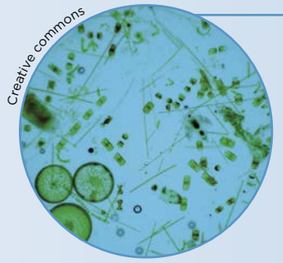
Possible contribution of UK natural systems to reducing CO_2 emissions

Total UK emissions 2018


Splashdowndirect.com

BIOMASS CARBON

All animals and plants are carbon stores. When marine animals die, they generally sink and become incorporated into sediment, where their carbon might stay for thousands of years. Human activities release this carbon and impact populations of marine animals.

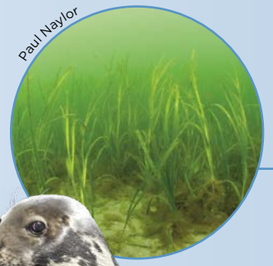

Creative commons

FOOD WEB CARBON

Phytoplankton are the basis of ocean food webs and absorb CO_2. Globally, 10 billion tonnes of carbon are transferred to seabed sediments when phytoplankton die or are eaten then excreted.

SEAGRASS

A hectare of seagrass may store two tonnes of CO_2 a year and hold it for centuries, while providing nursery habitat for young fish. But we have lost half our seagrass meadows since 1985. Reducing water pollution and replanting would bring them back to health.


Paul Naylor


Grey Seal: Paul Hobson. Gannet: David Chapman. Wren: Colin Varndell. Illustration: Dan Hilliard, www.hilliard.design

SALTMARSH

A hectare of saltmarsh can capture two tonnes of carbon a year and lock it into sediments for centuries, but we are losing nearly 100 hectares of saltmarsh a year. Coastal realignment could restore much of it, and reduce flooding and erosion.


Niall Benvie


Rob Jordan

PEATLAND

The UK's peatland soils store around 3.2 billion tonnes of carbon, but are heavily degraded and release the equivalent of 23 million tonnes of CO_2 every year. Restoring them to prevent this emission is one of the most cost-effective Nature-based Solutions.


Zsuzsanna Bird

GRASSLAND

UK grasslands store 2 billion tonnes of carbon, but this is vulnerable to disturbance. Between 1990-2006, arable conversion of grasslands released 14 million tonnes of CO_2. We can restore species-rich grasslands to lock up carbon and support abundant wildlife.

WOODLAND

About 1 billion tonnes of carbon are locked up in UK woodlands, mostly in the soils. Planting more woods could lock up more carbon, but this must be carefully planned to maximise benefits and avoid harming other habitats.


Rupert Paul

Rupert Paul

WETLAND

Wetlands can accumulate carbon for centuries, but in some areas of the UK we have lost over 90% of our wetland habitat. Restored wetlands provide rich habitat, clean water naturally and reduce flood risk downstream.

The crucial tool: a Nature Recovery Network

On land, 66% of carbon in nature-rich areas is outside protected sites. We need to identify, map and protect these ecosystems, and restore them locally as part of a national Nature Recovery Network. We also need to incentivise farmers and other land managers to improve their land for nature and contribute to this network.

At sea, we need effective marine planning, and an ecologically coherent network of Marine Protected Areas.


Matthew Roberts

We need nature to be everywhere again

BLUE CARBON

Oceans absorb 20-35% of human-made CO_2 emissions every year. Carbon is incorporated into the tissues of plants and animals, and later into mud and sediments.

GREEN CARBON

Globally, plants have removed 25% of human-made CO_2 emissions. Soils contain more carbon than is stored in plants and the atmosphere combined.

The way forward on land

Our natural habitats can become long-term carbon stores if they are allowed to function well. This will take careful planning, regulation, incentives and good land management — as well as ensuring we reduce emissions so damage isn't locked in for the future.

HEDGEROWS
The UK's hedgerows store carbon above and below ground, and connect habitats across the landscape. We need 40% more hedgerows to help reach Net Zero by 2050.

PEATLANDS
These vast stores of carbon need positive long-term management. Restored peatlands can capture more carbon, reduce flooding, clean our water, and allow wildlife to thrive.

COAST
Our coasts must be managed to cope with climate change. Coastal realignment can create carbon absorbing, species-rich habitats and natural defences against sea level rise and storm surges.

GRASSLANDS
Species-rich grasslands are huge carbon stores and when managed carefully, e.g. through herb-rich leys and sensitive grazing, they lock in carbon and boost biodiversity.

WETLANDS
Healthy wetlands store carbon, support wildlife and hold back flood water. Less drainage and over-abstraction, the return of beavers and naturalising rivers will lock up more carbon.

WOODLANDS
We need to protect our existing woodland and help it to expand and join up. Semi-natural native woods store carbon, reduce flood risk, and improve our wellbeing when we visit them.

SOILS
Soil organic matter stores more carbon than any other land system, but is threatened by intensive farming. Crop rotation, cover crops and less ploughing can restore this fundamental asset.

Illustration: Dan Hilliard - www.hilliard.design

What needs to be done?

The next ten years must be a time of renewal, of rewilding our lives, of green recovery.

Nature is our strongest ally in building a resilient recovery for everyone, but for too long decisions have come at the expense of nature, undermining the very foundation on which our health and prosperity sits.

Business as usual cannot continue. To create a stronger, smarter, greener recovery, we need joined-up local and national government action to bring wildlife back into everyone's lives.

INVEST

The link between restoring the economy and restoring the natural environment is clear, but investment in environmentally harmful industries still far outstrips funding for nature.

All local and national recovery plans should drive investment in nature-based solutions, led by an additional £1bn annual UK Government investment in nature's recovery.

PROTECT

Despite current protections, wildlife is still disappearing at an alarming rate. If we don't address this now, the health and prosperity of future generations is at risk.

A new Wildbelt designation would allow communities, landowners, and public and private partners to protect and enjoy more places for nature, enriching our countryside, our towns, and our cities.

RECOVER

By making more space for nature to recover, we can improve people's health and wellbeing, create new environmental jobs, boost the tourism economy, and help to tackle the climate emergency.

To achieve this, local and national governments should ensure at least 30% of land and sea is protected and managed for nature's recovery by 2030.

Who we are

Gloucestershire Wildlife Trust works closely with local communities, landowners and partners to drive nature's recovery in the county, working towards a future where the countryside thrives once more with wildlife, wildflowers, trees, butterflies, insects and animals.

The charity also delivers a vast range of engagement activities and projects, as well as providing free public access to its nature reserves, enabling people from all backgrounds to spend time outdoors and get closer to nature.

Find out more

gloucestershirewildlifetrust.co.uk

Gloucestershire Wildlife Trust

The Wildlife Trusts