



TREES AND WOODS: AT THE HEART OF NATURE RECOVERY IN NORTHERN IRELAND



WOODLAND TRUST
NORTHERN IRELAND

Policy Paper

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“Nature in Northern Ireland is in crisis, ranking 12th worst globally for biodiversity loss – making it one of the most nature-depleted places in the world. Considerable work has been done to develop a National Nature Recovery Network for Northern Ireland that brings together a wide range of insights to inform actions that will help restore nature. Now, we need government to adopt, implement, and fund this resource to turn the tide on biodiversity loss.

Healthy trees and woods are essential for thriving nature networks. However, Northern Ireland is one of the least wooded regions in Europe. This report highlights the significant role that trees and woods can play in nature recovery and provides recommendations for both the Northern Ireland Executive and local councils in Northern Ireland to implement, to make this happen. Everyone benefits when our woods and wider landscapes are thriving for both people and nature.”

Ian McCurley
Director of Northern Ireland
The Woodland Trust

1. Overview and recommendations

If you've ever spent time in a woodland during spring you will know how important these places are for both wildlife and people. The sounds of birds chirping and insects buzzing, along with the sight of leaves unfurling and flowers blooming, are all signs that the area is home to important wildlife. While these sights and sounds can bring joy and contentment, the reality is that very few of Northern Ireland's woodlands are in good condition for wildlife, and many are a shadow of what they could be.

The decline of Northern Ireland's wildlife, including the animals and plants that inhabit woodlands, has been well documented. Government plans and funding decisions will determine how we address this decline. The future of some of our most important habitats and wildlife is at stake. Together with other habitats like peatlands, grasslands, rivers and streams, our trees and woods are essential components of our natural systems.

Although there is no legally binding target to recover nature in Northern Ireland, the Biodiversity Strategy to 2020 had a stated mission to '*make progress towards halting overall biodiversity loss*'. More recently, the Programme for Government 2021 includes the natural environment as a key priority area, including '*protecting and enhancing biodiversity and the natural environment*'. The Department for Agriculture, Environment and Rural Affairs (DAERA) has also endorsed meeting the target to protect 30% of Northern Ireland's land and water for nature by 2030 (30 by 30). Achieving this target will not be possible without consideration for the protection and restoration of our native woods.

This report shows how trees and woods can help restore nature in Northern Ireland. We provide principles for nature recovery at three scales – **landscape, woodland, and tree** – and highlight the need to **protect** existing trees and woods, **restore** wooded habitats, and **create** new native trees and woods, to form wildlife-rich mosaics with other habitat types. The report is aimed at policymakers in government and all public bodies, but we hope it will interest anyone who cares about woodlands and their wildlife.

Achieving nature-rich, resilient landscapes that allow for nature's recovery requires urgent collective action. Together we must:

- improve protection of existing native trees and woods
- incentivise excellence in conservation land management to restore nature-rich woodlands
- create new native wooded habitats
- bring nature closer to where people live
- adopt and implement the National Nature Recovery Network for Northern Ireland



Bluebells at Cammoney Hill, Newtownabbey, County Antrim

MICHAEL COOPER PHOTOGRAPHY

Recommendations for the Northern Ireland Executive

It is crucial that everyone works together to recover nature, underpinned by actions that only government can take. The Woodland Trust NI believes those actions should be to:

- 1. Pass legislation and allocate funds to adopt and implement the National Nature Recovery Network for Northern Ireland** – with associated framework of guidance, principles, monitoring and accountability – designed in collaboration with key stakeholders and local communities.
- 2. Develop a Tree and Woods Strategy for Northern Ireland to replace the Northern Ireland Forestry Strategy which was published in 2006. This would include:**
 - a new target to **increase woodland cover in Northern Ireland to 14% by 2050**, with priority given to the planting of semi-natural woodland habitat and wildlife corridors*
 - a target for 3,000 hectares of ancient and long-established woodland in Northern Ireland to be in **restoration** by 2030
 - an ambitious target to restore Plantations on Ancient Woodland Sites (PAWS) with native woodland.
- 3. Introduce measures to improve and better protect our existing trees and woods, including:**
 - **reforming the Tree Preservation Order (TPO) system** to make it easier to protect trees that have cultural or conservation value due to their age, size or condition
 - establishing new legal protections for ancient, veteran and notable trees, with a **register of trees of special interest**
 - introducing a **Tree Protection Fund** to provide advice and support to farmers and landowners on essential protection measures, such as fencing for trees of special interest
 - prohibiting any development on ancient and long-established woodlands and trees of special interest
 - **reducing ammonia concentrations at all ancient and long-established woodland sites** by at least 40% by 2030 (using 2020 as the baseline year).
- 4. Launch a £102 million trees and woods funding package over seven years comprising:**
 - £41.5 million delivered through government grants, including forestry grants and agri-environment schemes to support the **establishment of semi-natural woodland habitat and wildlife corridors****
 - £39.5 million **to support farmers for agricultural income forgone*****
 - a £21 million **Ancient Woodland Restoration Fund** to kick-start the restoration of Northern Ireland's remaining fragments of ancient and long-established woodland which are being damaged by non-native plantations and invasive species****.
- 5. Incentivise locally sourced and grown trees through public procurement** by investing in commercial, local council, and community tree nurseries. This will enable a rapid expansion of UK and Ireland sourced and grown (UKISG) trees – to both reduce the risk of importing tree diseases and improve biosecurity.

* Based on CCC balanced pathway land-use recommendations: theccc.org.uk/publication/advice-report-the-path-to-a-net-zero-northern-ireland/

** Based on £5,500 per hectare for a total of 7,500 hectares of native woodland creation over seven years

*** Based on an annual premia of £350 per hectare for fifteen years for 7,500 hectares of new woodland planted over seven years

**** Based on £7,000 per hectare for restoration and follow up treatment of 3,000 hectares of ancient and long-established woodland

Recommendations for local councils

Local councils have an important role to play in supporting nature's recovery across Northern Ireland. The Woodland Trust NI believes that the priorities for action by local councils should be to:

- 1. Declare a nature emergency** and set out a clear response to address it.
- 2. Develop a Tree Strategy that:**
 - maps and assesses existing canopy cover
 - sets a minimum urban canopy-cover target of 30%*
 - uses tree equity opportunity mapping to ensure that the planting and management of the trees can be focused in the areas where it will most benefit local people
 - utilises habitat network maps to deliver the best outcomes for nature
 - 'supports the development of local tree nurseries and incentivises them to meet requirements for future tree planting
 - identifies metrics and data on status and recovery targets, including for key woodland and indicator species, and embeds these into local policies and plans
 - establishes targets for outcomes, progress assessments and reviews and uses these to maintain fully costed delivery plans.
- 3. Prioritise the use of their land holdings for well-targeted habitat creation and restoration** as exemplars for nature recovery and climate mitigation.
- 4. Protect and increase the extent of trees, woods and associated semi-natural habitats,** through the planning system and by developing council policies and strategies.
- 5. Increase access to nature while supporting its recovery** by ensuring that everyone has access to nature-rich green space which can be reached within 10 minutes of where they live.



PAUL ARMSTRONG/WTM

Oak sapling at Glas-na-Bradán Wood, Newtownabbey, County Antrim

* Based on the 3-30-300 rule recommended by the IUCN (The International Union for the Conservation of Nature, a membership union composed of both government and civil society organisations).

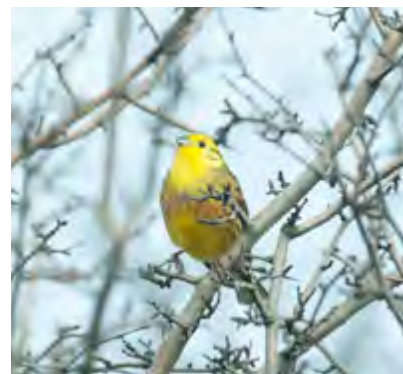
2. Introduction

Nature is the variety of all life on Earth and includes all species of animals and plants, their genetic diversity, and the natural ecosystems that support them. Humans are part of nature, and our health, wellbeing and livelihoods are dependent on healthy ecosystems.

Natural and semi-natural wooded habitats and trees are an essential and integral part of Northern Ireland's nature, from mixed broadleaved woodlands, upland oak and ash woods, and the wet woodland of river valleys, to the hedges which criss-cross farmed landscapes and the trees scattered across our towns and countryside. These wooded habitats and microhabitats are home to some of Northern Ireland's most iconic wildlife species, such as the red squirrel, and play a role in providing us with a range of wider benefits, including clean air and water, carbon storage, flood management, pollination and recreation.

Northern Ireland is one of the most nature-depleted places in the world, ranking 12th worst out of 240 countries on the Biodiversity Intactness Index¹. This has largely been driven by the fragmentation or complete loss of natural habitats. The State of Nature for Northern Ireland shows that of the 2,450 species found in Northern Ireland that have been assessed using the IUCN Regional Red-List criteria, and for which sufficient data was available, 11% are currently threatened with extinction from Ireland as a whole².

Many of the species in decline are associated with native trees and woods, either woodland specialist species or generalist species which use wooded habitats as part of their lifecycle. For example, farmland birds such as yellowhammer and tree sparrow, both Red-List species in sharp decline, nest in hedgerows on farms. Trees also provide roosting sites for all species of bat found in Northern Ireland, which are strictly protected under the Habitats Regulations³.



Yellowhammer (*Emberiza citrinella*)

JOHN BRIDGES/MTML



Aerial view of Glasswater Wood, Crossgar, County Down, within the wider landscape

MICHAEL COOPER PHOTOGRAPHY

The health of Northern Ireland's wildlife species, and their diversity and population, are dependent on the ecological condition of their habitat, as well as its location and extent. Although woodland cover is expanding, woodland wildlife is decreasing. For example, the 'tidying up' of woodlands and parks has led to the removal of deadwood and veteran trees, which in turn contributes to declines in saproxylic invertebrates and cavity-nesting birds which rely on these habitats. We need more structurally diverse native or native-dominated wooded habitats that are well managed and in good ecological condition.

In 2020, the Northern Ireland Landscape Partnership, comprising Ulster Wildlife, RSPB NI, the Woodland Trust NI, and National Trust NI, received funding from the National Lottery Heritage Fund to map what **more, bigger, better, and more joined-up habitat networks** might look like in Northern Ireland and the border regions in the Republic of Ireland. The project aimed to enhance understanding of current terrestrial habitat networks – serving as a foundation for Nature Recovery Network design in Northern Ireland, and supporting the development of plans to ensure that 30% of land is effectively protected and managed for nature by 2030 (30 by 30). The outcomes from this project have helped to identify areas that are suitable in principle for woodland expansion⁴.

For nature recovery networks to be realised, we need collective and bold action: bringing together expertise, creating a statutory requirement for nature's recovery, and supporting this through long-term funding. By legislating for and adequately financing the national Nature Recovery Network in Northern Ireland, we could put nature onto the path of recovery and deliver far-reaching benefits to society.

This report provides principles for nature recovery on three scales and highlights the central role that native trees and woods could and should play in restoring Northern Ireland's nature. They will provide the resilient, dynamic ecosystems needed to stabilise and then increase the populations of Northern Ireland's most vulnerable and threatened species, and keep common wildlife species common.



JOHN BRIDGES/WTML

Red squirrel (*Sciurus vulgaris*)



JOHN BRIDGES/WTML

Common lizard (*Zootoca vivipara*)



ANNE-MARIE KALUS/WTML

Pine marten (*Martes martes*)



LAURIE CAMPBELL/WTML

Bluebells (*Hyacinthoides non-scripta*)

3. The state of trees and woods in Northern Ireland

Northern Ireland's wooded habitats and species are in trouble. Threats affecting trees and woods include a barrage of coinciding pressures, from direct loss of habitat area to more insidious influences such as climate change, pollution, disease, and built infrastructure. These threats reduce the benefits that trees and woods provide to people and wildlife. Many of Northern Ireland's most special woodland habitats are legally designated as protected conservation sites. However, the Woodland Trust's *State of the UK's Woods and Trees 2021* report shows that for woodland wildlife, the picture is bleak. **Just 1% of woodland ASSIs (Areas of Special Scientific Interest) in Northern Ireland are in favourable condition**, with 61% in unfavourable condition⁵.

Ancient woodlands are woods that have existed continuously since 1600 or before and have developed irreplaceable, complex ecosystems not found elsewhere. These precious habitats make up just 0.04% of Northern Ireland's landscape⁶. Furthermore, around 13% of Northern Ireland's ancient and long-established woodland (defined as woodland dating back as far as 1830, but not proven ancient) that survived to the 1960s has since been lost, with a total of 273 ancient and long-established woods cleared since that time.

Habitat fragmentation

Habitat fragmentation poses a significant threat to Northern Ireland's wooded habitats. Of the ancient and long-established woodland areas that remain in Northern Ireland, nearly two thirds (63%) of these are under two hectares in size⁷.

As activities such as infrastructure development continue to expand, once-continuous woodland areas become fragmented and isolated. The construction of roads, buildings, and other developments carves up the landscape, creating barriers that impede the movement of wildlife and disrupt vital ecological processes.

Fragmentation not only limits the ability of species to find suitable habitats and resources, but also increases their vulnerability to other threats such as predation and invasive species. It can lead to population decline, genetic isolation, and a loss of biodiversity.



JAMES READER/NTML

Activities such as the construction of roads and other developments carve up the landscape, creating barriers that inhibit the movement of wildlife and disrupt vital ecological processes.

Invasive species

Invasive species are having serious impacts on woodland in Northern Ireland. Native species with the potential to become invasive include bracken and other scrubby species, while 'alien' non-native plants cover a spectrum of species, such as rhododendron, Japanese knotweed, Himalayan balsam, and cherry laurel. This negatively affects woodland structure, species composition, and regrowth (natural regeneration), resulting in declines in wildlife and ground flora.

Non-native animals can also have an adverse impact on woodland habitats. For example, grey squirrels have spread rapidly since their introduction into Ireland in the early 20th century. They have a significant impact on woodland biodiversity, particularly on the native red squirrel through competition and disease. Grey squirrels also pose a threat to the sustainable management of woodlands through the damage they cause to trees by bark stripping.

Non-native pests and diseases

High-quality woodland creation requires a mix of species to support biodiversity and ensure greater resilience against tree disease. However, due to the limited capacity of local growers, trees are often sourced from overseas. Importing trees can inadvertently introduce new pests and diseases that can have a devastating impact on our native trees and woods.

With ash dieback alone, we stand to lose up to 80% of ash trees across the UK. This will have a devastating impact on the landscape and the biodiversity of our woodlands, as well as cause a major loss in connections between habitats as we lose hedgerow trees and individual trees outside woods. It is predicted that the cost of managing the disease will be up to £15 billion⁸.

Climate change

Climate change is one of the greatest threats to natural systems across the globe. Long-term phenology records (i.e. the seasonal timing of natural events such as bud burst) show that the beginning of spring is now happening, on average, 8.4 days earlier when comparing the 1998–2019 period to the historic 1892–1947 period⁹. This matters because not all plants and animals that are interdependent can keep up with this range, and it may create a mismatch in their food supply. For example, blue tit chicks starve when the caterpillars they feed on are unavailable in years of early leaf emergence.



ROBERT READ/MTML

Invasive *Rhododendron ponticum* suppresses tree regeneration and shades out important plants that form a key part of native woodland biodiversity



KIM TAYLOR/NATUREPL.COM

In warmer springs, oaks leaf earlier causing an earlier peak in caterpillar abundance. However, blue tit chicks hatch too late to take full advantage of peak caterpillar numbers.

Nitrogen deposition

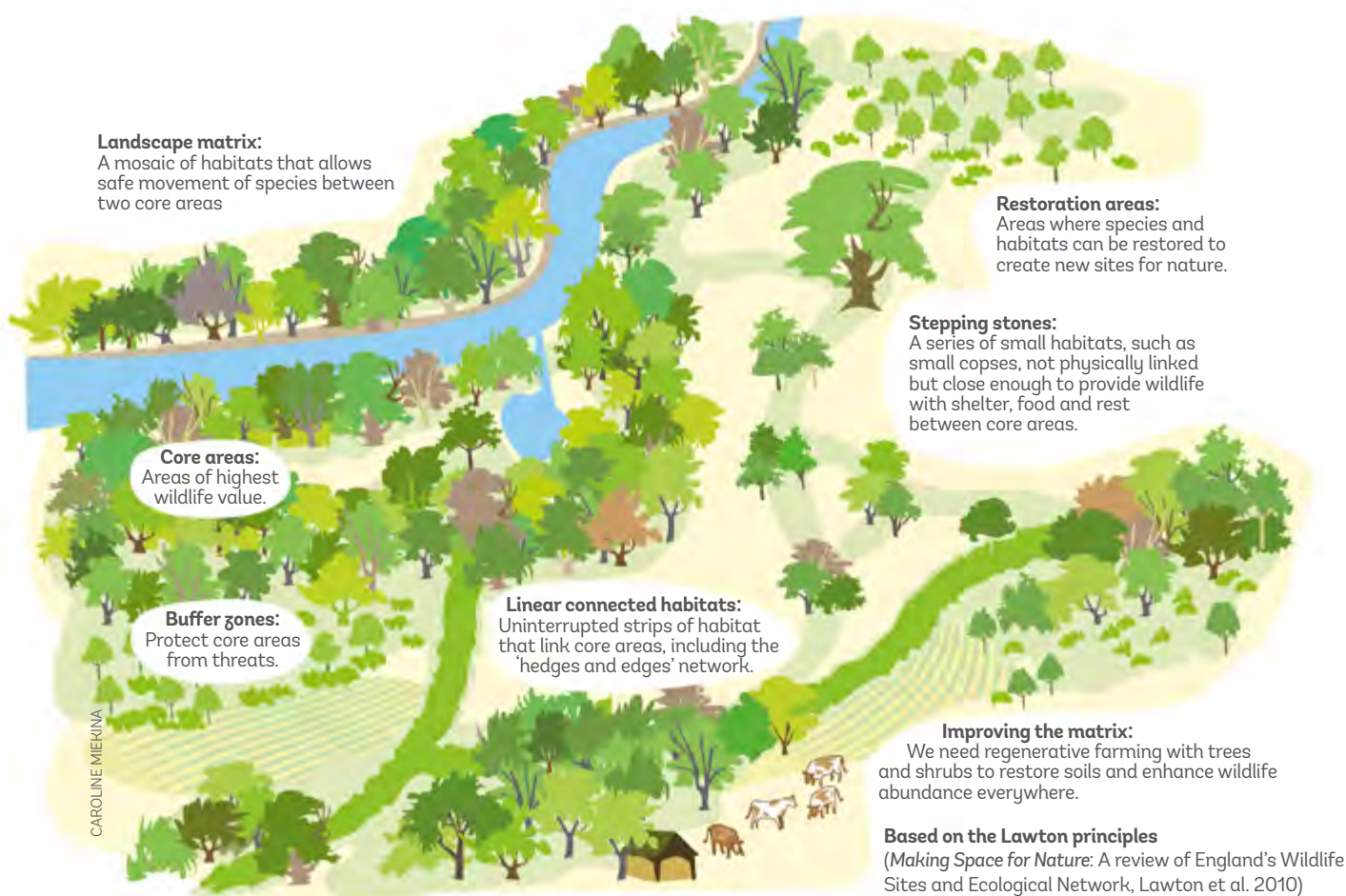
Despite only having 6% of the UK land area and 3% of the UK population, Northern Ireland is responsible for 12% of UK ammonia emissions, with agriculture being the primary source: producing 97% of these emissions¹⁰. In Northern Ireland, 99.7% of ASSIs have ammonia concentrations at which significant harmful effects occur, and 96% of all woods in Northern Ireland exceed the critical load for nitrogen deposition¹¹.

Ammonia emissions are deposited as nitrogen onto land and water surfaces. This negatively affects many woodland plants and fungi, with implications for wider ecosystem functioning, resilience, and services. Many woodland fungi have shown sensitivity to nitrogen deposition, and there is particular concern about impacts on ectomycorrhizal species (associated with tree roots) and the subsequent impacts on tree health.

Higher nitrogen levels in woodlands also lead to a greater abundance of nitrogen-tolerant plant species which outcompete and impact many characteristic ancient woodland plants and mosses – degrading the ecological integrity of ancient woodland sites. The knock-on effects for all animal species associated with nitrogen-sensitive woodland plants are likely to be significant; for example, where essential larval food plants of woodland butterflies, moths and other insects are impacted.

Urgent action is required to address ammonia emissions in Northern Ireland. The Draft Ammonia Strategy proposes that by 2030, ammonia concentrations at all designated sites in Northern Ireland will be reduced by at least 40% (using 2020 as the baseline year)¹². Due to the scarcity of ancient woodland and the damage that ammonia emissions can cause to this irreplaceable habitat, this target should be extended to include all ancient and long-established woodland sites in Northern Ireland.

4. What is nature recovery?



To develop the resilient, complex and dynamic habitats needed to recover nature and reverse the decline of Northern Ireland's vulnerable wildlife species, we need to restore and create **more, bigger, better and joined up** natural and semi-natural habitats and landscapes. These principles were enshrined in the Lawton Report (2010)¹³.

For native woods and trees we need:

- **more natural and semi-natural wooded habitats and more trees in the landscape** to replace past losses and create new habitats which support diverse and abundant wildlife species
- **bigger** and more naturally functioning wooded-habitat areas by buffering and extending existing woods and trees to provide the sources of biodiversity to colonise the rest of the landscape
- **better** existing wildlife sites by making them:
 - structurally complex, with mosaics of habitat that provide more niches for species
 - diverse and rich in wildlife species, with full food webs
 - dynamic well-functioning ecosystems with mosaics which change in space and time, driven by natural processes and by active management where appropriate
 - free from, and resilient to, threats from invasive species, disease, pollution, climate change and development
- **joined-up** core habitat by reducing the distance, and increasing the cover, of semi-natural habitat in the area between core sites to allow species dispersal – supporting colonisation and enhancing resilience to climate change.

Planning for nature recovery should aim to reflect how habitats and associated species are naturally provided for by the geography and geology of the landscape, and by maximising opportunities for the provision of nature-based solutions – particularly in building resilience to future climate change and by providing benefits to local communities.

5. Landscape-scale nature recovery



CAROLINE MIEKINA

Principles for landscape-scale nature recovery with woods and trees

The following principles can be applied to any landscape appropriate for trees and woods, and together will underpin effective high-quality nature recovery:

- **Protect and restore the surviving nature resource**
The surviving remnants of our natural ecosystems and the ancient soils that support them provide the foundations on which to build wider ecosystem recovery and should be protected and managed appropriately.
- **Threats to habitat condition should be addressed**
Threats such as over browsing by deer and grey squirrels should be reduced at a landscape scale to enable growth of saplings, shrubs and diverse woodland flowers. Invasive species like rhododendron should be removed at a landscape scale. Emissions of damaging nitrogen air pollution, including from intensive farming systems, should be reduced.
- **Bigger and more habitat**
To allow for nature recovery, the habitat area should be expanded by buffering and extending wooded habitats and trees where they exist and creating new large woodlands in areas where they do not. Buffering increases woodland area and allows for natural colonisation and species movement from the existing to the new habitat.
- **Abundant and diverse native trees and shrubs should be prioritised**
Native trees are best adapted to most local natural environments and have a high genetic diversity which enables populations to be resilient in the face of climate change. Wildlife communities have adapted over time with native tree species and will be best supported by these.
- **A blend of woodland-creation methods should be used**
Appropriate methods include natural colonisation, direct seeding, and planting using locally sourced and grown trees (UKISG-assured) to prevent importation of pests and diseases. Adaptation to climate change and locally prevalent disease can be supported through a focus on natural regeneration and colonisation.
- **Restore natural processes and dynamism where appropriate and practicable**
Such restoration will help drive self-powered ecological recovery and adaptation to changing conditions – promoting habitat niches that can't be easily created artificially. Large herbivores like cattle and the reintroduction of keystone species such as pine marten can help to achieve this.
- **Use active conservation management**
The habitat quality of woods and hedgerows can be enhanced with active conservation management – boosting their value for declining species.
- **Mosaics of semi-natural habitat of different types should be integrated**
Many wildlife species use resources across a range of habitat types. Transitional habitats at woodland margins, where they blend into grassland via scrub, are often the richest for wildlife.
- **More joined-up natural habitats**
Landscape-scale nature recovery should focus on the creation and restoration of habitat in areas that join together existing patches of wooded habitat and trees to increase the permeability of the landscape, and to allow dispersal between otherwise isolated parts of habitat networks.

The role of native woods and trees

Native wooded habitats, including woods, trees, hedgerows and scrub, play four main roles in landscape-scale nature recovery: as semi-natural habitat in their own right, as vital natural components of mixed habitats, as essential parts of large-scale habitat mosaics, and as arteries of connectivity to support movement and dispersal of wildlife.

Creating more wooded habitats

Nature recovery must include the protection, better management, restoration and creation of wooded habitats. Native woodland creation is considered in this section, while protection, restoration and management are considered in section 6 (Woodland-scale nature recovery).

Northern Ireland is one of the least-wooded regions in Europe, with less than 9% woodland cover¹⁴. This compares with 11% in the Republic of Ireland, a UK average of 13%, and a European Union average of 40%¹⁵. While tree cover in Northern Ireland has been steadily increasing for more than a century, much of the expansion has consisted of plantation conifer. In the same time period there has been a continued loss of biodiversity. Creating more resilient nature-rich native woodlands and expanding those we already have with active management for ecological resilience (covered in more detail in section 6), will be vital for nature recovery.

The Climate Change Act (Northern Ireland) 2022 has set a target to achieve net-zero emissions by 2050. To meet this target, the UK Climate Change Committee has stated that woodland cover will need to increase to around 14% of Northern Ireland's land area. To achieve this, annual afforestation rates will need to reach 3,100 hectares by 2035 and 4,100 hectares by 2039, and remain at this level until 2050¹⁶. This represents a substantial increase compared to afforestation rates delivered to date, which were 540 hectares in 2021/22 and on average around 290 hectares annually between 2018 and 2022.

There is a risk that focusing solely on carbon capture could drive woodland creation that can be met principally through productive plantations and non-native planting. However, it is crucial to note that climate change and biodiversity are inextricably connected, with climate change contributing to biodiversity loss and biodiversity loss making climate change and its effects worse. Therefore, new woodland must provide benefits for wildlife as well as carbon capture¹⁷.



MICHAEL COOPER PHOTOGRAPHY

Native woodland such as Corrog Wood in Portaferry, County Down, capture and store carbon while simultaneously providing habitats for wildlife.

Nature Recovery Networks provide valuable principles and evidence about existing habitat types and the opportunities and constraints for woodland expansion. This expansion should be delivered in the right places and in the right ways to capture and store carbon while simultaneously delivering wildlife-rich mosaics with other habitat types.

The Nature Recovery Networks mapped by the Northern Ireland Landscape Partnership have identified areas that are suitable in principle for a range of different woodland planting. This takes into account constraints, including existing priority habitats, land suitability, and sensitivities like priority species that may be adversely impacted by woodland creation, such as breeding waders.

By 2050, at least 80,000 hectares of new woodland will need to be established in Northern Ireland¹⁸, with priority given to native woods and trees. Its value for nature recovery should be optimised by targeting to improve connectivity, expanding existing woodland, and buffering existing habitats. This planting should be carried out using locally sourced and grown trees assured to UKISG (UK and Ireland Sourced and Grown) standards. Progress should also be monitored using UK Biodiversity Indicators¹⁹.

Trees and scrub as vital natural components of other habitats

Nature recovery means making all habitats better for wildlife. Trees and scrub are natural components of nearly every UK habitat – including grasslands, heathlands and wetlands – where they add structure, diversity and resources for birds, invertebrates and mammals. Trees and scrub should be part of these habitats at appropriate levels to optimise the ecological value of these sites, with the right trees in the right places, while being mindful that in some places the best approach for nature is no trees at all.

Large-scale habitat mosaics

For many species, it is a mosaic of habitats – including trees, woods, hedges, heathlands, wetlands and grasslands – that is important to meet their various lifecycle needs and sustain viable populations. Mobile species, such as mammals and birds, tend to need a range of habitats in which to breed, nest or roost, and others in which to feed or forage. Providing a mosaic of these elements across the landscape – ranging from tall trees through layers of scrub to herbs and grasses – will go a long way to meet the needs of many species.

An **ecotone** is the transition between two patches of habitat, such as woodland or grassland. The broader the ecotone, with a gradual blend of communities, the greater the variety of microhabitats it will contain, which in turn will accommodate a greater variety of species. A large proportion of wildlife species²⁰, including birds²¹, are associated with these soft scrub herb interfaces on the edges of woodland, glades and rides, and their creation and long-term management is of vital importance for wildlife.

Ecosystem services

Ecosystem services are the benefits provided by ecosystems that contribute to making human life both possible and worth living. These services are commonly grouped into four categories:

Provisioning: these are the products obtained from ecosystems, such as food or timber.

Regulating: these are the benefits obtained from ecosystem processes, such as pollination, climate control, and water regulation.

Cultural: these are the non-material benefits obtained from ecosystems, such as recreation and tourism.

Supporting: these are ecosystem functions that are necessary for the production of all other ecosystem services, including soil health and the cycling of nutrients and water.

The ecosystem services provided by trees, woods, hedgerows, and scrub vary, depending on their location. Nature Recovery Network Maps can play a vital role in providing information to identify local priorities and ensure that the right trees are planted in the right place, for the right reasons.

Examples of once common species which would benefit from improved protection, restoration and creation of semi-natural wooded habitats:

Hedgehog *Erinaceus europaeus*

- Uses woods, trees and hedgerows for hibernation and feeding
- Threatened by loss and damage of hedgerows and woodland, use of pesticides in farms and gardens, and increased built development



Cuckoo *Cuculus canorus*

- Uses woods and trees for nesting where host species nest (e.g. dunnock)
- Threatened by loss of habitat and the knock-on effects to their host species, and by deforestation and hunting on migration routes



Brown long-eared bat *Plecotus auritus*

- Uses woodland for feeding and roosting, and hedgerows for navigation
- Threatened by loss of their woodland habitats, depriving bats of roost sites and hunting grounds



CAROLINE MIERKINA

Essential for connectivity and dispersal

Trees, woods and hedgerows play an essential role in providing connectivity for species. Landscape-scale nature recovery should focus on the creation and restoration of habitat in areas that join together existing patches and increase the permeability of the landscape. Evidence suggests that providing 'stepping stones' and improving the 'permeability' of the matrix are usually more important than providing physical corridors through which nature can disperse²². Many native woodland specialists are poor dispersers, so for woodland creation sites to have the most value they should be prioritised to areas with plenty of native woodland existing within 1km.

Successful dispersal between patches is vital because it ensures the genetic health of populations, and enables species range shifts in response to climate change and other ecological processes integral to biodiversity conservation.

Case study

Woodland creation in the Belfast Hills

Glas-na-Bradán Wood is a 98-hectare site situated in the Belfast Hills in the Greater Belfast area. The Woodland Trust acquired the location in 2021 with funding from Biffa Award and the Northern Ireland Environment Agency.

This site offers a unique opportunity to create a new native woodland at scale over a five-year period, benefiting both people and nature. Volunteers from the local community are planting a total of 150,000 native trees to establish a 57-hectare native woodland. The rest of Glas-na-Bradán Wood consists of upland heath and species-rich grassland, contributing to the site's ecological diversity.

Expanding access to nature within an urban environment, this initiative not only benefits people, but also supports the recovery of natural habitats. A 2.5km path provides recreational access to the summit, catering to the nearby urban population's desire to engage with the outdoors. Moreover, the tree-planting efforts at Glas-na-Bradán will play a crucial role in extending and safeguarding remnants of ancient woodland habitat in the neighbouring Cave Hill Country Park, enhancing landscape connectivity and providing wildlife with improved corridors for movement, thus promoting overall ecological balance.

Glas-na-Bradán Wood provides a range of essential ecosystem services. As a native woodland, it offers crucial **supporting services** by promoting biodiversity, maintaining soil health, and retaining water. Additionally, the woodland contributes to **regulating services** by sequestering carbon and reducing water runoff, thus decreasing the risk of flooding. Moreover, it delivers **cultural services**, enhancing community wellbeing and providing recreational opportunities. The significance of these diverse ecosystem services highlights the vital role that trees play for people, climate, and nature.



MICHAEL COOPER PHOTOGRAPHY

Tree planting at Glas-na-Bradán Wood in Newtownabbey, County Antrim

Case study

Resilient farms in the Glens of Antrim

With 76% of Northern Ireland's land used for agriculture²³, farmers can play a vital role in supporting nature's recovery. Through the Resilient Landscapes Project, the Woodland Trust has engaged with local landowners to reconnect them with their local landscape by exploring ways they can incorporate trees and hedgerows back into their farming systems.

One such example is local farmer Frank McCarry who manages a sheep hill farm near Ballycastle. His farm had limited shelter for pasture and livestock, and to address this, a green infrastructure plan was developed incorporating shelterbelts of hedges and woodland strips. Computer Generated Imagery (CGI) was used to illustrate how the farm would look in 20 years' time.

Planting hedges and woodland strips serves multiple purposes. Not only do they provide vital nature corridors to support more connected habitat networks, but they also offer increased shelter – reducing livestock mortality. Furthermore, they enhance biosecurity by minimising animal-to-animal contact, and extend the season during which animals can be kept outdoors.

Through projects like the Resilient Landscapes Project, and the dedicated efforts of farmers like Frank McCarry, Northern Ireland's farmed landscapes can become vibrant hubs of nature conservation. By incorporating trees, hedgerows, and sustainable farming practices, we can restore and safeguard biodiversity while ensuring the continued productivity and resilience of our agricultural systems.



HEART OF THE GLENS LANDSCAPE PARTNERSHIP SCHEME

Aerial view of the McCarry Farm before the green infrastructure plan was implemented



HEART OF THE GLENS LANDSCAPE PARTNERSHIP SCHEME

A Computer Generated Image (CGI) of what the McCarry Farm will look like 20 years after the green infrastructure plan has been implemented

6. Woodland-scale nature recovery



Principles for woodland-scale nature recovery

These principles can be applied to any woodland at any scale, and together they will underpin nature recovery:

- **Protect, restore and better manage the surviving ancient and native woodland resource**
The surviving remnants of our natural ecosystems, their genetic diversity, and the soils that support them, provide the foundations on which to build wider ecosystem recovery.
- **Improve woodland ecological condition by increasing tree and shrub species diversity and enhancing structural complexity to support a variety of wildlife habitats**
This should comprise mosaics of dense groves, open glades, and open wooded habitats. Each patch should have a diverse range of tree age and size classes, dead trees and standing and fallen decaying wood, a shrub layer, regeneration, and a range of flowering plants. This provides habitat and resources for many different species at the same time.
- **Use active conservation management to enhance the habitat quality of wooded habitat**
This will boost the value of wooded habitats for declining species.
- **Restore natural processes and dynamism where feasible**
These processes (such as canopy-gap creation, tree death, natural regeneration, pollination and seed dispersal) drive self-powered ecological recovery and adaptation to changing conditions – and promote habitat niches that can't be easily manufactured. Often, they require considerable restoration management to set them on the right track, such as the introduction of large herbivores or keystone species, tree felling or invasive species management.

Native woodlands are some of our richest and most diverse wildlife habitats and support many priority species for conservation. A large proportion of these are lower plants, fungi and invertebrates dependent on microhabitats. Ancient woodland – where there has been continuous woodland cover for hundreds if not thousands of years – has had time to develop rich and interconnected ecosystems, shaped by geology, soils, climatic conditions and their interaction with people.

However, nearly one third of woodlands in Northern Ireland that are classified with a high degree of certainty as ancient, have been cleared and replanted with non-native timber species (PAWS)²⁴.

Research into PAWS has shown that the plants and animals that depend on the stable conditions provided by ancient woodland are devastated by the effects of these plantations, both initially and in the long term. These include clearance using heavy machinery; the dense shade cast by the conifers; and smothering from the deep layers of conifer needles which curtail opportunities for natural regeneration of trees, and reduce diversity of the tree and flowering plant species composition. Remnant populations, including vulnerable species, cling on in these productive plantations, often in isolated pockets, but could be lost forever if another cycle of felling and replanting with conifers takes place.

The urban forest

Trees deliver a multitude of benefits to the 65% of Northern Ireland's population who live in urban areas, including improvements to air quality, noise levels, temperature extremes and water management. They also provide important and connecting habitat for wildlife. Because urban trees need to cope with environmental extremes, they tend to be a varied selection of native and non-native species across a mix of small woods, street trees, trees and shrubs in parks, trees along rivers and trees in allotments and gardens.

Access to nature, including woods and trees, is important for people's physical and mental health and wellbeing. However, just 10% of Northern Ireland's population have access to a wood of at least two hectares within 500 metres of their homes. This represents the lowest provision of woodland access across the UK²⁵. Adopting the tree equity principle for tree cover in urban areas would help to support nature recovery in our towns and cities as well as address inequalities in health and wellbeing.

The farmed landscape

With 76% of land in Northern Ireland under agricultural management²⁶, ensuring nature recovery in our farmed landscape is essential. It is vital that the spatial targeting and prioritisation of options within Northern Ireland's new agri-environment schemes incentivise the most effective actions for nature recovery. Agri-environment schemes must deliver demonstratable positive outcomes for nature recovery and be designed in a way that is attractive to farmers, so that the process of identifying and applying for grants is simplified and suits the needs of their farm business. The habitat network maps for Northern Ireland, developed by the Northern Ireland Landscape Partnership, can help to identify areas for suitable actions, including the creation, restoration and management of trees, woods and hedgerows in the farmed landscape.

What do woodlands need in order to recover nature?

Maximising ecological integrity involves balancing management interventions with natural processes. To recover native woodlands and achieve their potential for wildlife, **active conservation management may be required to improve woodland ecological condition** – enhancing light levels and structural and species diversity, creating dynamism in the system, and tackling persistent threats like browsing pressure.



MICHAEL COOPER PHOTOGRAPHY

Urban trees provide a multitude of benefits, including improvements to air quality, noise levels, temperature extremes and water management.



LAURIE CAMPBELL/MTML

Planting hedges on farms can increase shelter, improve corridors for wildlife, and enhance the landscape

Woodland in good ecological condition, along with wooded landscapes with appropriate diversity of structure and habitat types, will be key to help reverse declines and support recovery of species.

While the evidence shows that native woodlands provide the most value to wildlife, appropriately designed and sited **production-focused plantations can also make a valuable contribution to nature recovery**. Northern Ireland imports a significant proportion of its timber, and there is a need to expand timber-focused plantations alongside native woodlands. There are a number of steps that can enhance the value of productive plantations for nature, such as using a wider variety of species – including a greater proportion of native species – creating open space, and retaining deadwood and veteran trees. At the moment, however, woodlands of all types are lacking many of these features. Improving the ecological condition of productive plantations will not only help wildlife, but will also support long-term production by underpinning the resilience of plantations to threats such as tree diseases.

The National Nature Recovery Network for Northern Ireland can be used to identify priority wooded habitats for restoration and better management, and inform the management actions required: enabling the development and delivery of management plans that will aid nature recovery.

Tools like the **Woodland Wildlife Toolkit** have been developed to refine woodland management to meet the needs of rare and declining woodland species. The toolkit²⁷ makes the link between species declines, woodland condition, and management required to improve species diversity and abundance, and contains an interactive map on which a user can locate their specific woodland site. At the time of going to press, it only covers England, Scotland and Wales, but with an ambition to add Northern Ireland at a later date.

Restoration of PAWS is a requirement of certification of sustainable management under the UK Woodland Assurance Standard²⁸. However, nearly one third of woodland classified with a high degree of certainty as ancient woodland in Northern Ireland is under plantation forestry. The Forest Service has committed to restoring at least 10% of its PAWS²⁹. Given how little ancient woodland remains in Northern Ireland, and the high proportion which is PAWS, DAERA should prioritise funding private landowners to restore and manage ancient woodland habitats to improve their ecological value.

Some of the attributes of woodland in good condition



Mix of tree sizes and ages



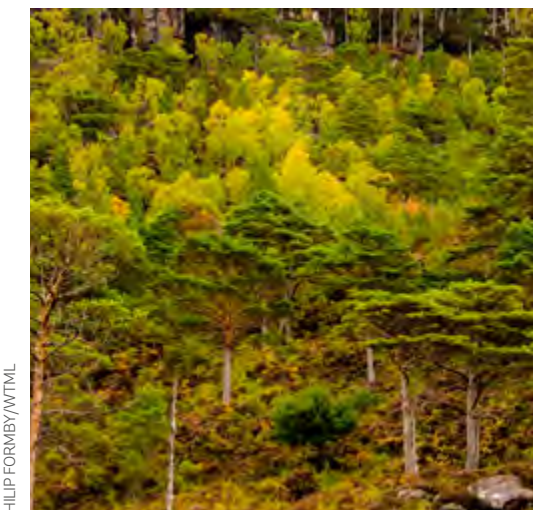
Standing and fallen large-diameter deadwood



Diverse ground flora



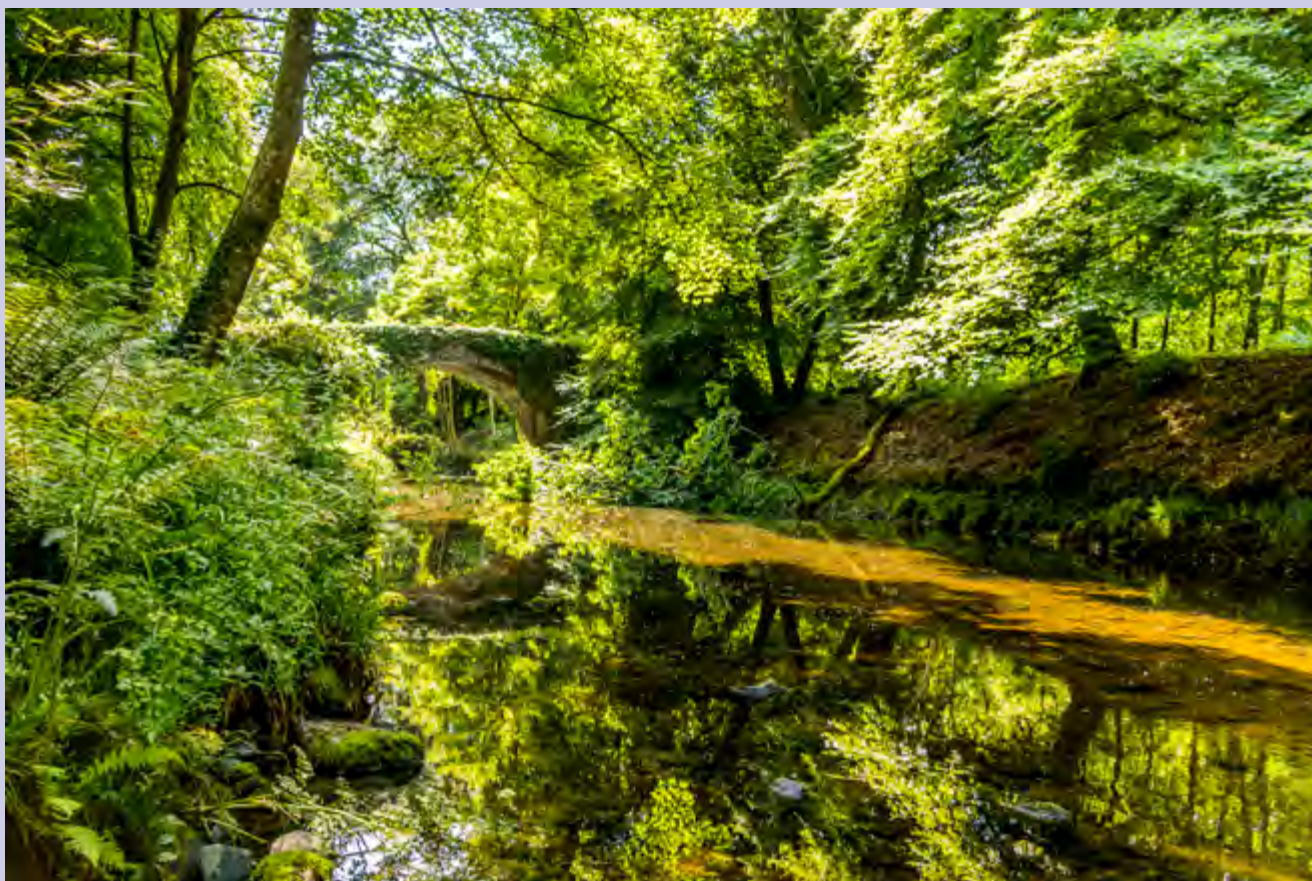
Abundant natural regeneration



Mix of tree species



Open habitats/glades and rides



JILL JENNINGS/WTMU

Mourne Park, Kilkeel, County Down

Case Study

Ancient woodland restoration at Mourne Park

Ancient woodland is one of Northern Ireland's rarest and most diverse habitats, making up just 0.04% of the landscape³⁰. Its formation is a slow process that spans hundreds of years, gradually nurturing the ideal soil conditions within the forest floor to support a complex and thriving ecosystem.

In 2021, the Woodland Trust made significant strides in the preservation of these irreplaceable habitats. Through funding from DAERA, the Garfield Weston Foundation, and gifts in wills, the Trust acquired 156 hectares of the Mourne Park Estate in County Down. Notably, this acquisition included 73 hectares of irreplaceable ancient woodland habitat – securing its protection for generations to come.

However, at Mourne Park the ancient woodland habitat was threatened by invasive non-native plant species, such as rhododendron and laurel, impeding tree regeneration and casting a shadow over the native flora that forms an integral part of ancient woodland biodiversity. The Trust has embarked on a comprehensive conservation management programme dedicated to restoring the woodland to its former glory. Central to this effort is the removal of invasive non-native plant species – an intensive process that aims to restore the woodland's ecological balance. By addressing the encroachment of rhododendron and laurel, the Trust seeks to provide a favourable environment for native species to flourish once again.

The significance of this restoration work extends beyond the woodland itself. By safeguarding species such as the iconic bluebell and delicate wood anemone, it ensures the continued provision of vital resources for woodland butterflies, bees, and hoverflies during the critical early stages of the year.

7. Tree-scale nature recovery



Individual trees and groups of trees outside woods – scattered through the landscape in hedges, fields, churchyards, gardens, parks and housing estates – have a hugely significant, yet unsung role in nature recovery.

Principles for tree-scale nature recovery

- **Ancient and veteran trees should be identified, valued, protected and properly managed**
This can be achieved by ensuring there is a suitable buffer from damaging activity, and by sensitive management. Ancient and veteran trees should be threat-assessed, and action taken where necessary, so they are secured for the long term.
- **Future veteran trees should be identified or established**
This can be done both in and outside woods to ensure the connectivity and continuity of the microhabitats old trees contain.
- **Time is needed to develop old-growth characteristics**
Habitats take time to develop their complement of species and processes. We need to think in 'tree time' in order to give wildlife a chance to recover, and to nurture the ancient trees of the future.

Ancient and veteran trees are living legends, pieces of history, our shared heritage. They've witnessed centuries of change and been part of our landscape for generations. They are of incredible importance for wildlife – supporting different species to those growing in closed-canopy woodland – and each tree is an ecosystem in its own right, providing a range of specialist habitats for animals, plants and fungi. Research published by the UK Centre for Ecology and Hydrology in 2019 revealed the oak's huge significance for biodiversity. Over 2,300 species are dependent on oak (as a tree species) for at least part of their life, 326 of which are only found on oak, and a further 229 species which are rarely found on any species other than oak³¹. The true numbers are likely to be even higher, as they don't include bacteria and other microorganisms.

In habitats such as wood pasture, many species – including fungi, lichens and invertebrates – are in mutually beneficial relationships with veteran trees, particularly the decaying wood they contain. These species need a steady supply of trees of a suitable age if they are not to become locally extinct when the host tree dies. This will mean thinking in tree time and planning management up to 100 years in advance.

Individual trees are subject to development pressures, yet **our oldest and most valuable trees have very little legal protection**. Government policies should protect all of our oldest trees from loss and deterioration, support the management of all old and important trees, and make provision to replace those lost to disease or age. Improvements to Tree Preservation Orders (TPOs) would help to better protect important trees; for example, widening the circumstances when TPOs can be used, raising their profile, and providing better enforcement and stronger deterrents for felling trees with TPOs without permission.

Land management systems should help to support tree owners to **prolong the life of old trees** and the wildlife that relies on them, including actions such as:

- ensuring there are root-protection areas around the base of trees
- keeping deadwood in place
- reducing any threats to the tree from its surroundings
- identifying suitable trees to become the next generation of veteran trees; for example, maintaining mature trees in hedgerows and fields.

8. Data and monitoring

The National Nature Recovery Network for Northern Ireland should be informed by the best available comprehensive national and local data, including both species and habitats, to identify the right local priorities and to map the opportunities for habitat restoration and creation. Full use should be made of the **Ancient Tree Inventory**³² and the **Northern Ireland Ancient Woodland Inventory**³³ (both maintained by the Woodland Trust). These should be supplemented by additional local evidence, including soils, geology, and species data from local record centres.

It is vital that a system of monitoring and evaluation to measure the progress and success of a National Nature Recovery Network is put in place at the outset, and sufficient resources allocated for the long term.

Baseline data should be gathered prior to any intervention, and monitored to ensure the accurate measurement of changes and the impact of conservation activity. Progress for priority species should be monitored, potentially using JNCC's* UK Biodiversity Indicators³⁴. Monitoring should use a simple and repeatable methodology that is standardised across the country, and the Northern Ireland Environment Agency/JNCC/eNGOs should be appropriately resourced to deliver this.

Monitoring the success of wooded habitat restoration using a range of woodland wildlife indicators (e.g. birds, butterflies, and plants) should continue via the UK/JNCC national species-monitoring schemes. This will check that improvements to woodland condition are resulting in wildlife recovery as measured against JNCC's UK Biodiversity Indicators, and recognised as an equally important measure of progress as tree expansion targets.

A regularly monitored and updated National Nature Recovery Network for Northern Ireland, supported by comprehensive data, will help inform land-use policy decisions regarding the role of trees and woods in nature recovery in Northern Ireland.



Citizen scientists in action

BEN LEE/MTML

* Joint Nature Conservation Committee

9. Useful resources

The Woodland Trust can help with identifying priority sites for woodland restoration and the best locations for woodland creation. We can also provide advice and support for the most effective conservation management for ancient woodland and ancient trees, and guidance on woodland creation that supports nature recovery.

Useful resources are available at:

Ancient Woodland Inventory (Northern Ireland) – The Woodland Trust:

arcgis.com/apps/webappviewer/index.html?id=5cea220a4b974bd78016248ce66a5a49

Ancient Tree Inventory – The Woodland Trust:

ati.woodlandtrust.org.uk

How we restore ancient woodland – The Woodland Trust:

woodlandtrust.org.uk/protecting-trees-and-woods/ancient-woodland-restoration/how-we-restore-ancient-woodland/

Ancient and veteran trees: an assessment guide – The Woodland Trust:

woodlandtrust.org.uk/media/51153/ancient-and-veteran-trees-an-assessment-guide.pdf

Woodland creation guide – The Woodland Trust:

woodlandtrust.org.uk/plant-trees/woodland-creation-guide/

Woodland creation – Site assessment handbook – The Woodland Trust:

woodlandtrust.org.uk/publications/2023/04/site-assessment-handbook/

Woodland creation – Tree species handbook – The Woodland Trust:

woodlandtrust.org.uk/publications/2022/03/tree-species-handbook/

State of the UK’s woods and trees 2021 – The Woodland Trust:

woodlandtrust.org.uk/state-of-uk-woods-and-trees/

Trees and Woodland Strategy Toolkit – The Tree Council:

treecouncil.org.uk/what-we-do/science-and-research/tree-strategies

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