Forests for Nature

INFORMATION BOOKLET

COILLTE

Contents

1. About Coillte

Coillte, Ireland's semi-state forestry company, is responsible for managing 440,000 hectares (ha) of primarily forested lands. Coillte balances and delivers the multiple benefits of forests for climate, nature, wood and people. It manages its forests sustainably and in compliance with the certification requirements of the Forest Stewardship Council® (FSC®-C005714) since 2001 and the Programme for the Endorsement for Forest Certification (PEFC (PEFC/17-23-042)) since 2014. Coillte was one of the first forest companies to be PEFC certified in Ireland.

Coillte is the nation's largest forester and producer of certified wood, a natural, renewable and sustainable resource. Coillte is also the largest provider of outdoor recreation in Ireland, and it enhances and restores biodiversity and delivers nature rehabilitation projects across its estate. It also facilitates renewable energy generation and manufacturers panel-board wood products.

Coillte employs over 800 staff and over 1,200 contractors across the country. Its purpose is to manage the state forests on behalf of the people of Ireland. Its mission is to deliver the multiple benefits of its forests for climate, nature, wood and people and its vision is to create a sustainable future for all from its forests.

The financial sustainability of Coillte underpins the balanced delivery of the multiple benefits of forestry.

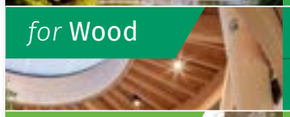
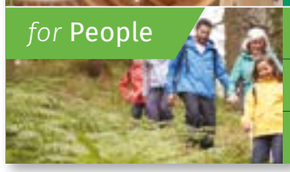
1.1 Coillte's Strategic Vision

Forests have never been more important. They help tackle climate change, supply sustainable wood products to help build homes, provide valuable habitats for wildlife, and offer recreational places for people to enjoy.

In 2022, Coillte outlined a strategic vision for its forest estate aiming to balance and deliver the multiple benefits from its forests, for society, bringing more focus to climate action, biodiversity and recreation, while continuing to deliver for the forest and wood products industry.

Coillte's ambition is to create new forests, manage its existing forests for greater carbon capture and provide more habitats to enhance biodiversity. It will support the creation of new homes by delivering sustainable Irish wood products, and it will increase the number of recreation spaces for everyone to enjoy.

Our strategic vision identifies the following 11 ambitions:

 *for* Climate	1	Enable 100,000 Ha new Forests by 2050
	2	10m tonnes CO_2 store increase by 2050
	3	30,000 Ha Peatland redesigned by 2050
	4	1 Gigawatt Renewable energy by 2030
 *for* Nature	5	30% primarily for Nature by 2025
	6	50% primarily for Nature in long-term
 *for* Wood	7	25 million m^3 timber by 2030
	8	80% timber frame homes by 2050
 *for* People	9	€100m in Visitor destinations by 2030
	10	Doubling Recreation areas to 500
	11	1,200 new jobs in rural communities

In developing our strategic vision ambitions, we identified that forests deliver multiple values that support nine of the UN Sustainable Development Goals. Forests help with climate change mitigation and water and soil protection. They provide homes for nature and wildlife, they provide us with low carbon, sustainable construction products and they are also important for our health and well-being, providing spaces to connect with nature. They also support our rural economy and jobs.

We summarise these forest values and benefits in four main objectives: forests for climate, forests for nature, forests for wood and forests for people as follows:

Forests *for* wood

delivers on the need to provide Irish sustainable wood products to build our homes and support jobs in rural communities nationwide.

Forests *for* climate

relates to the role our forest estate plays in the sinking and storing of carbon and its capacity for wood products to substitute for carbon-intensive materials.

Forests *for* nature

identifies the existing biodiversity within our forest estate and seeks to protect, enhance and restore the ecological values of these areas.

Forests *for* people

focuses on enhancing recreational, social, and wellbeing benefits from Coillte's forests for communities throughout Ireland.

This booklet focuses on Coillte's **Forests for Nature** ambitions and Coillte's work on nature and biodiversity.

2. About Biodiversity

Biodiversity refers to the variety of life on earth, which includes plants, birds, mammals, insects, fungi and microbes, the places they live, the communities they live in and how living things interact with their environment. Biodiversity is life and it supports life on Earth.

Nature everywhere is declining and climate change is causing more frequent and extreme weather events, which is also having an impact on the natural world and people.

In response to these crises, in 2019 the Irish government declared a climate and biodiversity emergency. They published the fourth National Biodiversity Action Plan (NBAP) 2023-2030 with the aim of scaling up biodiversity action in Ireland. In the NBAP, the 2050 Vision for Biodiversity in Ireland is one in which biodiversity 'is valued, conserved, restored and sustainably used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people'. The plan, which has legislative backing, sets out several objectives and actions for nature.

Coillte is contributing to the actions required to help tackle Ireland's biodiversity and climate challenges.

2.1 Biodiversity in the Coillte Estate

The Coillte estate consists of a varied tapestry of different habitats, ranging from forests (conifer, mixed, broadleaf and native forests) to peatlands and uplands (blanket and raised bogs, wet and dry heaths), lakes and rivers. Every part of the Coillte estate is available as habitat for Ireland's wild plants and animals, and therefore has some value for biodiversity.

Biodiversity Areas

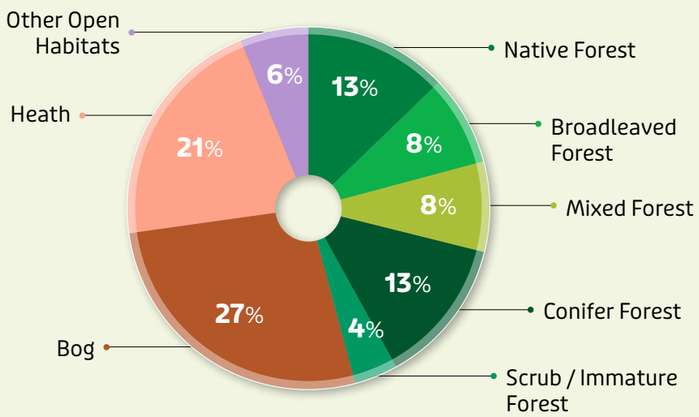
Our approach to conserving nature has been to focus nature management actions on the sites that are most likely to yield the highest potential biodiversity gains. We use science-based ecological assessments to select these sites and map them as biodiversity areas. We also liaise regularly with National Parks and Wildlife Service (NPWS), relevant experts and other stakeholders in relation to the management of biodiversity on the estate.

Biodiversity areas are Coillte lands that are already, or have the potential to become, habitats of special ecological value. These sites, which are mapped by ecologists, vary in size from 2ha to 1,000ha and everything in between. Today, 20% of the Coillte estate is managed primarily for nature and Coillte's ambition is to increase this to 30% by the end of 2025.

Coillte's biodiversity areas vary widely in terms of their ecological value and their management requirements. Some biodiversity areas contain habitats of high nature conservation value that are in excellent condition, while others show potential to develop into more valuable habitats over time. In addition, some biodiversity areas require little or no management, while other areas require active management to either protect or enhance them. We prioritise sites for management through our annual BioForest programme, based on ecological priorities.

The following diagram shows the different types of habitats found in Coillte's Biodiversity Areas.

The different types of habitats found in Coillte's Biodiversity Areas:



Habitat Types in Coillte's Biodiversity Areas:

Habitat Type:	Habitat Description:
Native Forest	Forests where native tree species (including Scots pine) occupy 75% or more of the forest canopy
Broadleaved Forest	Forests with over 80% of the forest canopy composed of non-native broadleaved trees, primarily beech and sycamore
Mixed Forest	Forests with over 20% of the forest canopy composed of conifers and over 20% composed of broadleaves
Conifer Forest	Forests with over 80% of the forest canopy composed of conifers
Scrub / Immature Forest	Small or stunted stands of trees that can be either broadleaves or conifers
Bog	Blanket bog, raised bogs and flushes
Heath	Heaths dominated by dwarf shrubs, heather or bracken
Other Open Habitats	Grasslands, wetlands, rocky habitats (including limestone pavement) and coastal habitats (including dunes)

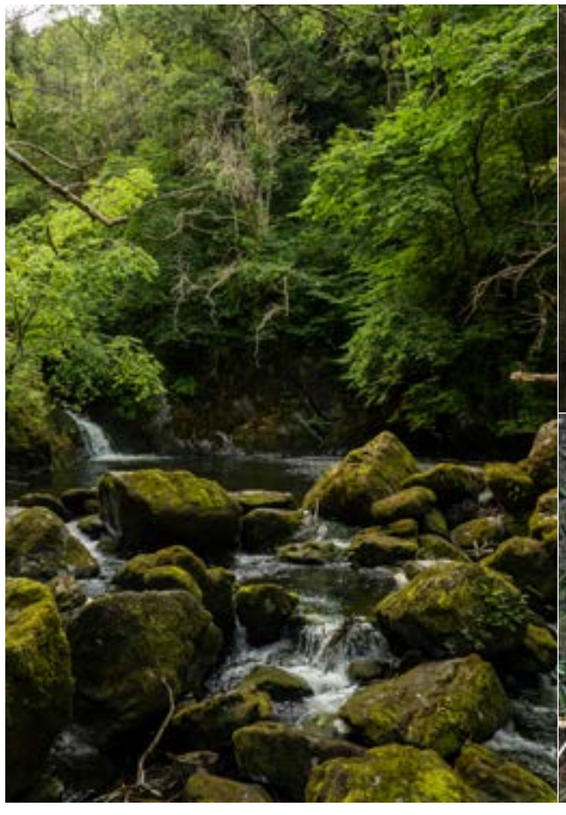
Managing Nature across the Estate: Beyond Biodiversity Areas

Every part of the Coillte estate is available as habitat for nature and wildlife. It is estimated that about 20% of Ireland's plant species, 28% of breeding birds and 50% of invertebrates are forest-dwelling species in the broadest sense, which means that they make use of forest habitats to find food and shelter, and in some cases to breed.

Many of these wild species utilise conifer and mixed forests, particularly in landscapes where native forests do not widely exist. A number of species have benefited from the increase in forest cover in Ireland during the 20th century for example the pine marten and red squirrel, while species such as the woodpecker have also returned.

This means that a range of native plants and animals live in forests managed primarily for wood production or recreation, not just in areas managed primarily for biodiversity. Across the whole Coillte estate, including the lands outside of Coillte's biodiversity areas, measures to conserve species and protect important biodiversity features are incorporated into a wide range of best practice guidelines that are implemented in the day-to-day operations.

Examples of these measures include: retaining deadwood, safeguarding features associated with rare and protected species, such as badger *(Meles meles)* setts and wood ant *(Formica lugubris)* nests, and protecting watercourses and riparian buffers. Coillte's main forestry operations such as tree felling and replanting, forest road building and afforestation are conducted under licence from the Department of Agriculture, Food and the Marine (DAFM). A key component of the licence process is a detailed ecological assessment undertaken by professional ecologists to ensure the planned operations are compatible with locally important habitats and species. Coillte regularly engages with NPWS and other agencies regarding the protection of species that live in our forests.



2.2 Threats to Biodiversity

There are several specific threats to biodiversity in Ireland that can negatively impact habitat quality and the species that inhabit them.

Invasive Species: One of the main threats to biodiversity in Ireland is from the spread of invasive species because they can push out native species and alter ecosystem function. The two main invasive species found on the Coillte estate are rhododendron and cherry laurel, but there are others including Japanese knotweed and giant rhubarb, and animal species such as deer and grey squirrel. Invasive species control is ongoing in many biodiversity areas across the estate, guided by plans developed by ecologists to ensure the approach is strategic and effective.

Overgrazing: Overgrazing of forest and open habitats by browsing animals such as deer also represents a major threat to Irish biodiversity. Without any natural predators, deer numbers can rise in local areas to unsustainably high levels. Large amounts of deer browsing prevents natural regeneration of trees and can have a negative impact on forest flora.

Climate Change: Adaptation to climate change is also likely to become a major pressure on our forests and biodiversity areas. As temperatures and rainfall increases and storm events become more common, it will be important for us to ensure that our forests and habitats are resilient to these changes.

Legacy Challenges: There are also some legacy challenges arising from previous national afforestation policies. As science and our understanding evolved, these policies have been updated and changed. However, at some locations, forests were planted on habitats of ecological value. As part of the ongoing mapping of biodiversity areas, Coillte has identified sites where the ecological characteristics of the former habitat are still present, and where restoration will provide a positive benefit for nature. Other legacy forests were planted before the current range of environmental guidelines and protections were put in place, which now require careful management.

3. Coillte's 'Forests for Nature' Strategic Ambitions

Coillte is committed to balancing and delivering the multiple benefits of forests for climate, nature, wood and people.

We currently manage 90,000ha of the estate primarily for biodiversity. Our 'Forests for Nature' strategy will see us using our BioClass and BioForest programmes to dedicate an additional 10% of our lands to be managed primarily for biodiversity by the end of 2025, bringing the total to over 134,000ha of forests and lands.

Delivering multiple benefits from forests requires a balanced approach. In certain forests, e.g. productive conifer forests, the main objective of wood production is quite apparent, while in other cases, e.g. native forests, an objective of nature conservation and biodiversity is more appropriate. However, certain forests require management decisions to be made and there can be trade-offs required. For example, the forests in the Dublin Mountains were planted primarily to produce wood, but due to increasing recreational visitor numbers, a decision was taken to change the primary objective from forests for wood to forests for people. In striking the right balance for the entire Coillte forest estate, it is important to safeguard future wood production targets while also delivering on climate, nature and people objectives.

Coillte's Forests for Nature Ambitions:

- **Enhance and restore biodiversity by increasing the area of our estate managed primarily for nature from 20% to 30% by the end of 2025.**
- **Transform areas of our forests so that 50% of our estate is managed primarily for nature in the long-term.**

Increasing the area of the Coillte estate managed primarily for nature to 30% by the end of 2025 will be achieved by identifying areas of existing biodiversity value on our estate which can be protected and enhanced. Ecologists identify these areas, and working closely with foresters, develop management plans to improve the overall biodiversity values.

In the longer term, Coillte aims to grow the area of its estate managed primarily for nature to 50% by targeting specific forests which may have been originally planted primarily for wood production but are now more suited to delivering other primary management objectives. These legacy forests offer an opportunity for redesign to improve biodiversity and create new improved habitats in the future.

The delivery of Coillte's ambitions will see more forests managed for climate and nature than ever before, greater number of recreational forests while also delivering and safeguarding a future supply of sustainably grown, certified Irish wood and wood products, supporting rural jobs and growing an Irish bioeconomy.

4. Measuring & Monitoring Biodiversity – Coillte's BioClass System

What is BioClass?

BioClass was developed by Coillte in 2015 as a science-based procedure for assessing the ecological value of sites on the Coillte estate and identifying the most valuable as biodiversity areas. This procedure categorises biodiversity areas into four classes, ranging from BioClass 1, the areas of highest ecological value, to BioClass 4, areas that currently have moderate value but show some potential to develop into more valuable habitats.

In general, sites that most closely resemble natural habitats have the highest value for biodiversity. Based on a review of biodiversity indicators that were identified in national research on biodiversity in Irish forests (Smith et al., 2008), we have worked with experienced consultant ecologists to define "naturalness" in terms of a series of natural values and biodiversity features.

Natural values are indicators of biodiversity, for example, in forests, characteristics that are likely to be associated with higher biodiversity include a multi-layered forest structure, long history of forest cover and abundance of native trees.

Biodiversity features are microhabitats that benefit one or more groups of species, such as veteran trees, large diameter deadwood and small wetlands (springs or flushes) or rocky outcrops in the forest.

Coillte ecologists use the BioClass system to assess the presence of natural values and biodiversity features present in forests, bogs and other open habitats, based on a set of defined criteria. The total score based on these values determines the BioClass rank of the site being assessed.

The main benefits of this system are:

- it is evidence-based and based on national research
- it highlights sites of very high ecological value
- its ability to evaluate all types of forests (including native forests, mixed forests and conifer forests) using the same, objective criteria
- it can be integrated into Coillte's mainstream forest inventory and planning systems

This approach enables Coillte to prioritise areas for proactive nature conservation management, targeting available resources at sites that will yield the highest benefits for biodiversity through an annual improvement programme of work referred to as BioForest.

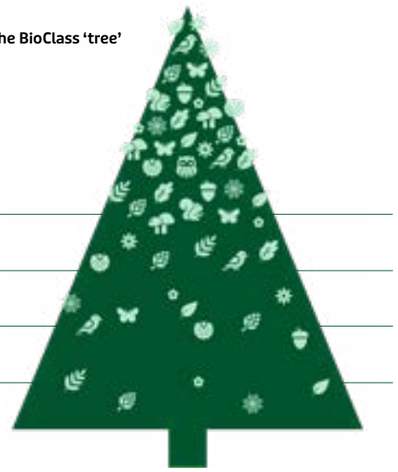
BioClass

Forests and other habitats *of* ...

1. **Outstanding ecological value**
2. **High ecological value**
3. **Good ecological value**
4. **Moderate ecological value**

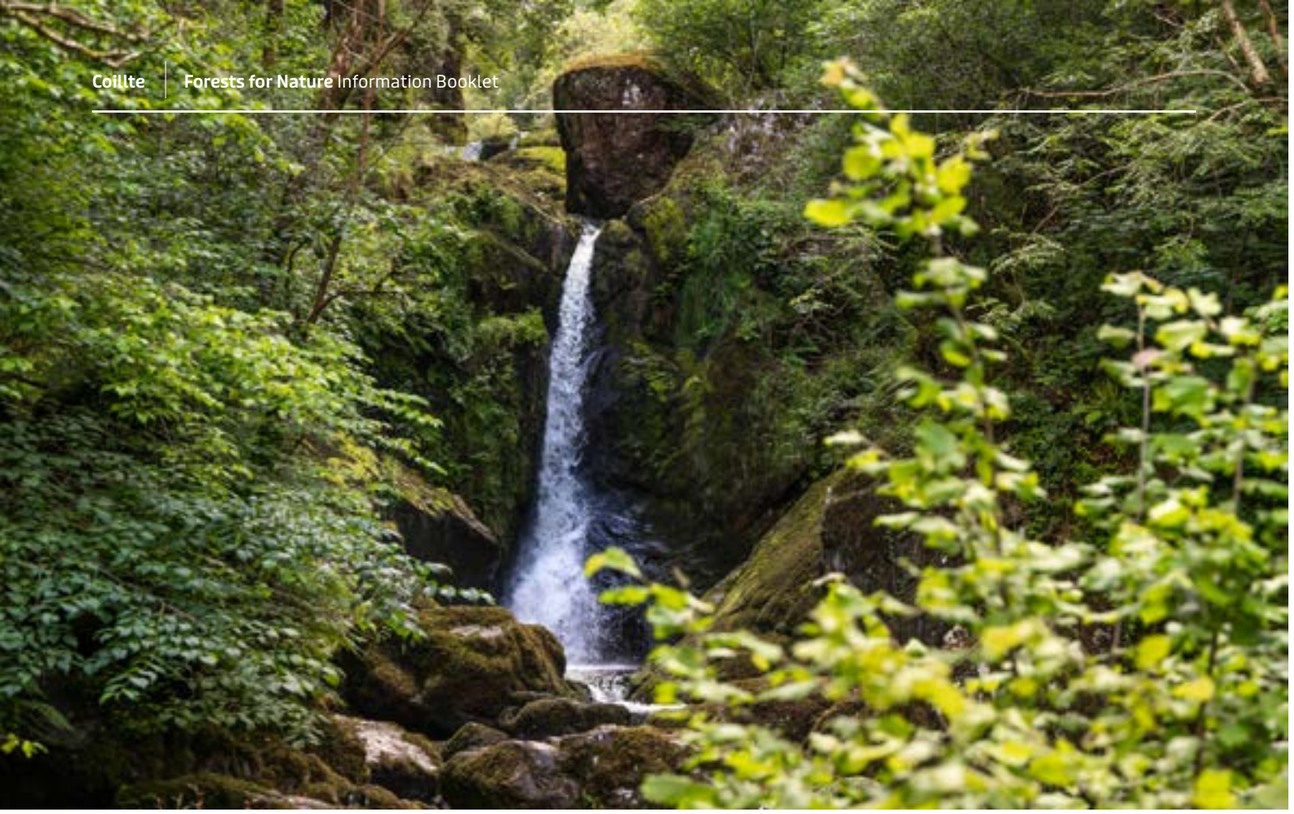
Biodiversity features and natural values:

The BioClass 'tree'



Scoring Criteria for Forest Habitats	
Biodiversity Features	
Veteran trees	Very large, old trees of any species. Veteran trees, especially those with lots of nooks and crannies can support a wealth of wildlife.
Dead wood	Standing or fallen dead stems/branches
Wet 'micro-habitats'	Springs or flushes within the forest supporting native wetland vegetation
Rocky 'micro-habitats'	Rocky ravines, cliffs, large rock outcrops or large boulders
Open space	Well-lit, discrete, open habitats within the forest
Natural Values	
Size of forest	Larger areas of permanent canopy cover have better ecological value
Age of forest stand	Average age of the standing trees
Adjacent habitat	Presence of habitats of ecological value such as heath, wetland or natural grassland beside the forest
Oceanic climate	Located in the western counties
Native trees in canopy	Proportion of forest canopy made up of native trees, such as oak or birch
Natural regeneration of native trees and shrubs	Abundance of naturally occurring saplings and seedlings of native trees and shrubs in the forest
Habitat rarity	Presence of rare native forest habitat
Size range of trees	Trees of different sizes are present, from saplings to large old trees
Vertical stand structure	Presence of good ground flora, shrub layer, subcanopy and canopy
Forest ground flora	Good cover of ground vegetation, comprising typical forest plants
Old woodland characteristics	Appears on historic maps and presence of features such as large old stumps and coppiced trees

Scoring Criteria for Bogs	
Peat depth	Peat >1.5m deep, usually on flat or very gently sloping ground
Surface topography	Surface wet and quaking, presence of features such as pool systems, hummock/hollow patterning and wet, quaking, vegetated flats
Vegetation	Good cover of typical bog plants, particularly Sphagnum mosses
Connection to designated peatland habitats	Within or adjacent to blanket bog or raised bog designated as SAC or NHA
Hydrological connectivity	Same hydrological unit as adjacent designated bog



Using BioClass to increase the area of Coillte lands managed primarily for nature from 20% to 30%

To deliver on our ambition to increase the area managed primarily for nature from 20% (90,000ha) to 30% (134,000ha) by 2025, we first identified sites of highest ecological value and selected these as new biodiversity areas. The identification of new biodiversity areas is led by Coillte's ecology team.

As a first step in this process, the estate was characterised into five broad themes, to ensure that the full range of habitat types are represented in our new biodiversity areas. A range of spatial data sources relevant to each theme were analysed, to assess the biodiversity resource across the estate.

This data analysis exercise fed into a model that balanced the multiple benefits of forests through the objectives of climate, nature, wood and people. The model determined that an additional 10% of the estate (c. 44,000ha of land), could potentially be managed primarily for nature, bringing the area managed for biodiversity up from 20% to 30% (c. 134,000ha in total).

The model also identified the location of these potential new biodiversity areas on the estate. All of these areas are then assessed in the field by a team of experienced ecologists using the Coillte BioClass system and are ranked for their biodiversity values.

In addition, the model identified legacy areas of our estate where, through a programme of redesign, we can create new habitats in the long-term, increase the resilience of the forests and improve carbon storage.

Nature Themes on the Coillte Estate:

Forests

>20% canopy cover including conifer forest, mixed forest, broadleaved forest, and native forest.



Uplands

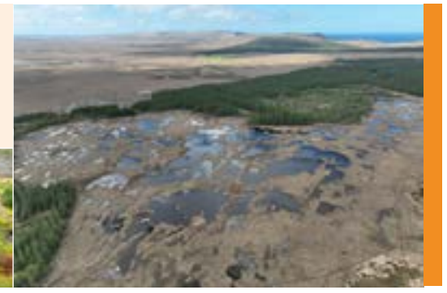
Land >150m above sea level, ranging from conifer plantation forest to open heath, and blanket bog.



Peatlands

Land <150m above sea level, on deep peat soils and includes habitats such as lowland blanket bog, raised bog, cutover bog and conifer plantation on deep peat.





Water

Highly sensitive catchments, for example freshwater pearl mussel catchments and high-status waterbodies.



Rare Species & Habitats

Rare Species (e.g. lesser horseshoe bat), Rare Habitats (e.g. limestone pavement)



Focus on **Forests**

Forests with a long history of forest cover are often more species-rich (above and below ground) than forests of recent origin, and hence are potentially of higher nature conservation value.

As a step towards identifying forests with best value for nature, Coillte has mapped old woodland sites on its estate. These are sites that have been apparently forested since the 1830's, when the earliest Ordnance Survey maps were prepared. Old woodland sites account for approximately 6% of the total area of the Coillte estate.

Some old woodland sites have an even longer history of forest cover that stretches back earlier to the mid-1600's, and these are termed "ancient forest sites". A pilot inventory of ancient forests in Ireland was produced by NPWS in 2011.

Old woodland sites and ancient forest sites are very variable in character today in terms of the type of forest cover they support and their ecological value. All have been strongly influenced by human activity, but some have retained their ecological value despite changes in forest cover and type, and it is important that these forests are identified and managed for nature within our biodiversity areas.

All old woodland sites and ancient forest sites on the Coillte estate, that are not already mapped as biodiversity areas, were included as potential biodiversity areas and are being assessed by ecologists using the BioClass system. Forests are selected as biodiversity areas based on their character and the quality of natural values present, for example ground flora, diverse stand structure and presence of rare native forest habitats.

Focus on **Uplands**

Much of the Coillte estate lies in the uplands and can include a wide range of habitats such as peatlands (upland blanket bog, wet and dry heath), semi-natural grassland, scrub and peatland forest.

Several rare and threatened birds occur in the uplands, including hen harrier and merlin, as well as habitats of conservation interest. The selection of new biodiversity areas in the uplands focuses on expanding open habitats in designated Special Areas of Conservation (SACs) and also improving the habitat conditions for protected species such as hen harrier and merlin.

Focus on **Peatlands**

Not all of the Coillte estate is forested. Peatland habitats present on the estate include lowland blanket bog, raised bog, wet and dry heath, as well as peatland forests. Most of the open peatland within the Coillte estate is already mapped and protected as biodiversity areas.

The selection of new biodiversity areas focuses on forested peatlands that have ecological value and good restoration potential. For example, these include sites that have been minimally modified and are adjacent to sites designated as SAC or Natural Heritage Area (NHA) for bog habitats. These sites are high priority to include in the new biodiversity areas.

Coillte over the years has also completed a number of successful EU LIFE Nature peatland restoration projects restoring important blanket and raised bog habitats. Management of the newly identified peatland biodiversity areas will aim to continue this work.

Focus on **Water**

Watercourses and lakes are plentiful across the Coillte estate, but some Coillte properties are situated in catchments that support highly sensitive aquatic species such as freshwater pearl mussel. When identifying new biodiversity areas, the focus is on identifying areas that could be managed to enhance water quality and aquatic habitats in sensitive catchments.

Focus on **Rare Species & Habitats**

As well as managing habitats in our biodiversity areas to enhance their ecological value, we also enhance habitats for forest-dwelling species of nature conservation importance in key locations. One example is the lesser horseshoe bat (see case study on page 23).

5. Enhancing & Restoring Biodiversity – Coillte's BioForest Programme

Each year, Coillte selects biodiversity areas for proactive nature conservation management, targeting available resources at sites that will yield the highest benefits for biodiversity through an annual improvement programme of work referred to as BioForest.

For selected biodiversity areas, site-specific ecological management plans are developed and implemented by Coillte's ecologists and foresters. The plans ensure that nature conservation objectives are considered and reviewed in the light of silvicultural practice and site conditions. Based on their assessment of site characteristics, the ecologists identify the management goals (including target habitat) for the site and the foresters propose a set of management actions. The process produces a practical, multi-annual plan that will deliver the best outcome for nature.

Careful site selection is essential to ensure that our most ecologically sensitive habitats and biodiversity areas within the Coillte estate are enhanced and restored. Good planning is key to ensure that biodiversity management is effective, efficient and has a long-lasting positive impact. Sites are selected for biodiversity management based on their ecological value (BioClass) and the nature of the management required (type, scale and urgency), as identified in biodiversity plans. Priorities for biodiversity management are also informed by monitoring reports and input from Coillte's management teams who regularly liaise with stakeholders and partners including NPWS, Inland Fisheries Ireland (IFI) and members of the public or community groups.

Management actions for nature include controlling invasive species, restoring hydrological regimes (bogs) and implementing close-to-nature forest management practices such as Continuous Cover Forestry (CCF) plus species-focussed habitat restoration and enhancement projects and habitat monitoring.

Many forests in Ireland are even-aged with uniform stand structure, including some broadleaved and native forests. A close-to-nature approach to forest management provides an opportunity to improve forest structure (through selectively thinning the forest) which in turn has benefits for nature and wildlife by diversifying the habitat. This approach, which is referred to as continuous cover forestry (CCF), also provides an opportunity to achieve biodiversity management goals such as gradually transitioning the forest from its current forest type (e.g. forest comprised mostly of beech trees of similar age and size) into a more biodiverse forest (e.g. mixed forest with beech, oak and Scots pine trees of different sizes).

Management actions are also informed by training days and knowledge exchange between foresters, ecologists and contractors to grow expertise in the implementation of practical field biodiversity management techniques. On site information days hosted by Coillte's ecological teams alongside consultant ecologists and foresters as well as contractors, helps facilitate the implementation of biodiversity management techniques and promotes the delivery of best practice approaches in the field.

6. Nature Restoration Projects
Case Studies

The following six case studies demonstrate Coillte's approach to managing forests (and other habitats) for nature.

6.1 Forest Case Study – (i) First Case Study
Glenart, Co. Wicklow

Coillte's Glenart biodiversity area is a beautiful mixed forest located near Arklow in south Co. Wicklow. It was selected for biodiversity enhancement because it is located on a possible ancient forest site. Ancient forest sites in Ireland are rare and therefore are of particular nature conservation value. There is evidence of forest cover in Glenart since the 1600s. Sites with a long history of forest cover tend to support higher levels of biodiversity, including rare species and woodland specialists (species that only occur in woodlands), as compared with woodlands of more recent origin. Their soils can also be important reservoirs of carbon.

The forest in Glenart is largely dominated by mature oak and Norway spruce with some Scots pine, ash, birch, European larch, beech and grey willow. There is an understory of holly and hazel in parts. The ground flora is typical of native oak forests on acidic bedrock, and includes great wood-rush, bilberry and ling heather.

The main issue in Glenart is that the forest is relatively even-aged i.e. most of the trees in the canopy are approximately the same age. The forest doesn't have the multi-layered structure that is found in natural forests. While there are lots of mature trees in Glenart, there are few saplings and young trees to renew the canopy when gaps form as trees die or are blown over. There are also few big, old, veteran trees, which are rare, but important because they can support a multitude of species (small mammals, birds, insects, fungi) above and below ground, and are very important for the ecological functioning of forests. Deadwood is also not abundant in Glenart. Deadwood is a hugely important part of the forest ecosystem because it is part of the nutrient recycling system, and deadwood in various forms of decay can support a myriad of insects, fungi and bacteria.

A close to nature approach is being adopted in the management of the forest in the Glenart biodiversity area. The aim is to gradually transform the forest over time to a multi-aged and layered diverse forest that is regenerating naturally, has plenty of veteran trees and abundant deadwood.

The silvicultural system adopted is called Continuous Cover Forestry (CCF). Individual trees are removed periodically to create gaps and to allow light to reach the forest floor, while retaining a permanent forest cover. Gaps created by periodically thinning out trees provides the conditions required for tree seedlings to emerge. Some trees are identified as future veterans and are protected. Standing and fallen deadwood is created to provide new microhabitats to support biodiversity.

The first CCF thinning took place in Glenart in 2023 and the next is likely to happen in 2030.

The benefit of a CCF approach to managing sites such as Glenart is that the forest ecosystem is protected and enhanced. The ecological value of the forest will increase over time as it is restructured to a multi-layered forest with a wide range of microhabitats to support a range of species. The forest will be able to regenerate naturally as light gaps are created thus reducing the interventions required.




6.1 Forest Case Study – (ii) Second Case Study
Hazelwood Forest Restoration Co. Sligo

Hazelwood forest is situated on the western shores of Lough Gill and the Garavogue River, close to Sligo town. It dates back to at least the 1650s and sites with a long history of forest cover tend to support higher levels of biodiversity, including rare species and woodland specialists, and so this fact adds significantly to the uniqueness of Hazelwood.

There are two different types of forest habitat present in Hazelwood: 1) **alluvial forest** in the northern half of the forest and 2) **mixed broadleaf/conifer forest** to the south.

Alluvial forests are situated on floodplains of rivers, and they have a unique ecology because they flood regularly when river water levels rise. Hazelwood, is in a highly natural state, making it one of the most significant remaining alluvial forests in Ireland, if not in Europe. As a result, Hazelwood is mapped as a Coillte biodiversity area, prioritised for biodiversity enhancement. It is also included in the Lough Gill Special Area of Conservation (SAC).

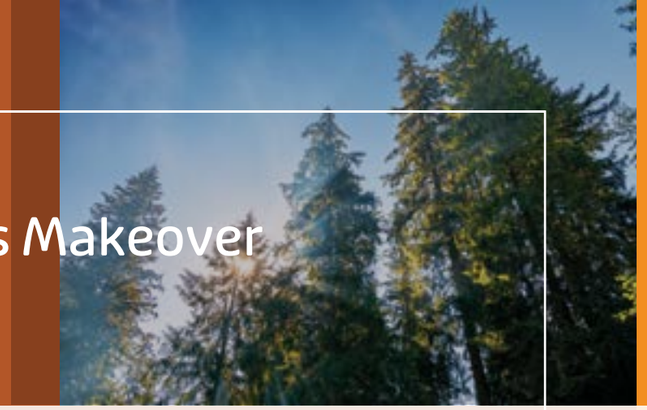
The **alluvial forest at Hazelwood** is dominated by willow, alder, ash, birch, aspen, spindle and oak. The ground flora is species-rich and includes meadowsweet, marsh marigold, flag iris and sedges.

From an ecological perspective, the main issue at Hazelwood was that large portions of the forest were covered with dense stands of invasive shrubs – rhododendron and cherry laurel. Dense growth of these shrubs completely suppresses the native forest vegetation.

Between 2005-2009 Coillte restored 25ha of the alluvial forest as part of a major restoration project funded by the EU LIFE Nature fund. The rhododendron was removed from the wettest part of the alluvial forest, and the native forest vegetation has since regenerated very well. Since 2009, Coillte has removed a further 43ha of invasive species (cherry laurel and rhododendron) from this high-quality forest habitat, enabling regeneration. A wonderful array of native flowers are reappearing, particularly marsh marigold, wood anemone and bluebells; along with young tree seedlings of willow, aspen, and birch which are emerging in the wetter areas, while on drier soils species such as oak, holly and hazel are present.

In the southern part of Hazelwood, the main ecological issue to be addressed was that the **mixed forest** is relatively even-aged, which means that most of the trees in the canopy are approximately the same age. The management objective here is to enhance the biodiversity value of the forest by using Continuous Cover Forestry principles.

In 2025, Coillte was proud to receive the RDS Forestry Award for Native Woodland Conservation for the ecological restoration works at Hazelwood. As a result of the forest restoration works, the condition of the alluvial forest habitat will improve over time. Regeneration of native flora, trees and shrubs is starting to occur, and the species and structural diversity of the wider forest is being improved. This will ensure that the forest will thrive and sustain itself in the future for everyone to enjoy.



6.2 Uplands Case Study – Dublin Mountains Makeover

The Dublin Mountain forests are among Coillte's most popular forest recreational sites and provide a growing urban population with a wonderful place to experience nature. To accommodate the increasing amenity use of these forests, Coillte took the decision to transform its management approach in these uplands, from one of primarily wood production, to one of recreation and nature conservation in a way that will also benefit the forest and open habitats present.

The objective of the Dublin Mountains Makeover project is to gradually transform 700ha of nine Coillte forests to improve habitats for wildlife, enrich the forest's recreational appeal for people, improve the wider landscape's aesthetic value and make it more resilient to climate change.

The management approach is to manage these forests under Continuous Cover Forestry (CCF) principles, which maintains a permanent forest canopy and gradually transforms the forests into multi-generational, more diverse forests in terms of species, age and structure. To implement CCF, the forests are carefully thinned, which means that individual trees are selected and removed to create gaps and to allow light to reach the forest floor, while retaining permanent forest cover. Over time, this will improve the structure and diversity of these forests, which in turn will increase their habitat value for plants and animals.

At some locations, the forest is being converted to native forest, by removing the conifer trees and replanting with native species such as Scots pine, birch, rowan, oak, holly and willow. These species will also appear in the CCF managed forests over time.

Since the commencement of the project in 2020, CCF management has been initiated on 190 ha of the Dublin Mountains forests. A further 60ha have been replanted with a mix of native trees and shrubs.

At higher altitudes, the Coillte properties include almost 200ha of open habitats: wet heath, dry heath and small areas of blanket bog. These habitats are also being protected and enhanced.

The delivery of the project is further enhanced through close collaboration with the Dublin Mountains Partnership (DMP)* thereby working together to protect the resource and enhance the recreation experience and partner with the key stakeholders in the area. The Dublin Mountains Makeover project will continue for many decades, delivered in a way that minimises disruption to local residents and visitors, while locking in the benefits for nature, recreation and the landscape that will be enjoyed by generations to come.

* The DMP aims to provide and manage sustainable recreation in the Dublin Mountains. Partners include Coillte, NPWS, Dún Laoghaire Rathdown County Council, South Dublin County Council, Dublin City Council and the Dublin Mountains Initiative (DMI), an umbrella group representing the interests of recreation users of the Dublin Mountains.

6.3 Peatlands Case Study – Aghrane Bog, Co. Galway

Aghrane (also known as Aughrim Bog) is a raised bog in north-east Galway. This biodiversity area was selected for bog restoration because it is designated as a Special Area of Conservation (SAC). The site is therefore of international nature conservation significance.

Raised bogs are dome-shaped peatlands that occupy former lakes in the landscape. Most started to form at the end of the last ice age about 10,000 years ago and many contain deep deposits of peat of up to 12m.

The main source of water and nutrients in raised bogs is from rainfall. As a result, the peat is very nutrient poor, as well as being waterlogged. The vegetation is dominated by Sphagnum mosses (which acidify their environment), sedges and heathers, all of which are adapted to the wet and acidic conditions.

Raised bogs tend to contain a mosaic of peatland microhabitats including heathery hummocks, hollows with lawns of Sphagnum moss and bog cotton, and bog pools.

Aghrane (Aughrim) bog is one of the largest raised bogs in Co. Galway. It was originally restored in the mid-2000s as part of a Coillte EU LIFE Nature project when productive conifer trees were removed, invasive species were controlled, and drains were blocked.

In the period between 2022-2025, enhanced restoration measures have been implemented, in collaboration with NPWS, in order to build on the restoration works completed to date and to apply new restoration techniques.

These measures aim to raise the water table further to support the development of raised bog habitats and to promote active bog growth.

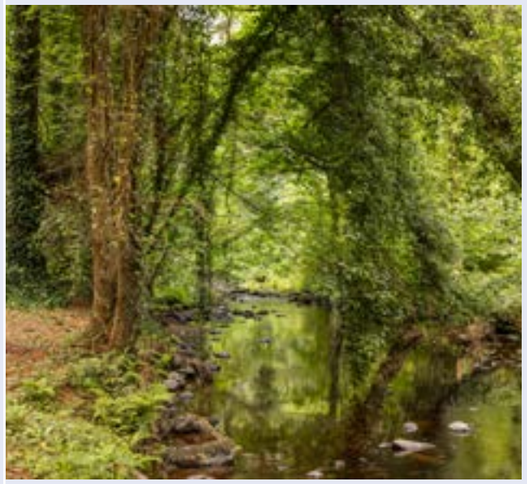
Drains were blocked in the bog with a mixture of peat and plastic dams, in order to pool the water and maintain a high-water table on the bog.

NPWS have been monitoring the area of 'active bog' on the site, which means areas of bog that support peat-forming vegetation such as bog mosses and sedges, and this area has expanded by 20% since 2018, which is a very positive result for biodiversity and for carbon capture in this important habitat for nature.

6.4 Water Case Study – Devil's Glen, Glanmore, Co. Wicklow

Coillte's Devil's Glen forest is a beautiful **mixed forest** occupying a steep river valley near Ashford, Co. Wicklow. Approximately 135 ha of the forest at Devil's Glen was selected by Coillte as a biodiversity area because it is a large old woodland site with a long history of forest cover that has retained features of natural forests. There is evidence that broadleaved forest cover has been present at Devil's Glen since the 1600s. and therefore it is considered an ancient forest site and consequently has a high biodiversity value.

There are special features at Devil's Glen that add to its ecological value. The forest is bisected by a rocky gorge up to 100m deep, through which the Vartry river flows. It supports a range of salmonid fish species, especially sea trout *(Salmo trutta trutta)* and a small population of Atlantic salmon *(Salmo salar)*, as well as river lamprey *(Lampetra fluviatilis)*.



The predominant forest type at Devil's Glen is mixed forest including conifer trees such as Douglas fir and Scots pine, and broadleaf trees including sessile oak, beech, sycamore, sweet chestnut, birch and rowan. There is an understorey of holly and hazel in parts. Along the Vartry River is approx. 14ha of native forest, where the forest canopy is dominated by sessile oak, birch and rowan (or mountain ash).

Throughout the forest, a good ground flora of typical woodland forest plants can be seen. Woody shrubs such as bilberry (or frachan) and ling heather are plentiful, also ferns (including hard fern, polypody and broad buckler fern) and flowering plants such as great wood-rush, sorrel and a carpet of mosses. In spring, the bluebell, wild garlic and wood anemone produce a colourful display. A particularly unusual plant present at Devil's Glen is the toothwort *(Lathraea squamaria)*, a parasitic plant that taps into the roots of trees for its nourishment. It is a forest specialist species and tends to occur in forests that have a long history of forest cover.

From an ecologicial perspective, the main issue at Devil's Glen was the dense growth of the invasive species cherry laurel and rhododendron in the forest, which extended to an area of about 11ha, mostly around the car park and along the Vartry River. One of the main management objectives was to remove both of these invasive species because these shrubs form dense and dark growth that completely suppresses the forest flora and prevents natural regeneration of trees and shrubs. In 2023/24, most of the dense cherry laurel was treated (8ha) and the remainder is due to be addressed in the near future. In the coming years, the natural vegetation will start to reappear, and a good forest flora will become more visible.

In partnership with Inland Fisheries Ireland, Coillte introduced a further objective, which is to create additional spawning areas for salmonids in the Vartry River, which are restricted due to the dam located upstream at the Roundwood reservoir. These works commenced in 2024 on a 1.5 km stretch of the river, and five new sea trout spawning areas (redds) resulted during the spawning season. The operations comprised of placing felled trees in the river, which creates leaky dams that restrict water flow, and placing gravel upstream of the secured trees to provide new spawning bed habitats.

6.5 Rare Species Case Study – Lesser horseshoe bat at Rossacroo, Co. Kerry

The lesser horseshoe bat *(Rhinolophus hipposideros)* is Ireland's rarest bat species. It is primarily found in the western parts of the country, in counties Cork, Kerry, Limerick, Clare, Galway, and Mayo. The reason for this may be that these counties experience a milder climate with rare frosts, which seems to favour the bats. They favour habitats with trees: forests, scrub, hedgerows and treelines. They roost in old buildings or caves surrounded by trees or hedgerows.

Coillte has a very positive contribution to make in the long-term conservation of this species, being the custodians of numerous lesser horseshoe bat roosts, including several Special Area of Conservation (SAC) designated roosts, and large tracts of supporting forest habitat surrounding roosts.

Rossacroo is one of many Coillte properties that support internationally important SAC populations of lesser horseshoe bat. An old, derelict cottage located within Rossaacroo forest is used by the bats as a maternity roost in the summer months, but some repairs were needed to maintain the roost in a suitable condition.

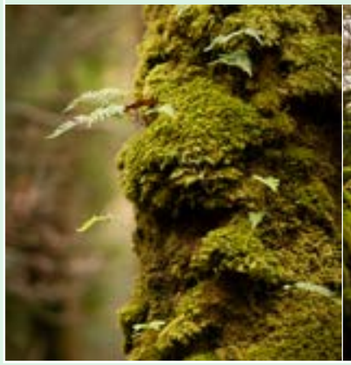
In winter 2022/23, the roost enhancement works were completed, including replacing the existing corrugated roof with a natural slate roof, removing the chimney, reinforcing the walls and managing vegetation. The objective of these improvements, which were jointly funded by Coillte and NPWS, was to create ideal roosting conditions for the species and to boost bat numbers.

Subsequent monitoring by NPWS recorded an increase in the numbers of bats roosting in the building, from just 37 bats in 2022 to over 100 bats in 2024 and more than 150 bats in 2025, moving this site to "favourable conservation status", a significant achievement for the protection of this bat species in Ireland.

Together with NPWS, we are actively exploring possibilities for roost enhancements at other Coillte properties, such as Dromore, Co. Kerry and Brackloon Wood, Co. Mayo. And we are partners in a major project called the Moorehall Masterplan, which is led by Mayo County Council, in partnership with NPWS. The aim of the Masterplan is to protect the natural built and cultural heritage through the development of a nature reserve which will, amongst many things, maintain a world class habitat for the lesser horseshoe bat.

Maintenance and enhancement of roosts is a significant component of the national Species Action Plan (SAP) for lesser horseshoe bat, which was developed by NPWS in 2022. Implementation of the SAP for lesser horseshoe bat requires co-operation across a broad range of stakeholder organisations, such as DAFM's Forestry & Agriculture Divisions, the Heritage Council, Vincent Wildlife Trust, Bat Conservation Ireland, Transport Infrastructure Ireland and Local Authorities. Coillte participates in implementing the SAP through a Steering Group hosted by NPWS.

Coillte's contributions, through roost maintenance works and careful forest management are vital to the long-term conservation of the species.



7. Doing More for Nature

Coillte's BioClass and BioForest programmes will contribute significantly to the protection and enhancement of biodiversity in Ireland. However, there is more that can be done. Working strategically with key partners and developing common understanding and shared approaches can lead to increased efficiencies and stronger delivery.

In September 2024, NPWS and Coillte signed a Memorandum of Understanding (MOU) establishing a framework for greater partnership and collaboration for the delivery of nature conservation projects and the management of the respective estates of both organisations.

Through greater collaboration and the alignment of shared objectives for nature, NPWS and Coillte can deliver positive conservation projects aimed at protecting, enhancing and restoring important ecosystems. Priority actions include the co-design and co-delivery of conservation measures through agreed site action plans, with a focus on protected habitats such as raised and blanket bog, heaths and wetlands, lakes and rivers, and for threatened species such as freshwater pearl mussel, hen harrier, merlin and breeding waders.

More recently, in April 2025, Coillte and Inland Fisheries Ireland (IFI), the state environment agency for inland fisheries and sea angling resources, signed a Memorandum of Understanding to deepen the relationship between the two organisations, aiming to deliver greater environmental protection and nature restoration projects.

The agreement reflects the evolution of the existing relationship between both Coillte and IFI and works to deliver conservation projects aimed at protecting, enhancing, and restoring important ecosystems across Coillte's forestry estate and Ireland's inland waterways.

The MOU establishes the basis for collaborative working to maintain a network of technical and operational managers; exchange data and advice relating to the management of ecosystems; and promote scientific and technical cooperation through commissioning mutually beneficial research projects.

IFI and Coillte will also endeavour to work together on nature restoration projects to facilitate and support improved sustainability, with particular emphasis on restoring riparian corridors within the Coillte estate to increase climate resilience, improve habitat for fish and remove barriers to the free passage of fish and other aquatic fauna.

This collaborative approach between Coillte and IFI paves the way for further projects similar to the restoration works which took place in Devil's Glen, Co. Wicklow in 2024, to enhance the spawning conditions for sea trout and salmon in the Vartry River and improve the surrounding forest habitat.

At a European Union (EU) level the EU Nature Restoration Law (NRL) which came into force in 2024, is aimed at repairing damaged ecosystems across Europe. It's the first European-wide law of its kind, and it's part of the EU's broader plan to tackle biodiversity loss and climate change.

The Key Goals of the NRL include:

- **Restoring at least 20% of the EU's land and sea areas by 2030.**
- **Restore all ecosystems in need by 2050.**
- **Reverse the decline of pollinators like bees and butterflies by 2030.**
- **Improve urban green spaces, forests, farmland, and marine habitats.**

Nature Restoration in Ireland – a National Opportunity and a Shared Responsibility

While the EU Nature Restoration Law (NRL) sets out ambitious targets, more can and should be done nationally to restore our ecosystems, protect biodiversity, and tackle climate change.

Coillte, is already taking important steps, like restoring peatlands, adopting close-to-nature forestry where it is suitable to do so, and expanding land managed primarily for nature. But there is potential to do even more on Coillte's estate to help meet national and EU goals.

To scale up nature restoration effectively at national level, a set of key enablers is required:

1. **Streamlined Regulation**	**Simplify and speed up planning and licensing processes for nature restoration projects while maintaining environmental safeguards.**
2. **Collaboration**	**Encourage partnerships and knowledge sharing between public bodies, private landowners, NGOs, and technical experts.**
3. **Operational Resources**	Invest in skilled contractors, ecologists, and the right equipment; building capacity for large-scale restoration work.
4. **Biotic Threats**	Address overgrazing by deer and the spread of invasive species in forests and other wild habitats. Implement a National Deer Strategy to manage populations sustainably.
5. **Funding & Market Mechanisms**	Provide additional funding to resource and carry-out nature restoration work at scale.

8. Future Vision

By achieving its Forests for Nature ambition, Coillte will significantly improve the overall habitat quality of its estate, which in turn will provide better quality habitats for a broad range of native plants and animals.

- Overall, this ambition will deliver a significant increase in the proportion of native forests and mixed forests across the estate.
  - Additional forests will be management primarily for nature. For the most part, this will entail a move towards continuous cover forestry (CCF) management techniques in these forests, gradually converting from uniform forests to more mixed forests with a range of tree and shrub species present and more diverse structure, maintaining a forest canopy and improving habitat for forest-dwelling plants and animals.
  - In areas where it may not be possible to implement CCF management, for example due to unfavourable ground conditions, forests may be felled and re-planted with site-suitable native tree species or a mix of tree species to increase diversity in the forest.
- Forest removal and re-wetting actions will be implemented on more than 2,000ha of raised bogs and blanket bogs that are recognised by NPWS as being of ecological value, building on bog restoration work previously delivered by Coillte in EU LIFE projects during 2002-2015.
- In the uplands, the area of open habitat in ecologically valuable upland habitats designated as SAC/ NHA will increase, particularly where the scientific data shows that this will benefit rare species such as hen harrier, merlin or other upland birds.
- The process of managing riparian buffers and creating habitat corridors along streams, rivers and lakes on forestry sites will continue and will be expanded significantly in sensitive catchments.
- Special measures for forest-dwelling species, such as enhancing important bat roosts on Coillte lands, will improve their numbers in Coillte forests.

In the longer-term, transforming Coillte's forests so that 50% of the estate is managed primarily for nature will deliver broader landscape-scale changes benefitting a wide range of species.

In the uplands and in western counties, peatland landscapes will feature open peatland forests, native scrub and open bog or heath interspersed throughout the conifer forests. Wetland fringes and streams will be enhanced, and good quality open habitats will be created or expanded.

Legacy forests will either be redesigned to create open forest with good ground vegetation, or restored, whichever provides the greater benefit to wildlife.

It is our belief that, due to the scale and reach of the Coillte estate, the achievement of these ambitions will create more habitat for a broad range of Ireland's plants and animals, and will help to deliver the goals and vision of Ireland's national biodiversity plan.

Coillte's strategic vision for our forest estate is to deliver the multiple benefits from our forests, bringing more focus to climate action, setting ambitious new targets on biodiversity and recreation, while continuing to deliver for the forest and wood products industry. 2025 will see Coillte deliver a significant milestone in our new strategy, under our forests for nature ambitions, increasing the area of the estate managed primarily for nature from 20% to 30%, equivalent to an area of 134,000ha.

The achievement of our overall strategic vision will be guided by balancing the multiple benefits of our forests through the objectives of climate, nature, wood and people while the financial sustainability of Coillte underpins our ability to deliver our purpose, vision and mission and achieve our forests for nature ambitions.

For further information visit: www.coillte.ie
or email: info@coillte.ie

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