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Community
Foundation
Ireland

Durrow

Biodiversity Action Plan 2023-28



Plan produced by:



Durrow Biodiversity Action Plan 2023-28

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Acknowledgements & Contact

Details

Durrow TidyTowns would like to acknowledge and thank the Community Foundation for Ireland for funding this local Biodiversity Action Plan for the Durrow community. Durrow Tidy Towns also want to take this opportunity to thank all the tireless volunteers both in our local Tidy Towns group and those of Durrow Development Forum.

Getting Involved:

If you wish to get involved with any of the actions outlined in this Plan, please contact Durrow Tidy Towns locally or via our social media channels:

Facebook: DurrowTidyTowns

Instagram: durrowlaois

Photographs

Photographs used in this Plan are courtesy of Brian Gaynor, Dr Fiona Mac Gowan and Emer O'Brien.

Summary of Objectives and Actions

We are currently in the middle of a biodiversity crisis. This is not just a problem for countries in other parts of the world. Here in Ireland, a Biodiversity Crisis was officially declared by the Dáil in 2019. Although we lost most of our natural forest's long ago, we still are seeing declines in native biodiversity across the country. To stop this decline, we will need to increase our efforts significantly at all levels of society including at the local level.

This is a shared plan of action for Durrow community to build on recent progress and help increase biodiversity in the area. The plan has 5 objectives and targets with specific actions which are detailed in Section 3.

Objective 1	Make more space for biodiversity in Durrow
Target 1.1	Continue to make more room for biodiversity in the streetscape of Durrow
Target 1.2	Make more room for biodiversity on the grounds of the different community / public buildings
Target 1.3	Continue to support Our Lady's Meadow National School to become more biodiversity friendly
Target 1.4	Continue to support local faith community sites to take actions for biodiversity
Target 1.5	Make more room for biodiversity in Durrow's community park and playground
Target 1.6	Continue to support residential estates and gardens taking actions to increase biodiversity
Target 1.7	Increase the number of gardens that are taking actions for biodiversity
Target 1.8	Increase the number of sports clubs that are taking actions for biodiversity
Target 1.9	Increase the number of businesses that are taking actions for biodiversity
Target 1.10	Continue to make more room for biodiversity on the approach roads
Target 1.11	Continue to look after the River Erkina corridor (SAC 002162) with biodiversity in mind
Target 1.12	Make more room for biodiversity in the forests and woodlands in the surrounding landscape
Target 1.13	Make more room for biodiversity in the farmland in the surrounding landscape
Target 1.14	Protect and strengthen existing features of biodiversity importance and links between them
Target 1.15	Mitigate against the potential impacts of Ash Dieback in the community
Objective 2	Controlling Invasive Species
Target 2.1	Increase our knowledge and understanding of Invasive Alien Species in the local area
Target 2.2	Take practical control measures for Invasive Alien Species in the local area
Objective 3	Move towards the elimination of herbicide use
Target 3.1	Move towards the elimination of herbicide use in the community
Target 3.2	Raise awareness of the negative impacts of herbicide use for biodiversity and on our health
Objective 4	Raising awareness of biodiversity
Target 4.1	Continue to deliver biodiversity training and identification workshops
Target 4.2	Continue to deliver biodiversity street art and signage
Target 4.3	Continue to promote and support positive actions to encourage more sustainable lifestyles and individual choices
Objective 5	Citizen Science: Collecting evidence to track change and measure success
Target 5.1	Monitor and record biodiversity and biodiversity actions taken
Target 5.2	Build the capacity within the community to manage and record biodiversity
Target 5.3	Review the Biodiversity Action Plan

Section 1: Introduction

This Biodiversity Action Plan compiled with and for the local community of Durrow aims to provide guidance in the enhancement, restoration and protection of its natural heritage. Durrow with surrounding rivers and woodlands, is a biodiversity haven and this plan will help in maximising the benefits that nature can provide while creating awareness for all. The plan is not a static document and will be reviewed and updated throughout its life by the people of Durrow.



PROCESS TO PRODUCE THIS PLAN

Durrow Tidy Towns received a grant from the Community Foundation for Ireland to develop a Biodiversity Action Plan (BAP) for the village and surrounding area. Green Pine Consultants and Dr Fiona Mac Gowan were contracted to deliver the project.

A site visit was carried out in 2022 including a general habitat survey of the village's main public spaces in. During this visit we met with members of the Tidy Towns committee who showed us around and discussed planned projects. In addition, Fiona carried out extra site visits to the area to survey different habitats. She also assisted with writing natural history text for new information boards.

The objectives, targets, and actions were produced based on the site visits and meetings.

A draft of the Plan was produced during 2022 for feedback, this was taken on board and the final Plan was completed for 2023.

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What is Biodiversity?

Biodiversity refers to the variety and variability of all living things including plants, animals, microbes, fungi, and people. It also includes the places where plants and animals live (known as habitats), the interactions among living things (the web of life) and their environment (ecology).

Biodiversity is all around us, everywhere and in our everyday life. It forms complex systems that sustain life on Earth. Each part of the system is important no matter how small or trivial it may seem to us. Think of it as a puzzle; having a biodiverse system allows us to see the full puzzle but when we start to remove different pieces, or species, the picture loses important parts.

We rely completely on biodiversity to provide us with the basic elements we need such as clean air and water, food, fuel, building products and medicines. We also rely on it for the many free 'services' such as nutrient recycling, pollination, and water filtration etc. It is therefore vital that we make space for nature in our towns, villages, and countryside for us to continue living full and healthy lives.

“Biodiversity underpins the functioning of the ecosystems on which we depend for food and fresh water, health and recreation, and protection from natural disasters. Its loss also affects us culturally and spiritually. This may be more difficult to quantify, but is nonetheless integral to our wellbeing” - Ban Ki-moon, Secretary General of the United Nations



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Why Protect Biodiversity?

A Biodiversity Crisis was declared by the Dáil in 2019. On the 29th May 2019, during a Dáil Eireann debate, the Minister for Culture, Heritage & the Gaeltacht Deputy Josepha Madigan made an address which included the following excerpts. The full address is available here:

<https://www.oireachtas.ie/en/debates/debate/dail/2019-05-29/35/>

'We are losing biodiversity around the globe at a rate unprecedented in human history. The number of plants, insects, mammals, and birds that are threatened or endangered grows every year, while the land, ocean and atmosphere are being altered to an unparalleled degree.

A few weeks ago, the United Nations' platform on biodiversity and ecosystem services published its global assessment report and advised that unless action is taken to reduce the intensity of drivers of biodiversity loss, there will be a further acceleration in the global rate of species' extinction, which is already at least tens or hundreds of times higher than it has averaged in the past 10 million years.

It is not just over there in the Amazon basin or Borneo. Although we cut down our forests centuries ago, biodiversity in Ireland still demonstrates worrying and ongoing declines.... My Department reports every six years to the EU on the status of habitats and species protected by the EU habitats directive. We recently submitted the draft report for the past six years and it shows that Irish habitats, especially the peatlands, grasslands, and some of the marine habitats, remain under enormous pressure.... I have also seen reports that insects are declining on a massive scale throughout Europe. Insects are the most abundant terrestrial organisms on the planet and of paramount importance to the ecosystem services that sustain life on earth. These are services such as pollination, natural pest control, nutrient recycling, and decomposition services. Of course, insects are also the main food for many fish, birds, and mammals. The occurrence and spread of invasive and non-native species in Ireland are also increasing for all environments.

All of this makes for very sobering and worrying reading. To stop this decline, we will need to increase our efforts significantly at all levels of society."



Why is Biodiversity in trouble?

In 2019, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services¹ (IPBES) listed seven major global drivers of biodiversity loss. This included two indirect drivers and five direct drivers. These global drivers are also affecting biodiversity at the national level and the local level in Portlaoise. For example, we continue to lose important habitats and see the spread of invasive species. This all confirms that the following key pressures on biodiversity must be tackled:

Main Drivers of Biodiversity Loss (IPBES)

1. People's disconnect with nature

- Connectedness to nature is the extent to which people are aware of their natural world and dependence on it.
- As human societies became industrialised and urbanised this connection with the natural world was lost.
- Our disconnection from nature is at the heart of our environmental crisis and has allowed humanity to view the natural world as other and apart from human society.

As most of the drivers of climate change and biodiversity loss are caused by humans (Pörtner et al., 2021)², the solution to them lies in changing people's behaviours, and attitudes to nature, at both the individual and collective levels (Nielsen et al., 2021)³. For this reason, transformative change - system-wide change across policies, economic systems and society - is needed (Pörtner et al., 2021).

2. Lack of recognition for the value and importance of nature

A sustainable society and economy fundamentally rely on a healthy and valued natural environment. This value is intangible in that nature has an intrinsic value in itself and tangible based on societal, cultural, spiritual and financial value to the humanity.

In many areas of human activity, nature has been taken for granted and the value of ecosystem services has not been counted. Ecosystem services encompass the biophysical structures and processes that support basic human needs economic activities and enrich human culture.

3. Invasive Species and Disease

Invasive species out compete native species for space, food and other resources and can fundamentally alter local ecosystems. Global trade in animals and plants also risks the spread of pathogens to which native species have no resistance, e.g. Ash Dieback Disease and Crayfish Plague.

4. Pollution

Pollution is an important driver of biodiversity loss and ecosystem change throughout the world, with particularly devastating direct effects on freshwater and marine habitats. In particular, pollution by nitrogen and phosphorus causes severe algal blooms and depletes oxygen in fresh water and sea water habitats. Plastic and micro-plastic pollution is also a global problem.

5. Climate Change

The climate crisis is dismantling ecosystems at every level. Extreme weather events storms and flooding destroy habitats. Warmer temperatures are also changing the timing of natural events – such as the availability of insects and when birds hatch their eggs in spring. The distribution of species and their range is also changing.

6. Direct exploitation of organisms

Logging, hunting, and fishing and the extraction of soils and water particularly at industrial scale has significant negative impact on species, habitats and ecosystems.

7. Changing use of sea and land

Human land management for Agriculture, Deforestation, Industrialisation, Extractive Industries and Urbanisation leads to increase in Habitat Loss, Habitat Degradation and Habitat Fragmentation.

¹ The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services: <https://ipbes.net/>

² Pörtner, H. O., Scholes, R. J., Agard, J., Archer, E., Arneeth, A., Bai, X., Barnes, D., Burrows, M., Chan, L., Cheung, W. L., Diamond, S., Donatti, C., Duarte, C., Eisenhauer, N., Foden, W., Gasalla, M. A., Handa, C., Hickler, T., Hoegh-Guldberg, O., ... Ngo, H. (2021). *Scientific outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). <https://zenodo.org/record/5101125>

³ Nielsen, K.S., Marteau, T.M., Bauer, J.M. et al. Biodiversity conservation as a promising frontier for behavioural science. *Nat Hum Behav* 5, 550–556 (2021). <https://doi.org/10.1038/s41562-021-01109-5>

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One may feel powerless at this depressing list and yes, most of biodiversity loss will have to be addressed at a statutory level but the main thing to realise and understand is that these problems are occurring on our own doorsteps and therefore we can do something to make a positive change!

Habitat destruction refers to rainforests being cleared in Brazil and Borneo but it also refers to hedgerows being cut back too hard, herbicide being sprayed along ditches and verges and wildflowers in our lawns being unable to flower due to over-mowing!

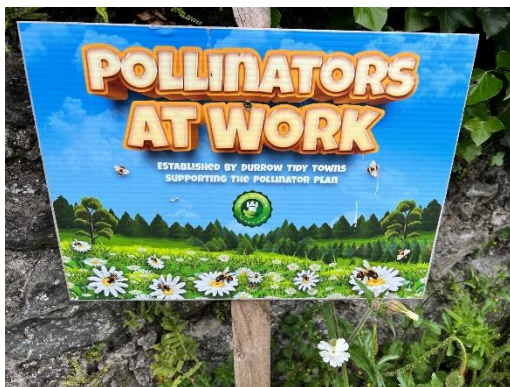
In the words of our former President and former UN Special Envoy on Climate Change Mary Robinson, current chair of The Elders, we need a 'moonshot mentality' meaning we can still head into our best future world but positive leadership between civil society, business and governments is needed to deliver this. She feels that while the transition to net zero is generally depicted as sacrifices and costs, a green transition actually has the capacity to raise standards of living all over our planet. In her own words:

"I think the world has to have a wake-up moment of responsibility now. It's not a guilt trip. It's not making accusations to people. It's saying we have to manage this and manage it well, because our best world is still in front of us. We can get there."

So, What Can Durrow Do?

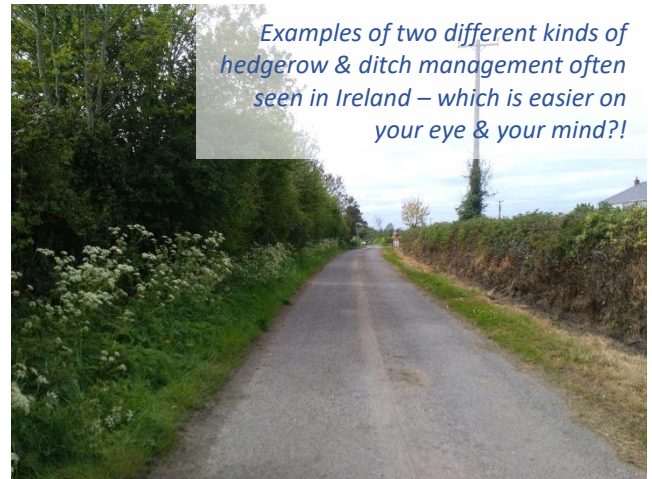
This Biodiversity Action Plan was commissioned by Durrow Tidy Towns for them to have a professionally guided tool with which to tackle the Biodiversity Crisis on their own doorstep. This BAP is also intended as a document to help inform all who are interested so that they can help on their own patches – private gardens, sports grounds, farms etc. There is no need to feel helpless in the face of this crisis – we can all do something to help!

Section 2 overleaf of this Community Biodiversity Action Plan will point out the biodiversity highlights of the greater Durrow area.



Section 3 will list the biodiversity objectives and targets for Durrow, and the actions that will achieve them.

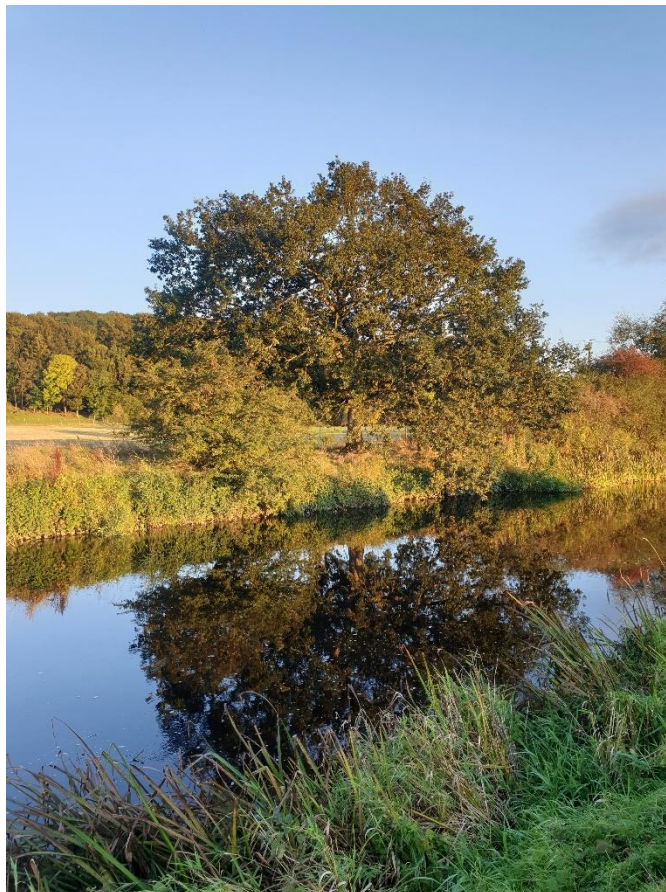
Finally, **Section 4** and the **Appendices** feature the resources that will help guide the community efforts that will be needed to ensure the protection and enhancement of biodiversity locally in Durrow.



Examples of two different kinds of hedgerow & ditch management often seen in Ireland – which is easier on your eye & your mind?!

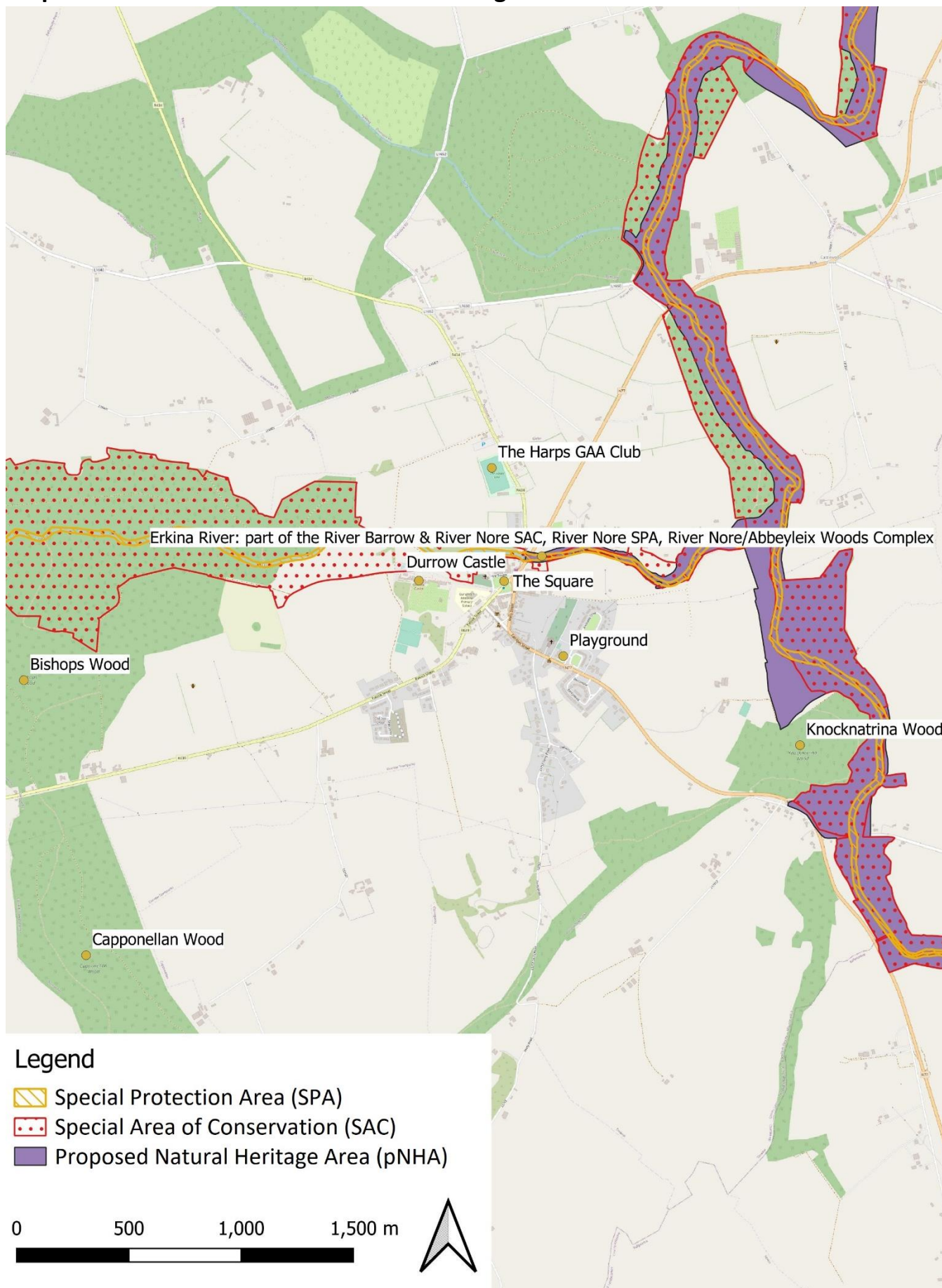
Section 2: Biodiversity in Our Area

Looking at an aerial image of Durrow shows how it is beautifully situated encircled by a necklace of woodland and rivers. The Irish name for the area is *Darú Ó nDuach* which means the Oak plain of the Uí Dhuach (a clan/tribe of the region). So the Oak woodlands have always been at the heart of this area. All the woods that surround Durrow are in public ownership, managed by Coillte, the State Forestry Service and therefore publicly accessible. The Durrow Leafy Loop is a 21km circular walk that takes in all these woods, several of which follow the Nore and its tributaries the Erkina and the Gully. The Erkina flows through the centre of Durrow village and it, together with the Nore and all the woodlands are included in the River Barrow and River Nore Special Area of Conservation (SAC). Being designated as an SAC means that these habitats are of international ecological importance. This importance is due to the presence of several species and habitats not least of which is the Nore freshwater pearl mussel. This is a freshwater bivalve – treasured for its river pearls in the past. Unlike the other species of freshwater pearl mussel in Ireland, this species can tolerate the alkaline waters of the Nore and its centre of population is in this region therefore its scientific name is *Margaritifera durrovensis* – making Durrow the only Irish village (to this ecologist’s knowledge) to have a species named after it! This mussel’s story, however, is not going well as it has a complicated life cycle that requires river water to be of pristine quality. The Nore drains a region of Ireland where forestry, peat cutting and agriculture have been prominent landuses in recent decades and all have impacted upon the water quality through increased sediment and nutrient levels. No juvenile pearl mussels have survived in the river in the last 40 years approximately. The only survivors are the older mussels who can live for a century but time is running out as they age and the species is headed for extinction unless the pristine water quality of the Nore river can be restored. There is good ecological news for Durrow though as all the woodlands that surround it are now being managed by Coillte for their biodiversity value meaning there is a bright future for native woodland species in Durrow as well as the locals and visitors who will get to enjoy them!



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Map of the Main Habitats and Natural Heritage Sites of Interest



Main Biodiversity Sites

There are numerous places of important biodiversity value in Durrow and the surrounding environs. The following are some of the main ones.

Sites of Biodiversity Interest

The Rivers Nore, Erkina & Gully: Durrow is in the very special position of having three rivers flow through the area. The main river being the Nore which flows along the eastern side of the village passing alongside Dunmore, Course and Knocknatrina Woods before heading south to Kilkenny. In Dunmore Woods it is joined by the Gully which has come from Ballacolla and Aghaboe and then between Course and Knocknatrina Woods, the Erkina flows into the Nore. The Erkina flows in from the west where its biodiversity-rich floodplain known locally as 'The Curragh's' and known historically as 'The Marsh of Ossory' also forms part of the River Barrow & River Nore Special Area of Conservation (002162): This SAC comprises both the River Barrow and the River Nore, including many of their tributaries (including the Erkina), from their origins in (Barrow) and near (Nore) the Slieve Bloom Mountains as far as their estuary in Co. Waterford. The SAC is of high conservation importance due to its featuring many habitats listed in Annex I of the Habitats Directive and its hosting several plant and animal species listed in Annex II of the Habitats Directive (e.g. salmon & otter). These very important habitats and species are reliant on good water quality in the rivers, many of which are at risk from pollution by various causes including sewage and industrial waste and runoff from intensive agricultural and forestry practices.



River Nore Special Protection Area (004233): This SPA is designated especially for the presence of Kingfishers along part of the Nore and in Durrow, parts of the Erkina river too. This beautiful, secretive bird needs river banks in good ecological condition i.e. with plenty of shelter in the form of shrubs and trees as well as enough food in the river in the form of small fish. The River Nore SPA is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive.

The 'Leafy Loop' of Durrow: This is the name given to a 21km walking trail that winds its way through the different woodlands that encircle the village. These woodlands, in a clockwise direction are called: Dunmore; Course; Knocknatrina; Derry; Capponellan; Bishop's and Knockanoran Woods respectively. They feature a mix of woodland habitats from pockets of native Oak and Alluvial woodlands to planted coniferous and mixed broadleaved woodlands. They host a wide variety of plant, bird, mammal, invertebrate and fungal species with something to interest the nature lover through all four seasons. These woodland habitats combined with their association with the river SAC make them of national importance, indeed for some of the species e.g. the Nore freshwater pearl mussel, the kingfisher, the otter, they are of international importance. All of the woodlands are under State ownership and are actively managed by Coillte for their biodiversity value who at the time of writing are implementing a plan to manage the invasive alien species cherry laurel in Dunmore Woods.



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Recent Progress

The following are just some examples of actions taken in recent years to enrich the village's biodiversity:



Planting the old bank at the church with Alpines to provide an early source of food for pollinators using peat free medium



Use of perennials in our large containers now standard practice in an effort to accommodate pollinators while enhancing the town



The biggest volunteer run festival in the country "The Durrow Scarecrow Festival" works with Tidy Towns with an emphasis on reuse, recycle and promoting sustainability. Tidy Towns were instrumental in greening the festival with a special green entry category agreed for 2023.



Collecting rainwater to water our plants – all from water butts placed on public buildings



Swift and bat conservation supports - The first set of Swift boxes have been installed on the CYMS hall to provide nest sites for these endangered native birds. Following advice from Bat Conservation Ireland, a number of donated bat boxes were repurposed into bird nest boxes and placed on mature trees in the churchyard. Also DTT members annually carry out Daubenton's Bat surveys for Bat Conservation Ireland each August.



Workshop on Dividing plants in St. Fintan's Terrace (Rudbeckia) Providing new plants while using what's there

Planting at the bridge in Durrow of pollinator friendly plants (*Nepeta* and *Verbena*) to provide food for pollinators late into the Autumn

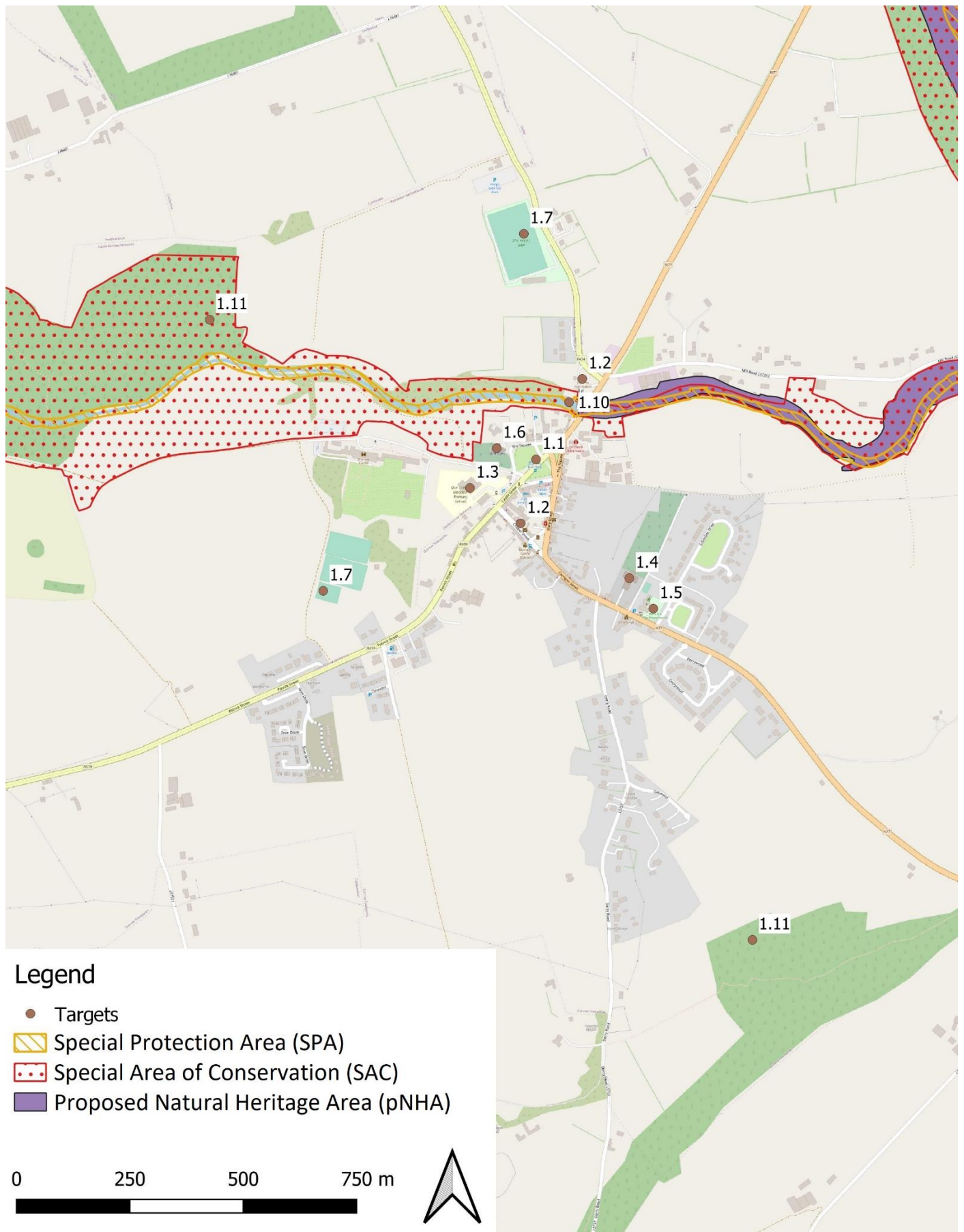
Section 3: A Call to Action

This is a shared plan of action for the Durrow community to build on recent recent progress and help increase biodiversity in the area. The plan has 5 objectives, each with specific actions to help achieve them.

Objective 1	Make more space for biodiversity in Durrow
Target 1.1	Continue to make more room for biodiversity in the streetscape of Durrow
Target 1.2	Make more room for biodiversity on the grounds of the different community / public buildings
Target 1.3	Continue to support Our Lady's Meadow National School to become more biodiversity friendly
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Target 1.9	Increase the number of businesses that are taking actions for biodiversity
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Target 1.13	Make more room for biodiversity in the farmland in the surrounding landscape
Target 1.14	Protect and strengthen existing features of biodiversity importance and links between them
Target 1.15	Mitigate against the potential impacts of Ash Dieback in the community
Objective 2	Controlling Invasive Species
Target 2.1	Increase our knowledge and understanding of Invasive Alien Species in the local area
Target 2.2	Take practical control measures for Invasive Alien Species in the local area
Objective 3	Move towards the elimination of herbicide use
Target 3.1	Move towards the elimination of herbicide use in the community
Target 3.2	Raise awareness of the negative impacts of herbicide use for biodiversity and on our health
Objective 4	Raising awareness of biodiversity
Target 4.1	Deliver biodiversity training and identification workshops
Target 4.2	Increase biodiversity street art and signage
Target 4.3	Promote and support positive actions to encourage more sustainable lifestyles and individual choices
Objective 5	Citizen Science: Collecting evidence to track change and measure success
Target 5.1	Monitor and record biodiversity and biodiversity actions taken
Target 5.2	Build the capacity within the community to manage and record biodiversity
Target 5.3	Review the Biodiversity Action Plan

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Site-Specific Biodiversity Actions



Objective 1: Make more space for biodiversity in Durrow

This objective aims to deliver real practical benefits on the ground for biodiversity. Fourteen actions have been identified to deliver this objective. These are spread across a range of public and private spaces to increase biodiversity in Durrow.

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Target 1.1: Continue to make more room for biodiversity in the streetscape of Durrow

Biodiversity Loss Drivers Addressed: 1, 2, 5, 7

No.	Action	Why
1.1.1	<p>Make room for biodiversity on Durrow's streets by:</p> <ul style="list-style-type: none"> Managing public areas of lawn grass as a shortcut meadow and maintain the fringes around their perimeters as mown grass. See Appendix 1. Public lawn areas around the town could be planted with spring bulbs e.g. crocuses, snowdrops & grape hyacinths. This will give great colour in spring & provide food for pollinators Continue to use pollinator-friendly plants in all the containers. These can also be planted with pollinator-friendly spring bulbs to give a longer period of interest for these pots. 	<ul style="list-style-type: none"> Increase biodiversity on the lawn areas by allowing plants to flower which will support pollinators and other associated species Reduce grass cutting visits and therefore reduce fuel consumption Wildflowers in bloom in the lawn will add colour and visual interest Most annuals, although colourful are of no food value to our pollinators who are starving to death in many cases due to lack of pollen & nectar in the environment Introduce a broader range of flowering species in the flowerbeds that will support a wider variety of biodiversity
1.1.2	<p>The Village Green is currently being managed as a shortcut meadow until 1st May annually. The period of visual interest & of pollinator food value could be extended with the planting of crocus bulbs through the lawns.</p>	<ul style="list-style-type: none"> Increase biodiversity on lawn areas by allowing plants to flower which will support pollinators and other associated species Reduce grass cutting visits and therefore reduce fuel consumption Wildflowers in bloom in the lawn will add colour and visual interest
1.1.3	<ul style="list-style-type: none"> When refreshing shrub beds, use a mix of pollinator friendly herbaceous perennials. The flowerbeds at St Fintan's Terrace have lots of potential to propagate perennials as well as the planting of pollinator-friendly spring bulbs 	<ul style="list-style-type: none"> Introduce a broader range of flowering species in the flowerbeds that will support pollinators Use the flowerbeds as an opportunity for a community event to teach people about plant propagation
1.1.4	<ul style="list-style-type: none"> Continue to work with Bat Conservation Ireland advice in relation to using the right type of bat boxes for erection around Durrow 	<ul style="list-style-type: none"> Durrow features many habitats used by bats, all of whom are protected under law due to their low numbers. Bats need all the help us humans can give them. They provide us with a fantastic ecosystem service with each bat eating 3000 midges per night in summer!
1.1.5	<p>The Pound:</p> <ul style="list-style-type: none"> Continue with improvement works here where several old coniferous shrubs have been removed to make way for more colourful herbaceous & shrubby perennials. The area could have an edible theme with soft fruit bushes planted. It is also ideal for herbs to be planted in the wall to the front 	<ul style="list-style-type: none"> Creates opportunities for the general public to experience the natural world in their everyday life and foster a greater appreciation of it Increase habitat for wildlife such as birds, insects, etc. Create a more visually attractive space in keeping with the surrounding streetscape Having such a prominent area featuring edible plants provides opportunities for community events

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Photo Board



The Village Green is perfect for management as a shortcut meadow & the addition of pollinator-friendly spring bulbs



Durrow features many lawn areas suitable for meadow management



An example of a colourful pollinator-friendly container on Tramore's Main St.



An example of a shortcut meadow in a lawn in a Portlaoise Industrial Estate. This was achieved simply by cutting the mowing regime to once a month.

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Target 1.2: Make more room for biodiversity on the grounds of the different community / public buildings

Biodiversity Loss Drivers Addressed: 1, 2, 5, 7

No.	Action	Why
1.2.1	Use pollinator-friendly plants in all the containers such as at the Library and other public buildings. These can also be planted with pollinator-friendly spring bulbs as well to give a longer period of interest and provide food for pollinators.	<ul style="list-style-type: none"> • <i>Most annuals, although colourful are of no food value to our pollinators who are starving to death in many cases due to lack of pollen & nectar in the environment</i> • <i>Introduce a broader range of flowering species in the flowerbeds that will support a wider variety of biodiversity</i>
1.2.2	Continue the installation of Swift boxes and a caller on the Community Hall building on the Kilkenny Road. The booklet by BirdWatch Ireland has lots of information about how best to carry this out: https://birdwatchireland.ie/publications/saving-swifts-guide/	<ul style="list-style-type: none"> • The endangered Swift has a fascinating life story intertwined with humans. Providing space for them will allow for all sorts of learning opportunities for the pupils while increasing awareness of the natural world around us.

Photo Board



The Community Hall is tall enough to be a good spot for Swift boxes and this is where the project is currently focused in Durrow

Durrow Biodiversity Action Plan 2023-28

Target 1.3: Continue to support Our Lady's Meadow National School to become more biodiversity friendly

Biodiversity Loss Drivers Addressed: 1, 2, 7

No.	Action	Why
1.3.1	<p>Continue to work with the school and explore the opportunity to do the following:</p> <ul style="list-style-type: none"> • Manage the wider grass areas at the school as shortcut meadow, keep the fringes along footpaths and roadsides cut regularly • Explore the potential for grass areas to be allowed to grow to taller hay meadows during the summer break • Plant a native hedgerow along the boundaries where suitable • Explore the opportunity to plant a pocket woodland that will double up as an outdoor classroom • Plant fruit trees at selected locations • Eliminate the use of herbicide 	<ul style="list-style-type: none"> • <i>The school's beautiful name alone makes it an ideal candidate for some meadow management of the grass areas!</i> • <i>Utilise the unused / underused green space on the school campus as a place for outdoor learning and to implement parts of the school curriculum</i> • <i>Increases biodiversity on the school campus</i> • <i>Creates opportunities for pupils to experience the natural world in their everyday life and foster a greater appreciation of it</i> • <i>Increase habitat for wildlife such as birds, insects, etc.</i> • <i>Hedgerow can be used to teach the children about native trees</i> • <i>Hedgerow provides screening and shelter benefits for the school</i> • <i>A herbicide free environment is safer for children</i>
1.3.2	<p>Continue running workshops for local school children with local organic farmers</p>	<ul style="list-style-type: none"> • <i>Creates opportunities for pupils to experience the natural world in their everyday life and foster a greater appreciation of it</i>

Photo Board



Grass areas around Our Lady's Meadow N.S.



A Pyramidal orchid growing in nearby Derry Woods grass area where the mowing regime has been recently lessened.

Durrow Biodiversity Action Plan 2023-28

Target 1.4: Continue to support local faith community sites to take actions for biodiversity

Biodiversity Loss Drivers Addressed: 1, 7

No.	Action	Why
1.4.1	<p>Old Castledurrow School</p> <ul style="list-style-type: none"> Continue to work with St Fintan’s Church of Ireland Rector & parishioners to explore the potential to manage selected parts of the grass areas as meadow, either shortcut or hay/tall meadow. For the larger meadow, incorporate mown paths to allow people to wander through the meadow. See Appendix 1. N.B. grass areas are need for children’s recreation during summer camp each July so meadow management will need to take this into account. The grounds feature a mature False Acacia specimen tree which is unusual. Explore the possibility to propagate this tree as it appears to be quite old. The planting of a native hedgerow is suggested along the fence (not the stone wall) at the front Explore the potential for a small community orchard to be planted in a corner of the site 	<ul style="list-style-type: none"> <i>Increase biodiversity by allowing plants to flower which will support pollinators and other associated species</i> <i>Reduce grass cutting visits and therefore reduce fuel consumption</i> <i>Creates opportunities for residents (both young and old!) to experience the natural world in their everyday life and foster a greater appreciation of it</i> <i>Wildflowers in bloom will add colour and visual interest</i>
1.4.2	<p>Church of The Holy Trinity; St Fintan’s church & their respective graveyards:</p> <ul style="list-style-type: none"> Manage lawn areas as shortcut meadows with their edges maintained as short grass (see Appendix 1). Plant pollinator-friendly spring bulbs where suitable in the lawn areas such as Crocus, Grape Hyacinth and Snowdrops. Provide both parishes with a copy of the AIPP for Faith Communities 	<ul style="list-style-type: none"> <i>Increase biodiversity on the lawn areas by allowing plants to flower which will support pollinators and other associated species</i> <i>Reduce grass cutting visits and therefore reduce fuel consumption</i> <i>Wildflowers in bloom in the lawn will add colour and visual interest</i> <i>Create an early season source of forage for emerging pollinators</i> <i>Provide early season visual interest</i> <i>The delay in cutting allows wildflowers to bloom and provide food for pollinators</i>

Durrow Biodiversity Action Plan 2023-28

Photo Board



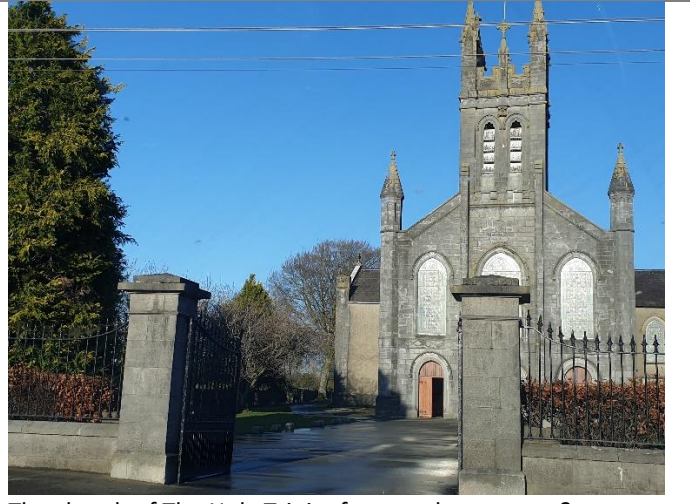
Part of the old Castledurrow school with lawns to the side and back



False acacia tree in the centre of the large lawn to the front of the old school building



St Fintan's church is prominently located on the Village Green



The church of The Holy Trinity features lawn areas & trees with the graveyard situated to the rear.

Durrow Biodiversity Action Plan 2023-28

Target 1.5: Make more room for biodiversity in the community park and playground

Biodiversity Loss Drivers Addressed: 1, 2, 7

No.	Action	Why
1.5.1	<p>At the Playground:</p> <ul style="list-style-type: none"> keep adding to the perennials in the flowerbed. Several of the plants can be split to create more, free plants 	<ul style="list-style-type: none"> <i>Introduce a broader range of flowering species in the flowerbed that will support pollinators</i> <i>Use the flowerbed as an opportunity for a community event to teach people about plant propagation</i>

Target 1.6: Continue to support residential estates and gardens taking actions for biodiversity

Biodiversity Loss Drivers Addressed: 1, 7

The following are some general actions for residential committees and gardeners to consider increasing biodiversity.

No.	Action	Why
1.6.1	<p>Manage selected part(s) of the common green areas as meadow, either shortcut or hay meadow. These should be targeted at the areas not used for recreation. For larger meadows, incorporate mown paths to allow residents to access the meadow. See Appendix 1.</p>	<ul style="list-style-type: none"> <i>Increase biodiversity by allowing plants to flower which will support pollinators and other associated species</i> <i>Reduce grass cutting visits and therefore reduce fuel consumption</i> <i>Creates opportunities for residents (both young and old!) to experience the natural world in their everyday life and foster a greater appreciation of it</i> <i>Wildflowers in bloom will add colour and visual interest</i>
1.6.2	<p>Manage the trees in the common green spaces, including the area around the base of them, using environmentally sensitive methods. This can be achieved by:</p> <ul style="list-style-type: none"> Eliminating herbicide for the control of vegetation (where this is the current practice). Use leaf litter to mulch around the base of trees each autumn. Strimmers and ride-on-mowers should not be used against the base of trees as they can kill or weaken them. As much as possible avoid planting trees as individuals, instead plant trees in small groups and manage the vegetation underneath less intensively. Monitor any tree ties and stakes used on planted trees on an annual basis. Adjust as necessary and remove once the trees can stand unsupported without bending or shifting in the ground (typically 1.5-3 years depending on the size of the tree at planting). Note: Tree ties and stakes are only required on trees planted at larger sizes. 	<ul style="list-style-type: none"> <i>Protect and promote the healthy growth of trees planted in common green spaces</i> <i>Move towards an herbicide free environment which have harmful effects on biodiversity and for human health</i> <i>Make use of leaf litter at source that would otherwise be seen as waste</i>

Durrow Biodiversity Action Plan 2023-28

No.	Action	Why
1.6.3	Plant native hedgerows along unplanted estate boundaries. See Appendix 3 .	<ul style="list-style-type: none"> • Increase habitat for wildlife such as birds, insects, etc. • Provides screening and shelter benefits for the residents
1.6.4	Where space allows consider planting native trees in small groups and / or traditional Irish heritage fruit trees – if possible use local varieties including apple, pear, plum, and cherry. See Appendix 3 .	<ul style="list-style-type: none"> • Increase habitat for wildlife such as birds, insects, etc. • Trees help deliver benefits for the wider environment e.g., carbon sequestration, improve air and water quality, etc. • Make the community more self-sufficient for fruit
1.6.5	In existing flowerbeds and containers use pollinator friendly herbaceous perennials to infill any gaps and to replace annual bedding plants where these are used. Where possible engage keen local gardeners to source the plants and use this as an opportunity for a community event on plant propagation. See Appendix 2 .	<ul style="list-style-type: none"> • Introduce a broader range of flowering species that will support a wider variety of biodiversity • Opportunity for a community event to engage people about plant propagation and wider biodiversity issues • Reduce watering requirements • Eliminate the need for regular replacement of annual plants where they are used • Create more interesting visual displays that change with the seasons
1.6.6	<p>Manage hardstanding areas (paths, roads, and car parking areas) and around site infrastructure in lawn areas (e.g. manhole covers, road signs, utility boxes, etc.) using environmentally sensitive methods. For example:</p> <ul style="list-style-type: none"> • Use non-herbicidal methods for the treatment of weeds on hard standing areas such as mechanical sweepers. • Strim around site infrastructure located in lawns rather than using herbicide. • Collect fallen leaves on hard standing areas for reuse as mulch around trees and in flowerbeds. • Where possible create swales and rain gardens to manage rainwater runoff. 	<ul style="list-style-type: none"> • Move towards an herbicide free environment which have harmful effects on biodiversity and for human health • Make use of leaf litter at source that would otherwise be seen as waste
1.6.7	Consider incorporating natural play and learning opportunities into common green areas. This can be done simply by maintaining paths through any new meadows, tree planting, and other ‘wild areas’, and by incorporating other natural features that promotes play (e.g. fallen tree logs, boulders, mounding, etc.) cleverly within these new natural spaces in the estate.	<ul style="list-style-type: none"> • Create natural play and learning opportunities for children • Creates opportunities for children to experience the natural world in their everyday life and foster a greater appreciation of it
1.6.8	Run a workshop for residential committees and gardeners on suitable biodiversity actions they can carry out in their estates / gardens.	<ul style="list-style-type: none"> • Raise awareness of ideas that residential committees and homeowners can take in their own gardens to increase biodiversity

Durrow Biodiversity Action Plan 2023-28

No.	Action	Why
1.6.9	<p>Engage with Laois County Council to ensure that any future residential developments are designed with green infrastructure principles in mind.</p> <p>This should include the protection of existing biodiversity features or ecological corridors of importance on the site, and the development of new green spaces and features that deliver multiple environmental and social benefits e.g. vegetated bioswales and / or rain gardens in the common green spaces can minimise rainwater runoff from the site.</p>	<ul style="list-style-type: none"> • <i>Potentially deliver a range of environmental, economic, and social benefits for the community (known as ecosystem services)</i> • <i>Conserve existing biodiversity features or ecological corridors of importance</i>

Target 1.7: Increase the number of gardens that are taking actions for biodiversity

Biodiversity Loss Drivers Addressed: 1, 2, 7

No.	Action	Why
1.7.1	<p>Use local media to encourage private garden owners to make space for biodiversity in their gardens. The following are some ideas for them to consider:</p> <ul style="list-style-type: none"> • Eliminate the use of herbicides • Leave corners / pockets of the garden to be managed less intensively • Manage part(s) of the lawn less intensively • Erect and maintain bird boxes and baths (these require regular maintenance) • Use native shrubs and trees as much as possible and avoid using invasive species • Construct a wildlife pond • Use pollinator friendly plants in flowerbeds and containers - where possible work with other keen local gardeners to source / share suitable plants from splitting / cuttings • Compost green waste and reuse once ready in garden beds as mulch • Manage rainwater runoff from roofs and hardstanding areas e.g. harvest rainwater for reuse in the home / garden and / or create rain gardens <p>The 'Gardening for Biodiversity' booklet has lots more ideas and tips: https://laois.ie/wp-content/uploads/Garden-Wildlife-Booklet-WEB-17MB.pdf</p>	<ul style="list-style-type: none"> • <i>Increase habitat for biodiversity</i> • <i>Creates opportunities for people to experience biodiversity in their everyday life and foster a greater appreciation of it</i> • <i>Reusing garden green waste at source</i> • <i>Manage and reuse rainwater to help conserve water during dry spells and to take pressure off storm water drains during heavy rain events – both dry spells and heavy rain events are becoming more common and severe with climate change</i> • <i>Raise awareness of ideas that individual homeowners can take in their own gardens to increase biodiversity</i> • <i>Creates natural play spaces for young children to experience, enjoy and learn about nature</i>

Durrow Biodiversity Action Plan 2023-28

No.	Action	Why
1.7.2	Run a 'Free Garden Tree Giveaway' during the bare root planting season (late Nov – early March). Suitable trees include (use trees of Irish provenance and origin only): Rowan, Birch, Hazel, Hawthorn, Crab Apple, and Wild Cherry. Other native shrubs such as Guelder Rose, Spindle, Holly, etc. could be used.	<ul style="list-style-type: none"> • Increase habitat for wildlife such as birds, insects, etc. • Trees help deliver benefits for the wider environment e.g., carbon sequestration, improve air and water quality, etc.

Target 1.8: Increase the number of sports clubs that are taking actions for biodiversity

Biodiversity Loss Drivers Addressed: 1, 7

No.	Action	Why
1.8.1	Where suitable, continue to plant native hedgerows along boundaries.	<ul style="list-style-type: none"> • Increase habitat for wildlife • Provides screening and shelter benefits for the club grounds
1.8.2	Consider replacing excess hard standing areas in the car parking area with green infrastructure features such as rain gardens and tree planting	<ul style="list-style-type: none"> • Reduce rainwater runoff to local watercourses • Create habitat to support wildlife including pollinators • Provide shade and cooling effects during hot spells
1.8.3	Ensure Durrow's sports clubs have copies of the All Ireland Pollinator Plan for sports clubs	<ul style="list-style-type: none"> • Further awareness about what is possible locally to create more space for biodiversity
1.8.4	Participate in the GAA's new Green Club Programme aimed at making clubs around Ireland more sustainable and biodiversity friendly: https://www.gaa.ie/my-gaa/community-and-health/green-clubs-sustainability/	<ul style="list-style-type: none"> • Create a more sustainable and biodiverse club • Play a role in the broader association's efforts to become more sustainable

Durrow Biodiversity Action Plan 2023-28

Target 1.9: Increase the number of businesses that are taking actions for biodiversity

Biodiversity Loss Drivers Addressed: 1, 2, 4, 5, 7

No.	Action	Why
1.9.1	<p>Run a workshop for business owners in the community on actions they can take to increase biodiversity locally including on their own premises. Some practical actions / ideas for them to consider include:</p> <ul style="list-style-type: none"> • Manage areas of grass on their premises less intensively as meadow • Where space allows on their premises, plant native trees and traditional Irish varieties of fruit trees • Plant native hedgerows on internal and site boundaries • Use pollinator friendly perennial plants in their flowerbeds in place of annuals • Install Swift boxes and callers on suitable buildings. • Move towards the elimination of herbicide use to control weeds on green spaces and hard standing surfaces • Encourage their staff to take actions for biodiversity • Sponsor local biodiversity projects • Run staff volunteer biodiversity events e.g. tree planting events <p>For a fuller list of ideas the All-Ireland Ireland Pollinator Plan has a guidance document especially for Businesses: https://pollinators.ie/wordpress/wp-content/uploads/2018/04/Businesses_actions-to-help-pollinators-2018-WEB.pdf</p>	<ul style="list-style-type: none"> • <i>Raise awareness among business owners in the village on actions they can take to support biodiversity in the community</i> • <i>Increase habitat for wildlife such as birds, insects, etc.</i>
1.9.2	<p>Encourage local businesses to implement environmental management systems (EMS) for their business. The production of the EMS may require the services of a specialist consultant in this field.</p>	<ul style="list-style-type: none"> • <i>Help businesses cut down on waste, lower energy use, use renewable resources, avoid risk and prevent pollution, comply with regulatory and legal requirements, and design for the complete product lifecycle</i>
1.9.3	<p>For hotel and other tourism accommodation providers consider:</p> <ul style="list-style-type: none"> • Provide information to guests on local biodiversity initiatives and natural heritage sites of interest that they can visit (e.g. bird watching, woodland walks, etc.). • Provide biodiversity viewing opportunities for guests as an additional offering e.g. moth trapping, biodiversity talks, bat walks, guided tours of local sites, etc. 	<ul style="list-style-type: none"> • <i>Alert visitors to the various natural heritage sites of interest and biodiversity in the area that they could visit</i>

Durrow Biodiversity Action Plan 2023-28

Target 1.10: Make more room for biodiversity on the approach roads

Biodiversity Loss Drivers Addressed: 1, 7

No.	Action	Why
1.10.1	Continue to implement less intensive grass cutting regimes on suitable roadside verges on the approach roads - a grass verge management plan for the village that identifies the timing and frequency of cuts for the different verges should be developed and implemented in partnership with Laois County Council. Suitable verges include the wider verges and verges that won't interfere with road safety or sightlines if managed as meadow. See Appendix 1 .	<ul style="list-style-type: none"> • <i>Increase habitat for biodiversity</i> • <i>Act as ecological corridors for biodiversity to move through the landscape</i> • <i>Creates opportunities for people to experience biodiversity in their everyday life and foster a greater appreciation of it</i>
1.10.2	Strengthen hedgerows on approach roads as needed. This could include: <ul style="list-style-type: none"> • Where there are large gaps / breaks in hedgerows engage with the landowners about planting them with native trees • Where Ash is the dominant tree species then engage with the landowner about planting other native trees to increase diversity • Continue to raise awareness of proper hedgerow management and timing among landowners / land managers in the community (see Appendix 3). 	<ul style="list-style-type: none"> • <i>Increase habitat for biodiversity</i> • <i>Act as ecological corridors for biodiversity to move through the landscape</i> • <i>Creates opportunities for people to experience biodiversity in their everyday life and foster a greater appreciation of it</i>
1.10.3	Continue to engage with Laois County Council to ensure herbicides are not used to control vegetation on roadside verges, stone walls, or other roadside infrastructure. See Objective 3.	<ul style="list-style-type: none"> • <i>Move towards the elimination of herbicide in the community as it has harmful effects on biodiversity and for human health</i>
1.10.4	Continue the planting the sloped stone embankment opposite Stanley's garage. Alpine plants do well and perhaps seeding with Nasturtiums and Pot marigolds might also be successful. There might also be potential for window-box type planters to be put along the base of the wall where Nasturtiums could tumble out and cover the grey.	<ul style="list-style-type: none"> • <i>Turning a grey 'desert' into a place of beautiful colour with food value for pollinators</i>

Durrow Biodiversity Action Plan 2023-28

Target 1.11: Continue to look after the River Erkina corridor (SAC 002162) with biodiversity in mind

Biodiversity Loss Drivers Addressed: 1, 3, 4, 7

No.	Action	Why
1.11.1	<p>Continue with NPWS and Laois County Council consultations prior to undertaking any actions adjacent to the river to ensure they are in compliance with all Water Framework Directive and Habitats Directive Legislation requirements.</p> <p>See the Waterways Ireland publication ‘<i>Waterways and Biodiversity A Guide for Community Groups</i>’* which has many good ideas on supporting nature along both watercourses.</p>	<ul style="list-style-type: none"> • <i>Ensure all actions carried out are done in accordance with best practice and the law</i> • <i>Develop good working relationship with the land managers to protect canal and river biodiversity</i>
1.11.2	Continue to organise bankside litter picks.	<ul style="list-style-type: none"> • <i>Prevent waste entering the watercourse and harming the aquatic biodiversity</i> • <i>Engage people in the care of their local natural resources</i>
1.11.3	Continue to engage with the different statutory organisations to ensure herbicide is not used adjacent to the river. See Objective 3.	<ul style="list-style-type: none"> • <i>Move towards the elimination of herbicide in the community as it has harmful effects on biodiversity and for human health</i>

Photo Board



The River Erkina in the centre of Durrow



The pedestrian bridge where the Erkina joins the Nore

Durrow Biodiversity Action Plan 2023-28

Target 1.12: Make more room for biodiversity in the forests and woodlands in the surrounding landscape

Biodiversity Loss Drivers Addressed: 1, 3, 5, 6, 7

No.	Action	Why
1.12.1	<p>Explore the opportunity to work with Coillte and private forest owners to increase the biodiversity potential of their local forests. A first step for the Coillte forests would be to contact the local area Coillte Estates Manager. Some actions can include:</p> <ul style="list-style-type: none"> Increasing species diversity in new forestry plantations and new planting rotations of clear-felled forests. Moving towards more sustainable forestry practices such as continuous cover forestry (CCF). More information about CCF can be explored at https://prosilvaireland.com/ Monitoring and controlling any invasive species in their forests. 	<ul style="list-style-type: none"> <i>Move towards more sustainable and biodiverse forests and woodlands</i>

Target 1.13: Make more room for biodiversity in the farmland in the surrounding landscape

Biodiversity Loss Drivers Addressed: 1, 5, 6, 7

No.	Action	Why
1.13.1	<p>Continue to work with local organic farmers organising and / or promoting training workshops and events on sustainable farming methods that will also increase farm biodiversity. These include talks and farm walks aimed at promoting protecting and increasing farm tree cover / agroforestry systems, improving farm soil health, nutrient management, organic farming, etc. Another action that farmers and smallholders could consider is the tradition of managing 'Hare's corners' in small pockets around the farm. See Info Box below. For more extensive list of ideas and guidance please visit some of the farming environmental charities / organisations, such as:</p> <ul style="list-style-type: none"> Irish Agroforestry Forum: https://www.irishagroforestry.ie/ Farming for Nature: https://www.farmingfornature.ie/ Irish Organic Association https://www.irishorganicassociation.ie/ Soil Association (UK based charity) https://www.soilassociation.org/ 	<ul style="list-style-type: none"> <i>Increase habitat on surrounding farms for biodiversity</i> <i>Strengthen ecological corridors leading into the village for biodiversity to move through</i> <i>Raise awareness among the local farming community of actions they can take to make their enterprise more sustainable and biodiverse</i>
1.13.2	<p>Let local farmers know about annual free tree giveaways</p>	<ul style="list-style-type: none"> <i>Increase habitat on surrounding farms for biodiversity</i>

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Info Box: The Hare's Corner, an old Irish farming tradition

The Hare's Corner is an age-old tradition in Ireland where small areas are left for nature around a farm. People knew that wildlife needed spots free from human intervention - clearing and tidying. The concept has been taken on expanded in Co. Laois by the Burrenbeo Trust where they are encouraging farmers to consider small projects such as pocket woodlands, mini orchards, small ponds and green sheds for corners of their farms (<https://burrenbeo.com/thc/>).

Such small areas can be of huge value for biodiversity on busy farms where the intensification of agriculture over recent decades has left little room for nature. Returning to this tradition of our forebears and spreading the idea to other counties in Ireland has the capacity to slowly but surely increase the space for nature that the Biodiversity Crisis so badly needs.



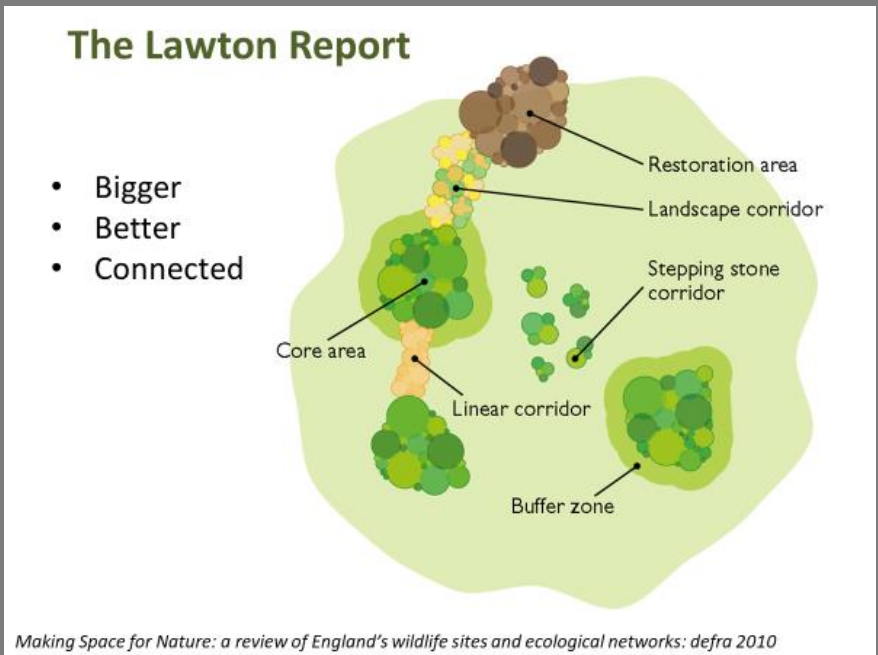
Target 1.14: Protect and strengthen existing features of biodiversity importance and links between them

Biodiversity Loss Drivers Addressed: 1, 5, 7

No.	Action	Why
1.14.1	<p>Conserve and build upon the existing green infrastructure or biodiversity features of importance in the community and the network of ecological corridors in the landscape. Some of these features and corridors in Durrow include hedgerows; treelines; woodlands; rivers; the old stone walls, buildings, and bridges; and parks.</p> <p>As a first step, these important features and corridors should be surveyed and mapped and that the conservation of them built into local area plans and any future developments. Local knowledge helping to inform decisions being made and implemented for your locality can be crucial.</p>	<ul style="list-style-type: none"> • <i>These existing features are typically of high biodiversity value and cannot simply be replaced through new planting or habitat creation used to offset their loss. Therefore, every effort should first be made to protect these features in any land management or development decision process. If new development is proposed in the community, then the aim should always be to conserve these features and incorporate them in the new design – they should not be seen as a hindrance but instead viewed as an asset.</i>
1.14.2	<p>Where gaps have been identified between natural sites in the landscape take steps to connect them. For example, if there is a break between hedgerows or areas of woodland in the landscape then engage with the landowner(s) in between to see if they would allow new hedging or tree planting to connect them.</p>	<ul style="list-style-type: none"> • <i>Strengthen ecological corridors for biodiversity to move through the landscape</i>

Info Box: The Lawton Report – Making Space for Nature

This action is adapted from *Making Space for Nature: A review of England's Wildlife Sites and Ecological Network* (2010). It concluded 'that England's collection of wildlife sites is generally too small and too isolated' and that 'we need a step-change in our approach to wildlife conservation, from trying to hang on to what we have, to one of large-scale habitat restoration and recreation'. The report coined the phrase: our wildlife sites need to be '*better, bigger, more and joined up*'. The report, and its findings and recommendations, can be applied to our current situation here in Ireland.



Main Findings of Lawton Report

- Many wildlife sites are too small
- Losses of certain habitats have been so great that insufficient remains to halt additional biodiversity losses
- With the exception of Natura 2000 sites and sites such as NHAs, most of semi-natural habitats important for wildlife are generally insufficiently protected and under-managed
- Many of the natural connections in our countryside have been degraded or lost, leading to isolation of sites
- Climate change will make matters worse for many habitats and species

Proposed Solutions/Actions “MORE, BIGGER, BETTER AND JOINED”

- Improve the quality of current sites by better habitat management (and enhance heterogeneity)
- Increase the size of current wildlife sites
- Create new sites
- Enhance connections between, or join up, sites, either through physical corridors, or through 'stepping stones'
- Reduce the pressures on wildlife by improving the wider environment, including through buffering wildlife sites
- Better management of existing sites > Bigger sites > More sites > Enhance connectivity > New corridors
- The impacts of climate change mean that these actions will be even more important in the future

Durrow Biodiversity Action Plan 2023-28

Target 1.15: Mitigate against the potential impact of Ash Dieback in the community

Biodiversity Loss Drivers Addressed: 3, 6

No.	Action	Why
1.15.1	Plant other suitable native tree species into our hedgerows where Ash is overly dominant. Any planting in sensitive habitats should only be carried out with the advice of an ecologist.	<ul style="list-style-type: none"> • <i>Increase native tree diversity in hedgerows where Ash is dominant to mitigate against potential future losses of Ash that will leave the landscape largely devoid of large trees</i>
1.15.2	Record any Ash trees showing resistance to the disease to Teagasc. These trees may act as a source of disease resistant trees in the future. Teagasc are actively working on this project: https://www.teagasc.ie/news--events/news/2022/managing-ash-dieback.php	<ul style="list-style-type: none"> • <i>These trees may act as a source of disease resistant seed for the future</i>
1.15.3	Where possible, for mature Ash trees of important biodiversity / aesthetic value in the community, collect, remove, and destroy Ash leaf litter in autumn from under the tree. This is currently the only effective option to reduce spread of the disease as it disrupts the fungus's life cycle and thereby reduces spore production the following summer.	<ul style="list-style-type: none"> • <i>Assist with the conservation efforts for local Ash trees of importance</i>

See **Appendix 4** for further detail on Ash Dieback (*Hymenoscyphus fraxineus*).

Objective 2: Controlling Invasive Species

This objective aims to help control the spread of invasive alien species in the community on both public and private lands. Invasive species are one of the main drivers of biodiversity loss globally and are a big threat to local biodiversity. They are defined by Invasives.ie as *animals, plants or pathogens that would not naturally occur in Ireland but are here because of human activity. When introduced, they survive and thrive to the point of negatively impacting on our wildlife, on the services nature provides, on our economy, and the way we live.* <https://invasives.ie/> Two targets, for raising awareness and taking practical steps, have been identified to help the community of Durrow address the problem in their area.

Target 2.1 Increase our knowledge and understanding of Invasive Alien Species in the local area

Target 2.2 Take practical control measures for Invasive Alien Species in the local area



Cherry laurel felled by Coillte as part of their biodiversity management plans for Dunmore Woods, February 2023

The National Biodiversity Data Centre has an excellent website with lots of information on invasive species that are causing problems in Ireland and practical measures to help control the different species. Check out their website here:

<https://invasives.ie/>

Durrow Biodiversity Action Plan 2023-28

Target 2.1: Increase our knowledge and understanding of Invasive Species in the local area

Biodiversity Loss Drivers Addressed: 3

No.	Action	Why
2.1.1	<p>Carry out a survey of the village and surrounding landscape for invasive species and develop management plans for any recorded species. The scope of the survey should be set by the community and the most immediate threats.</p> <p>Note: it is important to survey potential corridors in the surrounding landscape which invasive species may travel e.g. rivers, roadsides, etc. Control measures taken in the community maybe unsuccessful if the source of the problem is elsewhere and it isn't addressed.</p>	<ul style="list-style-type: none"> • <i>To tackle the problem species, it is important to have a fuller understanding of the scale and extent of it, and the survey will help identify this</i> • <i>Taking a landscape scale approach will help identify any sources of the problem species outside the community area that have the potential to invest / reinvest the community in the future</i>
2.1.2	<p>Train members of staff in the local authority (grounds staff and relevant officers), local employment schemes, and the Tidy Towns how to identify common invasive species.</p> <p>It is also important to remain vigilant for any new invasive species that could potentially establish in the area and report them to the local NPWS staff and / or Laois County Council.</p> <p>See Appendix 7 for a list of some of the common terrestrial plant species recorded in the area.</p>	<ul style="list-style-type: none"> • <i>Increase the number of people living and working in the area on how to identify common invasive species so that appropriate measures can be put in place quickly</i>
2.1.3	<p>Raise awareness among the public about invasive species including alternative plant species that are better for biodiversity e.g., using native species for hedging. This can be done by arranging talks, workshops, posting on social media, and by setting examples by removing them from public sites and not using them in new planting schemes.</p> <p>Encourage them to record any sightings of invasives species they note in the community, or surrounding landscape to the local NPWS staff and / or Laois County Council.</p>	<ul style="list-style-type: none"> • <i>Reduce the number of invasive plants used in private and public planting schemes</i> • <i>Create awareness of the negative impacts of removing native hedgerows.</i> • <i>Increase the records of invasive species so that appropriate control measures are put in place</i>

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Target 2.2: Take practical control measures for invasive species recorded in the local area

Biodiversity Loss Drivers Addressed: 3

No.	Action	Why
2.2.1	<p>Liaise with the landowner(s), the local NPWS staff and Laois County Council to implement appropriate control / eradication measures for invasive species on public lands and roadside verges known already and noted in any survey of the village (see Action 2.1.1). For private lands, encourage the landowner to do likewise.</p> <p>This should include regular follow up treatment and monitoring to ensure the problem species has been fully eradicated.</p>	<ul style="list-style-type: none"> Control the spread of invasive species in the community and stop the negative impacts they have on biodiversity and people
2.2.2	<p>Ban the use of invasive plant species in new planting schemes on public lands and community spaces.</p>	<ul style="list-style-type: none"> Control the spread of invasive plant species in the community and stop the negative impacts they have on biodiversity and people
2.2.3	<p>Where possible, use trees of Irish provenance and origin rather than imported stock for hedgerows and woodland planting i.e. seeds of native Irish species sourced, sown and grown in Ireland.</p>	<ul style="list-style-type: none"> Conserve local Irish genetic plant species which are adapted to the Irish climate. Avoid accidental introduction of pests and diseases which can be carried into Ireland on imported stock e.g., Ash Dieback.

Photo Board



Snowberry along the Nore path in Dunmore Woods. Traditionally planted in gardens and hedges in the past, like Cherry laurel, this plant spreads in woodland undergrowth and prevents native herbs and shrubs growing in their native habitats.



A purple form of the native Irish elder (*Sambucus nigra*) makes for a decorative but at the same time biodiversity-friendly addition to the garden or hedge. There are plenty such examples available in garden centres making for an alternative to the usual garden hedging species used which can be of little value to wildlife.

Objective 3: Move towards the elimination of herbicide use

This objective aims to move the community towards an herbicide free environment. Herbicide has serious negative implications for biodiversity, the environment, and human health. It can seriously impair water quality in rivers, streams and lakes when it enters them impacting aquatic life and for our human use. Therefore, it is important to start to move towards eliminating its use in the community as soon as possible. Two targets have been identified to help achieve this objective.

Target 3.1 Move towards the elimination of herbicide use in the community

Target 3.2 Raise awareness of the negative impacts of herbicide use for biodiversity and on our health



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Action 3.1: Move towards the elimination of herbicide use in the community

Biodiversity Loss Drivers Addressed: 4

No.	Action	Why
3.1.1	<p>Move towards the elimination of herbicide use in the community. This should begin with a review of current use in public spaces with the immediate aim of eliminating its use near sensitive habitats (e.g. rivers and drains), and its use on sites with children present or of public health concern (e.g. schools, playgrounds, etc.). This should then extend to all other public areas as soon as possible thereafter.</p> <p>Alternative approaches for weed control include:</p> <ol style="list-style-type: none"> 1. To do nothing or do less: this involves recognising that herbicide has been overused and used unnecessarily 2. Use physical methods: this is the age-old method of physically pulling up, snipping or hoeing out plants that are in the wrong place. Plants need their leaves to photosynthesis (i.e. make their own food), therefore if their leaves are continually removed they will not survive. This should only apply to making paving safer for pedestrians or clearing formal flower or vegetable beds. We need to change our mindset about what really is a weed in other situations! 3. Using new technologies: e.g. hot foam machines etc. These are often costly and may be out of the reach of most small communities but they can still be discussed with local authorities and large landowners. <p>Exceptions to this rule include for the treatment of invasive species such as Japanese knotweed.</p>	<ul style="list-style-type: none"> • <i>Move towards the elimination of herbicide in the community as it has harmful effects on biodiversity and for human health</i>
3.1.2	<p>Encourage private landowners to go herbicide free on their lands. This can be communicated through a combination of local media and word-of-mouth.</p>	<ul style="list-style-type: none"> • <i>Move towards the elimination of herbicide in the community as it has harmful effects on biodiversity and for human health</i>

Target 3.2: Raise awareness of the negative impacts of herbicide use for biodiversity and on our health

Biodiversity Loss Drivers Addressed: 4

No.	Action	Why
3.2.1	<p>Organise, and / or participate in, talks and workshops on herbicide free weed control methods and the impacts of herbicide use on biodiversity and human health. These can be run in partnership with other neighbouring communities.</p>	<ul style="list-style-type: none"> • <i>Raise awareness of herbicide and its impacts on biodiversity and human health.</i> • <i>Move towards the elimination of herbicide in the community as it has harmful effects on biodiversity and for human health</i>

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No.	Action	Why
3.2.2	Engage with the public, land managers, and landowners in the community to tackle the cultural perception of what is considered to be 'tidy' and 'untidy', and learning to accept and appreciate the vital role that these plants that are considered as 'weeds' play in a healthy environment.	<ul style="list-style-type: none"> • <i>Change attitudes towards 'weeds' and the need to tidy up outdoor spaces</i>

Info Box: Herbicide

Did you know that chemically all herbicides are actually pesticides? Therefore, they will also harm animals as well as plants – and that includes us humans!

Did you know that a single drop of herbicide/pesticide is enough to breach the drinking water limit in a small stream for up to 30km of its length! Yet people will spray many, many drops of herbicide into their local environment in their gardens or along ditches adjacent to their homes, schools or playing fields – probably oblivious to the harm they are causing. We need to think about what we are happy to put into our natural environment as our knowledge of biodiversity tells us that we humans are an intricate part of biodiversity and therefore we are also affected by abuses of our environment as climate change consequences worldwide are now teaching us.

Alternative thinking: As with nearly all things in life, pesticides have their uses – especially in the eradication of invasive alien plant species which are damaging Irish biodiversity through habitat destruction daily. However, weeds are a subjective matter – a dandelion is not a weed to a bumblebee but the best source of food and sustenance when you've just woken up starving from your winter hibernation! So, the first thought always needs to be: is that plant really a weed? Is it really bothering me? Is it causing problems to anyone or anything? If it really must go then the best course of action is to starve the plant of nutrients by cutting away its food makers i.e., its leaves and then preventing light getting to the plant by covering it up. This could be with a thick reusable plastic or a piece of old carpet but preferably something that will biodegrade away like cardboard.



Herbicide used on a ditch in rural Ireland compared with the biodiversity rich verge on the opposite side of the road.



Dandelions have long been considered as weeds but we now know that they are one of the most important species for pollinators in Ireland.

Objective 4: Raising awareness of biodiversity

This objective aims to raise awareness of biodiversity in the wider community. Given the biodiversity crisis we are facing locally and globally it is vital that as many people are aware of and willing to take actions to conserve biodiversity. Three targets have been identified with actions including installing street furnishings and art, social media and community events to achieve this objective.

Target 4.1	Continue to deliver biodiversity training and identification workshops
Target 4.2	Continue to deliver biodiversity street art and signage
Target 4.3	Continue to promote and support positive actions to encourage more sustainable lifestyles and individual choices



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Action 4.1: Continue to deliver biodiversity training and identification workshops

Biodiversity Loss Drivers Addressed: 1, 2

No.	Action	Why
4.1.1	<p>Use different forms of local media to raise awareness and to reach out to the community about actions and issues relating to biodiversity in the community.</p> <p>This will also include reaching out to the various groups and schools in the community to encourage them to come on board with the actions in this Plan and listen to their ideas, concerns, and questions.</p>	<ul style="list-style-type: none"> • <i>Raise awareness of local biodiversity issues and sites of biodiversity interest in the area</i> • <i>Raise awareness of and provide updates on local biodiversity projects</i> • <i>Provide information to the public about actions they can take to increase biodiversity or reduce their impact on biodiversity loss</i> • <i>Encourage people in the community to get involved with the efforts of local community groups to improve the community spaces and increase biodiversity</i>
4.1.2	<p>Raise awareness of the All-Ireland Pollinator Plan and its resources in the local community. Share links to the All-Ireland Pollinator Plan website including its resources and relevant content (https://pollinators.ie/).</p> <p>Also share their relevant resources guides directly with different sectors in the community e.g. schools, faith communities, sports clubs, gardens, etc.</p>	<ul style="list-style-type: none"> • <i>Raise awareness of the All-Ireland Pollinator Plan and its resources which are free to use by the public</i>
4.1.3	<p>Deliver, or participate in, biodiversity training talks and workshops over the course of this Plan. These could be organised with other neighbouring communities. Some ideas include:</p> <ul style="list-style-type: none"> • Biodiversity in the local area; covering local natural designated sites, other biodiversity sites of interest, and species of note in the local area – this could be a talk delivered in partnership with the local NPWS Ranger. • Workshops on ‘gardening for biodiversity’ • Workshops for residential associations on how they can increase biodiversity in their estate • Wildlife identification events in the community – bat walks and talks are great family events for the summer. Other event ideas include woodland walks and plant id workshops, dawn chorus, etc. <p>Tapping into other events: These days the different wildlife charities across the country are regularly running events for the public. Any of relevance to the local community should be promoted</p>	<ul style="list-style-type: none"> • <i>Raise awareness of local biodiversity and sites of biodiversity interest in the area</i> • <i>Training for the community on biodiversity actions they can carry out</i> • <i>Training for the community on biodiversity identification</i> • <i>As well as increasing awareness of local biodiversity these events can be great social occasions especially when combined with a food element e.g. a pollinator picnic or a bat walk & barbecue. Such events can foster community spirit and sense of place.</i>

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Action 4.2: Continue to deliver biodiversity street art & interpretation

Biodiversity Loss Drivers Addressed: 1, 2

No.	Action	Why
4.2.1	<p>Carry out an audit of all street art, sculptures, and interpretation signs in the village and highlight those that contain information about or interpret biodiversity and natural heritage in the village. The audit should identify:</p> <ul style="list-style-type: none"> Any existing street infrastructure such as utility boxes, bins and other street furniture, walls, etc. that could be enhanced with murals of biodiversity and other aspects of local heritage. Existing sculptures and opportunities for new biodiversity themed sculptures. The Pavilion Park recently added new woodland animal mosaic sculptures in the woodland garden area. Existing signs and opportunities for new signs. New signs should include orientation maps showing the latest trails, information on biodiversity in the area, and sites of natural heritage interest. 	<ul style="list-style-type: none"> <i>Raise awareness and appreciation of local biodiversity</i>

Target 4.3: Continue to promote and support positive actions to encourage more sustainable lifestyles and individual choices

Biodiversity Loss Drivers Addressed: 1, 2

No.	Action	Why
4.4.1	Promote and support initiatives to make the community of Durrow more sustainable both now and as it develops in the future e.g. make the village fully pedestrian and bicycle friendly to encourage less car use locally.	<ul style="list-style-type: none"> <i>Ensure that as Durrow develops that it is done in a sustainable way</i>
4.4.2	Use Durrow's collective voice of local community / residential groups, businesses, and individuals to advocate for better environmental and biodiversity protection at the local, county, and national with local elected officials.	<ul style="list-style-type: none"> <i>Using the community's collective voice to campaign for better environmental protections can carry more weight with local decision makers</i>
4.4.3	Promote and support campaigns that encourage individuals to consider more environmentally sustainable lifestyle and consumer choices e.g. shop local campaigns, reducing food waste, reducing single use plastics, etc.	<ul style="list-style-type: none"> <i>Raise awareness of individual lifestyle choices and how they can impact biodiversity at the local and global level</i>

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No.	Action	Why
4.4.4	Promote the UN Sustainable Development Goals (SDGs) in the community and use them to help guide local community actions, planning, and land use decisions: https://sdgs.un.org/goals . Tidy Town’s National Competition supports making the UN SDGs relevant to National Competition Categories.	<ul style="list-style-type: none"> Raise awareness of the UN Sustainable Development Goals

Liaise with relevant local authority officers to support projects / initiatives above e.g. Laois County Council’s Environmental Awareness Officer or other relevant organisations such as Sustainable Energy Authority Ireland.

SUSTAINABLE DEVELOPMENT GOALS



Objective 5: Citizen Science: Collecting Evidence to Track Change and Measure Success

This objective aims to encourage and support people in the community with biodiversity recording and monitoring. Understanding the trends in biodiversity loss / gain at the local, national and international levels are crucial to developing targeted solutions to address the problems and build on the successes. There is a big knowledge gap still and one that needs constant updating. Citizen Science will form an important part of filling in gaps in knowledge. Four actions have been identified to achieve this objective.

Target 5.1	Monitor and record biodiversity and biodiversity actions taken
Target 5.2	Build the capacity within the community to manage and record biodiversity
Target 5.3	Review the Biodiversity Action Plan



The Summer snowflake (*Leucojum nivalis*) is an uncommon Irish wildflower associated with flood meadows of the Nore. Creating awareness (as this beautiful street art painting on Durrow Village Green by local artist Marie Moylan demonstrates) of this plant should also lead to its being monitored and minded locally.

Durrow Biodiversity Action Plan 2023-28

Info Box: Who are Citizen scientists?

All of us have the capacity to be Citizen scientists! This term refers to ordinary people being able to help with the scientific recording of biodiversity in our everyday lives. This has been transformed in Ireland with the advent of the National Biodiversity Data Centre (NBDC) who run the website www.biodiversityireland.ie. The NBDC describe citizen science as 'data collection by members of the public to help answer research questions. Having a strong recording community is essential to citizen science'. The NBDC website has become a hub for knowledge about Irish biodiversity. It features maps of the recorded occurrences of species of our Irish flora and fauna and information about their ecology and population trends. This is all vital information for scientists to use in order to assess how different species are doing over the years – a factor that has become crucial with our Biodiversity Crisis. For instance, this is one of the reasons why we know that one third of our bee species are in decline in Ireland – the NBDC has the figures to back this up.

The graphic representation below shows how Citizen science works with the NBDC from their webpage:

Citizen Science - National Biodiversity Data Centre (biodiversityireland.ie)

The other consideration is how Durrow can use citizen science to help track how the actions of this BAP are working over the years. Doing things like pollinator FIT counts (flower-insect timed counts) can give lots of information as to how the local species and habitats are doing in general.

How your input helps national and global conservation



Submit your records and datasets to National Biodiversity Data Centre



Your data will help us to track Ireland's progress towards our goals to conserving biodiversity



We will share your data with the Global Biodiversity Information Facility, a global biodiversity database of more than 6 billion records

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Target 5.1: Monitor and record biodiversity and biodiversity actions taken

Biodiversity Loss Drivers Addressed: 1, 2

No.	Action	Why
5.1.1	<p>Monitor and record different pollinator species. Some recording activities to consider include:</p> <ul style="list-style-type: none"> Establish at least one bumblebee and / or butterfly transect in the community. Increase the number of moth records by encouraging interested member(s) of the public to put out moth traps in their gardens on a regular basis. Support people who are interested in taking up moth trapping through a moth trap loan scheme (see Target 5.3). Note: A licence is required to operate a moth trap and can be got from the NPWS. Identify any solitary bee nesting sites in the community and monitor the species and populations. Solitary bees make up the majority of our native bee species and are crucial for pollinating wildflowers. See the link below* for further information on these species and good nesting habitats. https://biodiversityireland.ie/app/uploads/2022/05/ActionSheet_Solitary-Bees-WEB-2.pdf Carry out a Flower Insect Timed Counts (FIT Counts) the methodology of which is outlined in the https://pollinators.ie/record-pollinators/fit-count/. This allows the community to monitor any change in the abundance of flower visiting insects. This is a great activity for children and schools. 	<ul style="list-style-type: none"> <i>Help build up a picture of the health of local pollinator populations in the area, which can act as an indicator of the overall health of biodiversity</i>
5.1.2	<p>Monitor and record other specific habitats and species in the community. The exact habitat or species will depend on the interest of people in the community, their willingness and availability to get involved, and resources available to carry out professional surveys. Some ideas identified by the community during the training sessions include:</p> <ul style="list-style-type: none"> Monitor any habitat boxes installed in the community such as the Swift boxes on the creche. Monitor local populations of other key stone species such as pine marten and otter. These species are indicator species for the quality of local habitats and ecosystems, the advice of an ecologist is recommended in setting up mammal monitoring devices such as trail cams and spraint surveys. Promote the BirdWatch Ireland garden bird survey. All records should be submitted to BirdWatch Ireland. BirdWatch Ireland link: https://birdwatchireland.ie/our-work/surveys-research/research-surveys/irish-garden-bird-survey/taking-part-in-the-irish-garden-bird-survey/ Participate in the National Biodiversity Data Centre's national dragonfly and damselfly survey. They have lots of information about these species here: https://biodiversityireland.ie/surveys/dragonfly-ireland/ 	<ul style="list-style-type: none"> <i>Help build up a picture of the overall health of biodiversity in the area</i>

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No.	Action	Why
5.1.3	Monitor any newly created or managed meadows and verges in the community for different wildflowers, grasses, and other associated species. For support on this, link with the BSBI (Botanical Society of Britain and Ireland, https://bsbi.org/) to highlight any plant occurrences or populations of local or national importance in the Durrow area. There is also the potential to run flora id courses in conjunction with Laois County Council.	<ul style="list-style-type: none">• Monitor actions taken to see if they are making a difference for biodiversity in the area

Note: Where more detailed information on habitats or species are required then an ecologist should be engaged to carry out surveys of the area. These may be required to build up a more comprehensive list of species and habitats in the area.

All records should be submitted to the National Biodiversity Data Centre (<https://biodiversityireland.ie/>).

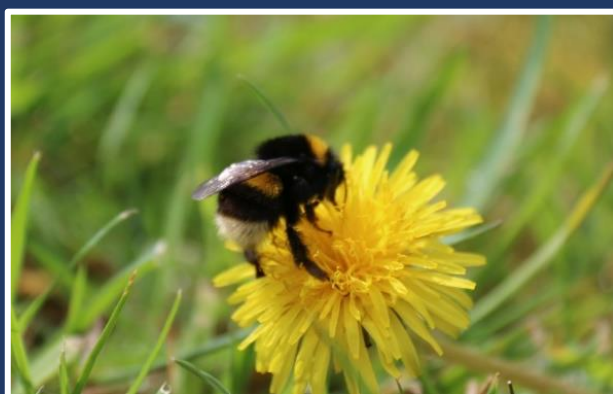
Info Box: Pollinators

Who are the pollinators?

Pollinators are species of insect who carry out the pollination of flowering plants that is vital for fruit and seeds to be produced. Many are aware of honey bees being pollinators but they are only one out of 99 native bee species in Ireland. The other 98 wild bee species are 21 bumblebees and 77 solitary bee species. In addition to bees, moths, butterflies, wasps, hoverflies, and ants can all act as pollinators – unwittingly transferring pollen with them from flower to flower as they seek tasty nectar to drink or gather pollen itself for their young to eat.

Why pollinators?

You may wonder what is all the fuss about pollinators in particular? Why are they the species that are being focussed on? The truth is that pollinator species are great indicators of the health of an ecosystem i.e. if there is a good number of various pollinator species then this means that there is enough food and nesting habitat for them i.e. enough healthy plants and undamaged natural habitats. So quite apart from pollinators being fascinating creatures – their presence or absence tells us a great deal about the state of biodiversity. Also they are relatively easy to recognise, if not at species level but at group level and it isn't always necessary for the citizen scientist to identify at species level e.g. FIT counts simply need the insect group identified – bumblebees, butterflies etc.



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Target 5.2: Build the capacity within the community to monitor and record biodiversity

Biodiversity Loss Drivers Addressed: 1, 2

No.	Action	Why
5.2.1	Ensure the Durrow Library is well stocked with biodiversity books, identification guidebooks, information leaflets and booklets, All Ireland Pollinator Plan guides, and other relevant information resources.	<ul style="list-style-type: none"> • <i>Help build up a picture of the overall health of biodiversity in the locality</i> • <i>Increase local capacity to identify habitats and species of importance</i> • <i>Understand the current issues relating to the Biodiversity Crisis and Proposed Actions that can be undertaken locally</i>
5.2.2	Ensure the local school has equipment and identification resources in stock. This can include posters, charts, guidebooks, swatches, pond dipping equipment, nets, pots, etc.	<ul style="list-style-type: none"> • <i>Increase contact with nature among local young people</i> • <i>Foster respect and interest in the natural world among local children</i> • <i>Facilitate linkage to the National Curriculum and cross curriculum learning opportunities for students in relation to Biodiversity and the Environment</i>
5.2.3	Consider developing ecological training for local teachers and youth leaders and building up resources with local schools to create outdoor classroom areas for nature study, including for example water sampling and kick sampling (to examine the macroinvertebrates that live in the bed of the canal and to monitor the health of the canal through this sampling process) this would be suitable for older age groups.	<ul style="list-style-type: none"> • <i>Increase local capacity and leadership to engage with issues pertaining to biodiversity</i> • <i>Increase capacity to share knowledge and facilitate interactions with local youth groups aiming to understand local flora, fauna and environmental issues</i>
5.2.4	<p>Moth Recording Equipment: Build a stock of moth traps and guidebooks that can be loaned to interested members of the public.</p> <p>There are two guidebooks, one for micro moths and another for macro moths.</p> <ul style="list-style-type: none"> • Field Guide to the Moths of Great Britain and Ireland (Paul Waring and Martin Townsend) • Field Guide to the Micro Moths of Great Britain and Ireland (Phil Sterling and Mark Parsons) <p>Note: A licence is required to operate a moth trap and can be got from the NPWS.</p>	<ul style="list-style-type: none"> • <i>Increase local capacity to identify moths, especially species of conservation importance</i> • <i>Help build up a picture of the overall health of local biodiversity</i>

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Target 5.3: Review the Biodiversity Action Plan

Biodiversity Loss Drivers Addressed: 1, 2

No.	Action	Why
5.3.1	Consider having an official launch of the BAP at the outset.	<ul style="list-style-type: none">• Increase local engagement with the Biodiversity Crisis and Actions that can be taken to address this crisis• Increase capacity to share knowledge and facilitate interactions with local groups aiming to understand local flora, fauna and environmental issues• Help build up a picture of the overall health of biodiversity
5.3.2	Carry out annual reviews of the Biodiversity Action Plan. This review should be used to identify progress on actions delivered, updates, and plans for the upcoming year.	<ul style="list-style-type: none">• This allows the fine tuning of actions for local perhaps ceasing low impact actions biodiversity and to understand and improve on actions that are making a positive impact on local biodiversity
5.3.3	Have an overall review of the Plan before it expires in 2028 and update it for the next agreed period of time.	<ul style="list-style-type: none">• This will facilitate an understanding of the local impact of the BAP and to make recommendations for any future Biodiversity Action Plan based on this review



Section 4: Resources

It is not necessary to re-invent the wheel to deliver this plan. There are numerous people, organisations, publications, and online resources available to achieve the best possible outcomes. Some of these are outlined in this section, although this is not intended to be an exhaustive list. It is also important that as new information becomes available that this should be considered and actions delivered or adjusted accordingly.

Links to useful online resources

The following is a list of useful links to guides on a range of common biodiversity subjects.

Subject	Link(s)
Bats	<ul style="list-style-type: none"> • https://www.batconservationireland.org/
Birdwatching	<ul style="list-style-type: none"> • https://birdwatchireland.ie/irelands-birds-birdwatch-ireland/
Children's Biodiversity Activities	<ul style="list-style-type: none"> • https://birdwatchireland.ie/our-work/fun-learning/for-kids/ • https://www.woodlandtrust.org.uk/blog/2020/03/kids-nature-activities-self-isolation/ • https://www.rspb.org.uk/fun-and-learning/
General Biodiversity Issues	<ul style="list-style-type: none"> • https://www.biodiversityireland.ie/ • www.npws.ie
Habitat Boxes	<ul style="list-style-type: none"> • https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-How-to-Guide-1-ALT_FINAL.pdf • https://birdwatchireland.ie/app/uploads/2019/09/Nestboxes-factsheet.pdf • https://www.batconservationireland.org/wp-content/uploads/2015/05/BCIrelandGuidelines_BatBoxes.pdf
Hedgerows	<ul style="list-style-type: none"> • https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Pollinator-How-to-Guide-3-FINAL-1.pdf • https://www.heritagecouncil.ie/content/files/conserving_hedgerows_2mb.pdf • www.hedgelaying.ie
Signage	<ul style="list-style-type: none"> • https://www.heritagecouncil.ie/content/files/bored_of_boards_1mb.pdf • https://pollinators.ie/resources/signage-templates/
Invasive Alien Species	<ul style="list-style-type: none"> • https://invasives.ie/ • https://www.fisheriesireland.ie/Invasive-Species/invasive-species.html
Orchards	<ul style="list-style-type: none"> • http://www.irishseedsavers.ie/blog/wp-content/uploads/2014/10/CreatingAnOrchard.pdf • https://www.theorchardproject.org.uk/
Pollinator Friendly Planting Schemes	<ul style="list-style-type: none"> • https://pollinators.ie/resources/
Pollinators	<ul style="list-style-type: none"> • https://pollinators.ie/
Recording Biodiversity	<ul style="list-style-type: none"> • https://www.biodiversityireland.ie/record-biodiversity/
Reducing Herbicide Use	<ul style="list-style-type: none"> • https://greensideup.ie/16-natural-alternatives-to-herbicide-why-you-should-use-them/
Schools & Biodiversity	<ul style="list-style-type: none"> • https://greenschoolsireland.org/biodiversity/ • https://pollinators.ie/schools/ • http://www.heritageinschools.ie/teachers-resources/strand/living-things-science/p3?q=&c= • https://www.eckilkenny.ie/images/Biodiversity_Plan_for_Schools.pdf • http://www.ipcc.ie/discover-and-learn/resources/
Swifts	<ul style="list-style-type: none"> • https://birdwatchireland.ie/publications/saving-swifts-guide/ • www.swiftconservation.ie/
Tree Identification & Selection	<ul style="list-style-type: none"> • https://www.treecouncil.ie/nativeirishtrees • http://www.Laoiscoco.ie/services/planning/publications/tree-design-guide-for-towns-and-villages-in-co-Laois-2017-28115.pdf
Wildflower Meadows	<ul style="list-style-type: none"> • https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Wildflower-Meadows-2018-WEB.pdf
Wildflowers	<ul style="list-style-type: none"> • http://www.wildflowersofireland.net/index.php

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Subject	Link(s)
	<ul style="list-style-type: none"> • www.bsbi.org
Wildlife Ponds	<ul style="list-style-type: none"> • https://www.wildlifetrusts.org/actions/how-build-pond • https://invasivespeciesireland.com/wp-content/uploads/2017/10/AQUATICS_BOOK5.pdf • https://www.antisce.org/ponds
Woodland	<ul style="list-style-type: none"> • http://www.woodlandsofireland.com/sites/default/files/Management%20Guidelines%20for%20Ireland%27s%20Native%20Woodlands%202017.pdf • https://www.forestryfocus.ie/social-environmental-aspects/biodiversity-and-nature-conservation/biodiversity-in-forests/conservation-and-restoration/ • http://www.woodlandsofireland.com/sites/default/files/Silvicultural%20Guidelines%20for%20Native%20Trees.pdf • https://www.wildlifetrusts.org/wildlife-advice/how-manage-woodland-wildlife

Biodiversity Podcasts

Subject	Link(s)
In Your Nature: Birds & general wildlife in Ireland	https://inyournature.buzzsprout.com/
Farming for Nature: Biodiversity on the farm	https://www.farmingfornature.ie/resources/podcasts/
Naturefile: All sorts of Irish ecology topics expertly presented	https://www.rte.ie/radio/podcasts/series/2407-naturefile/
Root and Branch: Each episode features a different native Irish tree	https://www.rte.ie/radio/podcasts/22155202-root-and-branch-birch-the-lyric-feature/
Wild Flower (Half) Hour: great wildflower information	https://tunein.com/podcasts/Podcasts/Wild-Flower-(Half)-Hour-p1065716/

Potential project funders

The following table outlines some of the potential sources of funding to help deliver the actions outlined in this Plan. These can be in addition to other traditional forms of fundraising.

Fund / Funding Body	Description
LEADER Programme, Laois Partnership Company	To discuss potential project ideas and the availability of funding, contact the Laois Partnership Company offices at (057) 866 1900. Website: https://laoispartnership.ie/
Laois County Council	For additional information in relation to funding for biodiversity and heritage projects, contact the Heritage Officer.
Community Foundation for Ireland	The Community Foundation for Ireland has funded biodiversity surveys and action plans under their Environment and Nature programme. https://www.communityfoundation.ie/grants/types-of-grants/environment-and-nature-fund
Heritage Council	The Heritage Council supports a wide range of heritage projects throughout the country through our annual grants programme. https://www.heritagecouncil.ie/funding
Local Authority Waters Programme	Their aim is to support communities and stakeholders in the delivery of local water quality projects and initiatives and have an annual grant package available. Contact your local officer to discuss potential projects by searching: https://lawaters.ie/funding/
NeighbourWood Scheme	This Forestry Service grant supports the creation and enhancement of new native community woodland schemes over 1ha in size (up to 12ha size) including the improvements to woodland facilities such as trail infrastructure. https://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/2015/NeighbourWoodScheme240717.pdf
An Taisce	An Taisce is currently running a project supporting community groups with the creation of wildlife ponds. Visit their website for further details: https://www.antisce.org/ponds

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Useful contacts & sources

To help deliver the actions it will be important to work with a range of local and national stakeholder groups. The following outlines some of these. It is worth remembering that there may also be local individuals in your community who have particular interests and skillsets worth tapping into to deliver the actions. Remember that skills other than ecological skills can be an important asset when delivering certain actions.

Organisation / Group	Area of Expertise	Contact Details
Laois County Council	The local Heritage Officer is available to discuss and provide information on biodiversity and heritage related matters and projects.	Email: heritage@laoiscoco.ie
Laois Public Participation Network	Public Participation Networks (PPNs) act as an independent structure to facilitate public participation in policy and decision making with the local authorities. Community and voluntary, social inclusion, and environmental groups are encouraged to join Laois PPN.	Website: https://www.laoisppn.ie/
Irish Wildlife Trust	National environmental charity covering all aspects of biodiversity.	https://iwt.ie/
BirdWatch Ireland	For information on Ireland's birds.	https://birdwatchireland.ie/
National Parks and Wildlife Service	Responsible for managing the Irish State's nature conservation responsibilities.	https://www.npws.ie/
All-Ireland Pollinator Plan	National Plan with the aim of creating an Ireland where pollinators can survive & thrive.	https://pollinators.ie/
National Biodiversity Data Centre	National centre for the collection, collation, management, analysis and dissemination of data on Ireland's biological diversity.	https://www.biodiversityireland.ie/
Vincent Wildlife Trust	National environmental charity with the aim of conserving and research into selected Irish mammals.	https://www.vincentwildlife.ie/
Botanical Society of Britain & Ireland	National organisation that promotes the study, understanding and enjoyment of British and Irish botany.	https://bsbi.org/ireland
The Local Authority Waters Programme	A shared service working with Local Authorities and State agencies to meet obligations under the EU Water Framework Directive for the development and implementation of River Basin Management Plans in Ireland.	https://lawaters.ie/
Bat Conservation Ireland	An all-Ireland charity that promotes the conservation of bats and their habitats.	https://www.batconservationireland.org/
Irish Peatland Conservation Council	A national charitable organisation with the aim of conserving and protecting a representative sample of Irish bogs, and to campaign on bog-related issues.	http://www.ipcc.ie/
Trees on the Land	This charity aims to increase the amount of native Irish trees across Ireland.	https://www.treesontheland.com/
The Acorn Project	A natural heritage education and place-based learning programme for communities along the Nore	https://slinacaille.ie/the-acorn-project

Appendix 1: Managing Community Meadows

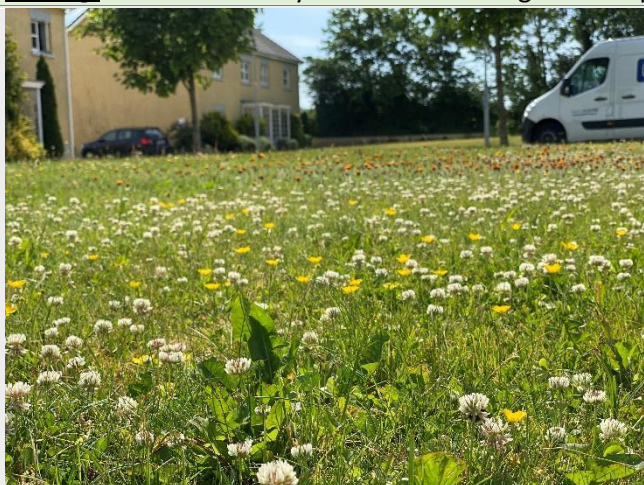
A meadow is a semi-natural habitat. Ecologists refer to it as semi-natural grassland. This means that its natural function and biodiversity are intact, but its existence is dependent on some human management. On the island of Ireland, a meadow left to its own devices, without any management, would eventually regenerate into woodland.

There are a few common types of meadow that community groups could consider as an alternative to short lawn grass:

Shortcut Meadow

This is a low meadow that is great for small areas or where the taller hay meadows are not suitable. It can be full of nectar rich wildflowers such as clovers, bird's-foot trefoil, dandelions, selfheal, and more.

Cutting: cut and lift every 4-6 weeks starting in mid-April and finishing in mid to late October.



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Hay Meadow

This meadow aims to mimic the old agricultural hay meadow, once common across Ireland but now mostly gone. The grasses & other wildflowers support a range of wildlife. Over the winter the vegetation is short.

Cutting: this meadow requires a cut and lift at the end of the summer. This is typically carried out in Aug-Sept after most of the plants have set seed. The exact timing is site specific and is dependent on the species present and the landowner's needs / preferences. Additional cut and lifts may be required in the autumn or early spring to remove autumn / winter growth.

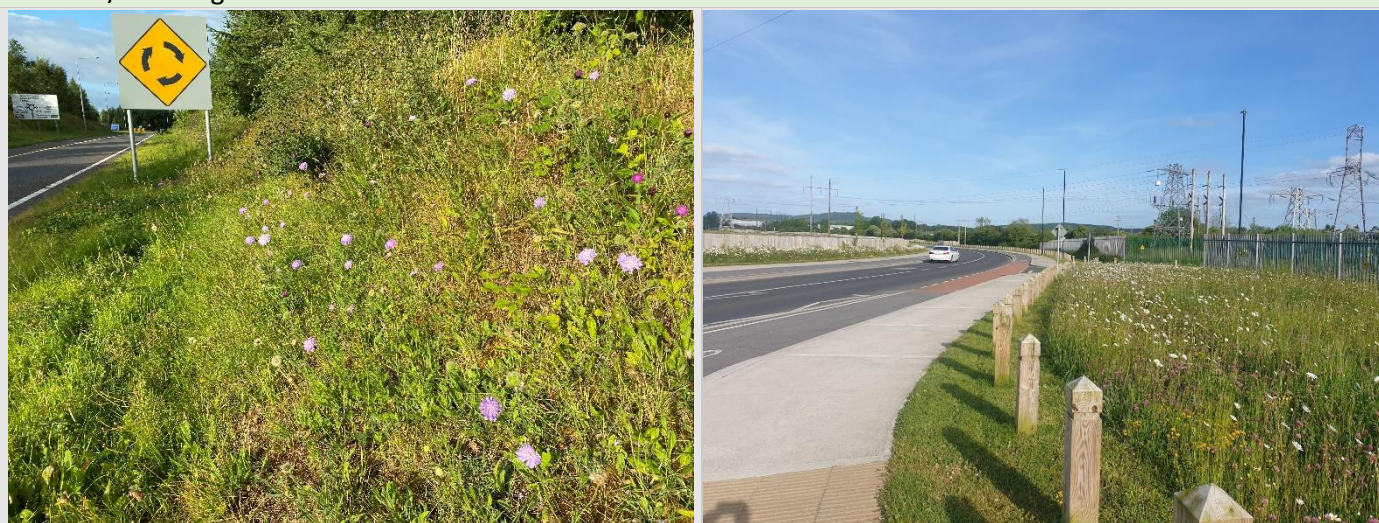


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Roadside verges

The grass verges of roadsides can be a great space to increase the biodiversity value of your local area. A mower's width (approx. 50cm) can be mown regularly on the roadside of the grass verge whilst inside this can be left unmown until September - managed the same way as the hay meadows described above. This allows wildflowers and grasses to bloom and provides valuable nesting and resting habitats for pollinators, other invertebrates and mammals, in at the base of the hedges or walls. If the verge is wide enough it can also be a good place to plant the occasional tree - especially on approach roads to your village. It is recommended to use signs in these situations as people become familiar with this new method of verge management.

Cutting: The roadside edge of ~50cm width requires mowing every 4-6 weeks during the growing season. The inner meadow verge requires a cut and lift at the end of the summer (Aug-Sept depending on species present) after most of the wildflowers have set seed. Additional cut and lifts may be required in the autumn or early spring to remove autumn / winter growth.



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Meadow Creation & Maintenance:

Planning

The change of management from traditional lawn grass to meadow, whilst delivering many positive benefits for biodiversity and the environment, also presents maintenance challenges. With proper planning these can be overcome. Some things to consider at the outset:

1) What type of meadow is suitable for your location?

A few meadow options are listed above but the choice of meadow for each site will depend practical issues, aesthetics, and personal / community preferences.

2) How are you going to cut the meadow?

Currently most communities rely on landscape / grass maintenance contractors to manage them and their public grasslands. Their equipment is typically not suited to cutting the longer grass in a meadow. It requires a specialist equipment. For smaller meadows then this can be done using scythes and / or handheld power tools such as trimmers, brush cutters or power scythe. Larger meadows may require the assistance of contractors or local farmers who would be willing to cut and take the grass cuttings away.

- In larger areas, cut out from the centre. This gives mammals and birds in the meadow a chance to naturally move from the area
- If possible, let the grass cuttings lie for a few days. This allows more seed to drop and gives any insects a chance to escape! A dry cut is also easier to lift, particularly if it is being done manually.

The management of a community meadow offers the potential for an annual community event. It could include showcasing the old tradition of scything – perfect as a Heritage Week event. There may even be the opportunity to organise a community event that could tie in with tie in a local vintage club if they have old hay meadow equipment!

3) What are you going to do with the grass cuttings?

Finding a sustainable use for the hay / grass cuttings is important and one of the trickiest aspects of the meadow management. Some ideas include:

- Community or personal composting - this may only be practical for smaller meadows. It should not be composted near sensitive habitats such as a watercourse.
- For larger meadows, if there is an interested farmer in the area, they may be able to use it as fodder or for bedding. If this is not an option, then consult with Laois County Council to explore your options and support with this issue.

Creating a Meadow

For existing grasslands, simply allow the grass to grow and maintain it as a meadow suitable for your requirements. It is not recommended that any wildflower seed be purchased for the purposes of adding it to the grassland. The grass sward will likely already contain a mix of grasses and other wildflowers naturally.

The seed of the annual wildflower Yellow Rattle (*Rhinanthus minor*) may be added to proposed hay meadows if it is not present and soil conditions suit. Seed should only be sourced from the local area from old unimproved meadows with the permission of the landowner.

Cutting Requirements

As per the tables above for the different meadow types.

Mown Fringes & Paths

Maintain the fringes on a regular basis along footpaths, seating areas, roads, and car parks. If the meadow is big enough, mow paths through it to allow access and create opportunities for natural play, learning and other social benefits.

Meadows and the Law

It is the responsibility of the landowner to control plants listed under the Noxious Weeds Act 1936. Currently these are Ragwort, Thistle, Dock, Common Barberry, Male Wild Hop Plant, and Wild Oat.

Appendix 2: Pollinator Friendly Planting

A crucial point to note before we go further with this section is that **the most beneficial areas** for pollinators and indeed other wildlife species are **natural, undisturbed habitats** such as native, wild grasslands in the photograph below (i.e. not lawns, golf courses, playing pitches or pasture fields). This intuitive point has been recently scientifically established through research by Russo *et al.* (2022) of Trinity College Dublin and the All-Ireland Pollinator Plan (<https://pollinators.ie/conserving-diversity-in-irish-plant-pollinator-networks/>). Therefore, managing as many of our mown lawn areas as possible as meadows for biodiversity (see 3.2 below) is the absolute best actions we can take for local biodiversity.



If, however, you are dealing with pots, planters and flowerbeds in gardens and the urban situation, then native Irish plants wherever possible are always the best choice.

Traditionally in recent years, community groups have turned to annual bedding plants such as Pelargoniums, Petunias, and Begonias for lots of colour. They are, however, of no use to pollinator species as the pollen has either been bred out of them or they have so many petals, the pollinators cannot physically access the pollen!

There are many other plants, a lot of them familiar as the beautiful cottage garden plants long used by Irish gardeners, that are pollinator-friendly. Another fantastic feature of these plants is that they are sustainable – they do not require replanting annually because they are perennial, and this also means that they require less watering – making them

eminently sustainable in this time of Climate and Biodiversity Crisis. Where possible, using plants sourced locally from keen gardeners is a cost effective and sustainable way of creating new or adding to existing flower beds. Various time-honoured propagation methods are simple to learn and this also avoids the use of imported plants which often are laden with pesticides invisible to the gardener but lethal to the insects we are trying to help! A list of pollinator friendly plants for different situations and seasons can be found in the All-Ireland Pollinator Plan Planting Code (<https://pollinators.ie/resources/>).

Planting bulbs to support pollinators

Another gardening action that can lengthen the time period of both pollinator food value and human interest is to plant spring-flowering bulbs into lawn areas. Pollinator-friendly spring bulbs are Snowdrops, Crocuses, and Grape hyacinths. The ever-popular daffodils and tulips unfortunately, are of no biodiversity value but even mixing through crocuses, snowdrops and grape hyacinths will be of some value. Planting these three bulb types through lawn areas is great for adding a splash of colour early in the season, announcing the arrival of spring! The delay in then in the first cut until the bulbs leaves have died back, allows other wildflowers such as dandelions to flower, also vital for emerging pollinators. Bulbs should only ever be considered for amenity grasslands, they are not suitable for use in species rich semi-natural grasslands. Planting bulbs such as these is considered a biodiversity-friendly gardening action but not a habitat creation action such as natural meadow actions outlined above.

Cutting: the first cut of the season should be timed to allow the bulbs to flower and the leaves to die back.



Appendix 3: Tree Planting Design & Maintenance Considerations

Woodland Planting Design Considerations

Trees deliver a wide range of environmental, social, and economic benefits. Where possible we should aim to increase tree cover in our communities, always being mindful of not disturbing or planting trees in semi-natural habitats e.g. wetlands, semi-natural grasslands etc. The following table outlines some of the common types of urban tree cover.



Hedgerows

Hedgerows have huge nature value as wildlife corridors, connecting sites and linking them with their surrounding landscape. Mixed native hedgerows are the best for biodiversity and should be the number one choice for any new hedgerow. Avoid using Cherry Laurel for any new hedges as they are highly invasive. To increase biodiversity further the vegetation at the base of the hedgerows should be managed less intensively.



Small Groups & Clusters of Trees

Smaller groups of trees are ideal for smaller common / public green spaces and parks. They are also useful in breaking up larger green spaces while still maintaining mostly open space where this is a requirement. By planting trees in blocks rather than singly, it offers the opportunity to eliminate grass cutting directly underneath the trees. This reduces the potential damage from lawnmowers and strimmers and creates additional habitat to support wildlife e.g. bumblebees.



Woodlands (Small to Large)

A woodland can be thought of as an area of land with trees as the dominant vegetation type. In community settings they can vary from small pockets to larger areas of woodland. They are great habitats for a range of wildlife and offer opportunities for recreation and amenity, whilst reducing grass maintenance. The photo shows a newly planted woodland in a residential estate. Notice how the grass underneath is left uncut which creates additional habitat, reduces grass maintenance and avoids the potential for accidental damage to the trees from lawnmowers.

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Shelterbelts

A shelterbelt is a linear strip of trees, anything from 2-20m width, that is designed principally to reduce wind speed and provide sheltered areas – ideal for sports grounds! They are also great for screening and act as important wildlife corridors. As for the woodland above, the grass underneath is left uncut creating additional habitat.



Orchards & Food Forests

These woodland types are great for community spaces as they not only provide benefits for biodiversity, but they also provide people with fruit and the potential for community events at blossom and harvest time.

The following are some practical tips for new tree planting design and maintenance:

- **Marking Out:** Set out all tree planting areas and inform grounds maintenance staff to avoid accidental damage to trees.
- **Setting Back:** It is important to set back from walls, roads, kerbs, blacktopping, and buildings. Do not plant against field stone walls (these are an important habitat in their own right).
- **Appropriate Planting:** Do not plant trees in places where they will have a negative impact on special or protected habitats and landscapes and resident flora and fauna. In most cases native tree planting is beneficial for the local environment and for biodiversity support. However, in certain situations planting trees can damage existing rare habitats and cause permanent habitat change. You must not plant trees on unenclosed land, moorland, wetland, heathland, bog or unimproved or minimally improved pasture or old meadow that has never been ploughed. Similarly, you must not plant on land falling within an SAC, SPA, NHA or any other designation without prior approval from the NPWS or relevant statutory body.

Similarly, it is important to consider your neighbours. Large trees may not be appropriate next to a building or garden where they will excessively block light or views, or otherwise interfere with their enjoyment of their property.

- **Site Conditions:** Design the planting mix to take account of local site conditions such as soil type, shelter, etc.
- **Scrub:** Avoid interfering with scrub and do not select scrubby areas for tree planting, they are best left alone.
- **Licence Requirements:** As of the production of this Action Plan, if any single block of new woodland planting exceeds 0.1 hectares (0.25 acres) then a Forest Service licence is required. This minimum area may be subject to change and so it should be checked in advance. A registered forester is required to carry out this on your behalf.
- **Maintenance Around New Trees:** Brambles, nettles, thistles and other common weeds all deter grazing and browsing animals and others who may trample or eat your trees. They are a cost-effective and natural alternative to barbed wire and plastic tree guards and will protect and shelter your trees if you let them. They also add additional wildlife value to new planting schemes.

Grasses and other herbaceous vegetation will compete with young trees for nutrients and light and the trees will grow more slowly on account of this during the first few years. Under the ground however they will be establishing strong roots which will serve them well in future and they will make use of the valuable shelter provided. After 1-2 years, the trees will have put roots below the other vegetation layer and you will find they take off and grow up

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fast, quickly shading out these plants. In the meantime, the grasses and other vegetation will provide important habitat for wildlife.

In general, any tall vegetation that is falling or hanging over the newly planted trees should be pulled or trampled as these can cause trees to lean or fork. This may be required 2-3 times in the first two seasons after planting. This is also a good opportunity to take a head count and note any failures. Do not use herbicide to control vegetation around trees, this is damaging for biodiversity and can also damage soil growing conditions for the trees.

- **New Tree Planting:** The following are some practical tips for planting new trees:
 - Where possible use bare root whips in planting schemes. These are preferable to standards as they establish quicker, have a higher success rate, and are less expensive to supply and plant.
 - Tree stakes and ties are only required for larger trees. These should be monitored during the year for defects that may damage the trees. Similarly, the ties should be loosened as the tree grows to avoid damage. All ties and stakes should be removed once the tree can stand unsupported without bending or shifting in the ground. This usually takes about 18 months to 3 years depending on the size the tree was planted at.
 - When planting new areas of woodland, avoid straight lines. Plant in small groups of the same species with the larger species concentrated to the back or centre of the mix and smaller species to the front or perimeter.
 - Planting spacings for new woodland areas: this will depend on specific project requirements. However, a 2-metre centre guide can be used where biodiversity is the primary aim of the planting scheme.
 - The planting season for bare root whips is November to March. It is best to plant as early in the bare root season as possible to allow plants time to bed in and minimise losses in the case of a dry spring or summer.
 - It is important to avoid any accidental damage caused by lawnmowers or strimmers. In general, it is best to avoid the use of these close to the base of trees as they can very quickly ring-bark a tree which will lead to the death of the tree. Allowing the vegetation to grow under new tree planting is the best way to avoid damage while providing additional habitat.

Hedgerow & Shelterbelt Planting

Native hedgerows and shelterbelts are suitable for use along site boundaries to provide biodiversity habitat, shelter, screening, and to act as a deterrent to would-be intruders and livestock, while allowing small mammals such as hedgehogs to pass through.

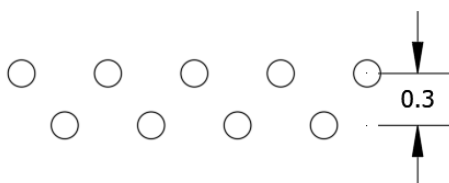
A hedge or hedgerow is a line of closely spaced shrubs with or without occasional trees, planted and trained to create a barrier or to delineate the boundary of an area. These are a common feature in the Irish landscape.

A shelterbelt is a linear strip of trees, anything from 2-20m width, that is designed principally to reduce wind speed and provide sheltered areas. They are also great for screening and act as important wildlife corridors.

Planting Design Considerations for Hedgerows

A hedgerow can be planted at anything from 3-8 plants per metre.

For best results, it should be planted in double staggered row approximately 30cm wide. Use a string line to achieve a straight line at planting.



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Maintaining a Hedgerow for Biodiversity

For native hedgerows that need to be maintained regularly, where space, road safety and other site considerations allow then they should be cut on 2–3 year rotations. This will allow the plants to flower and fruit, which act as an important food source for pollinators and other wildlife. It will also provide better screening and security benefits. When cutting the hedge, it should be cut in an A-shape with the base wider than the top. This will allow light to reach all parts of the hedge including the base which will help maintain a dense, bushy form.

Where resources allow then consider managing the hedgerow by laying it to create the best stock proof barrier. For more details see: <https://hedgelaying.ie/>

The cutting of hedgerows must be carried out in accordance with Section 40 of the Wildlife Act 1976 as amended by the Wildlife (Amendment) Act 2000 and the Heritage Act 2018. These Acts stipulate that it is an offence to destroy vegetation on uncultivated land between the 1st of March and the 31st August each year. There are exemptions to this to allow for the maintenance of sight lines for road safety reasons.

Species Selection for Woodlands, Hedgerows and Shelterbelts

It is recommended that native species should be used for new woodland, hedgerows, and shelterbelts. Non-native invasive species, such as Cherry Laurel (*Prunus laurocerasus*), Snowberry (*Symphoricarpos albus*), *Rhododendron ponticum*, etc. should be avoided in all circumstances.

Plants should only be sourced from certified Irish native seed origin and provenance. This will help prevent the import of pests and diseases. For example, Ash Dieback was brought in on imported tree stock and has now spread across the country. It is also important to avoid using ‘improved’ or forestry selected genotypes of native trees as they will narrow the genetic base of our native trees.

The following table lists some of the native trees and shrubs. Please note that the selection of exact species mix and percentage of each species will depend on site conditions, landowner requirements, and availability of suitable tree stock.

Species	Notes
Small trees / shrub species	
Hawthorn (<i>Crataegus monogyna</i>)	This is the most common hedgerow species in the Irish countryside. It can be used as the principal species for most sites. It creates a good quality stock proof barrier due to its thorns and dense habitat after cutting. Good show of cream flowers in May and red berries in autumn but this will only happen on bushes that are not cut that year.
Blackthorn (<i>Prunus spinosa</i>)	Another common hedgerow species. This is always the first to blossom in the hedgerows with white flowers in March before the leaves appear in April followed by purple fruit known as sloes in autumn. This is a particularly thorny species.
Hazel (<i>Corylus avellana</i>)	A small tree that favours limestone soils. Deciduous with large green leaves, catkins in early spring and hazelnuts in autumn.
Guelder Rose (<i>Viburnum opulus</i>)	A beautiful native shrub with large white blossoms in spring and scarlet red berries in autumn. Deciduous, its leaves turn deep red before they fall. Usually found in hedgerows along drains as it needs damp conditions to thrive.
Dog Rose (<i>Rosa canina</i> agg.)	A scrambling climber that will grow through other shrubs. Striking white flowers in June with bright scarlet hips in autumn. Thorny branches with small green deciduous leaves.
Purging Buckthorn (<i>Rhamnus catharticus</i>)	A native but uncommon deciduous shrub, favours damp, limestone soils. Green oval leaves with small white flowers in spring with green to black berries in autumn. The foodplant of the Brimstone butterfly caterpillars.

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Species	Notes
Spindle (<i>Euonymus europaeus</i>)	A green-branched shrub, deciduous with leaves turning bright red before they fall. Dramatically hot-pink coloured fruit that open out to reveal orange seeds. It favours limestone to neutral soils. Often found growing with Guelder rose in the wild.
Holly (<i>Ilex aquifolium</i>)	An evergreen shrub/small tree. Prickly leaves. Male and female trees needed for berries to be produced. White flowers in spring and summer with the famous red berries in autumn and winter.
Elder (<i>Sambucus nigra</i>)	A common shrub of high biodiversity value with large heads of cream flowers in early summer and dark berries favoured by the birds in September. It germinates easily in most soil types but it does favour nutrient-rich areas.
Willow/Sally (<i>Salix</i> species)	A common tree of damp ground, willows have a high biodiversity value with their catkins being an extremely important food resource for pollinator species in early spring. Very fast growing, it can take a lot of cutting but it will grow on damp ground where other species might be slow to grow.
Larger trees	
Pedunculate Oak (<i>Quercus robur</i>)	Both native oaks are of huge biodiversity importance supporting nearly 300 other species of insect, bird, lichen, fern etc. This species prefers heavy, damp, lowland soils.
Sessile Oak (<i>Quercus petraea</i>)	As above, this Oak species is hugely important for biodiversity. This is the species more suited to uplands and will grow in lighter, poorer soils than <i>Q. robur</i> .
Downy Birch (<i>Betula pubescens</i>)	This native tree is typical of bog edges and will happily grow on damp, peaty soils. Deciduous with small leaves, catkins in spring, good golden leaf colour in autumn.
Silver Birch (<i>Betula pendula</i>)	This is a tall native tree with an open crown that is similar to the Downy birch but needs good drainage.
Yew (<i>Taxus baccata</i>)	A native conifer, slow-growing evergreen with dense foliage thus making a good year-round screen. Both male and female trees needed to produce the red berries which are poisonous to humans but eaten by birds. Leaves are toxic to livestock and therefore it was widely planted in graveyards
Rowan (<i>Sorbus aucuparia</i>)	Native, does well in neutral to peaty soils. Clusters of cream flowers in spring with red berries favoured by birds in late summer to early autumn.
Crab Apple (<i>Malus sylvestris</i>)	Native, deciduous small tree. White & pink blossom, small green fruit in autumn.
Wild cherry (<i>Prunus avium</i>)	A small tree featuring many drooping clusters of white blossoms in spring with red cherries in late summer. Deciduous with lots of autumn colour on the leaves. Likes fertile soil but will tolerate clays.
Bird cherry (<i>Prunus padus</i>)	Another small native cherry with upright clusters of white flowers and black fruit in autumn. Great for birds. Prefers damp, fertile soils.
Alder (<i>Alnus glutinosa</i>)	A small tree that favours damp ground. The alder likes to have its roots in wet areas and is often found on stream and riverbanks in the wild.
Irish whitebeam (<i>Sorbus hibernica</i>)	Native to Ireland, favours limestone soils, deciduous. Attractive white undersides to oval leaves, cream groups of flowers in spring and red berries in autumn.
*Ash (<i>Fraxinus excelsior</i>)	The Ash is Ireland's most common tree species in the hedgerows. Ash dieback disease came into Ireland with the soil around Ash saplings from mainland European nurseries in the last decade. The disease has now been recorded in every county in Ireland and is expected to kill at least 90% of our Ash trees over the next decade. The only hope for the survival of Ash trees in Ireland is that a small percentage will prove immune to the disease.

*Please note that Ash, which is our most common hedgerow tree species is not available for planting due to the presence of Ash Dieback.

Appendix 4: Ash Dieback

Unfortunately, our Ash (*Fraxinus excelsior*) trees all over Ireland are facing into a very uncertain future as Ash Dieback disease (*Hymenoscyphus fraxineus*) is now well established across every county in Ireland. The disease is caused by a fungus, a blight similar to the potato blight that caused our Great Famine. Foresters' opinions differ between a 1% and 10% survival of our ash trees. This is a stark reality that we must acknowledge and therefore protecting the Ash trees we have left is important too in order to monitor them for signs of resistance. This is a local project that may interest the local community to work on over the coming years. Scientists believe the key to survival of the Ash species is the genetic biodiversity of wild Ash trees i.e. some trees are bound to have a natural immunity if there is enough genetic diversity within the Irish Ash population. Therefore, hopefully several of the ash trees in the local community will survive and thrive but unfortunately only time will tell.



Note the typical brown patches on these infected ash leaves

What does ash dieback look like?

Ash dieback can affect ash trees of all ages. Younger trees are killed off quicker, as seen in hurley ash plantations but in general, all affected trees will show some or all these symptoms:

- Leaves develop brown patches in the summer.
- Leaves wilt and turn black. Leaves might shed early.
- Dieback of the shoots and leaves is visible in the summer.
- Lesions develop where branches meet the trunk. These are often diamond-shaped and dark brown.
- Inner bark looks brownish-grey under the lesions.
- New growth from previously dormant buds further down the trunk. This is known as epicormic growth and is a common response to stress in trees.

The fungus overwinters in leaf litter on the ground, particularly on ash leaf stalks. It produces small white fruiting bodies between July and October which release spores into the surrounding atmosphere. These spores can travel many kilometres to land on fresh ash leaves and infect another tree. The fungus then grows inside the tree, eventually blocking its water transport systems, causing it to die.

Leafless, outer branches of a diseased ash. Also note the epicormic growth i.e. green leaf shoots on the main branch but not on the outer branches.



There is some good news! A very small proportion of ash trees are showing natural tolerance to the fungal disease. This means that they show minor symptoms and the disease does not have noticeable impact on their growth or health. Teagasc is working to identify such trees and build up a gene bank with the ultimate goal of producing tolerant ash seed and restore ash trees to Irish forests and hedgerows. This is where you come in! The community can get familiar with their local ash trees and monitor them over the coming years. Any that show resistance should be highlighted to Teagasc and hopefully this beautiful species that plays such a huge role in our Irish culture and heritage will not be lost to us.

Sources:

<https://treecouncil.org.uk/wp-content/uploads/2020/06/Tree-Council-Ash-dieback-tree-owners-guide-FINAL.pdf>

<https://www.teagasc.ie/crops/forestry/research/ash-resistance-to-ash-dieback/>

Appendix 5: An Taisce Wildlife Pond Project

Wildlife ponds and other wetland features can be one of the most biodiversity rich habitats in urban settings. An Taisce currently has a project underway to raise awareness and engage communities about these small wetland habitats and their importance for biodiversity, water quality and climate adaptation. It describes ponds as *'extraordinary reservoirs of biodiversity and have a critical role as Ireland faces our significant biodiversity loss. Over 50% of Ireland's amphibian wetlands have been lost to drainage, industrial peat extraction, pollution and natural senescence in the past 100 years. Of the 12,200 small enclosed water bodies across Ireland, 8,000 are less than a hectare in extent and the smallest categories have been subject to the greatest pressures. Ponds have been demonstrated to host more biodiversity than rivers and lakes, particularly macroinvertebrates and less common species (2/3 of all freshwater species!). Permanent and naturally vegetated ponds are excellent at carbon sequestration (Gilbert et al., 2014). Taylor et al. (2019) found that small ponds sequestered 20-30 times the amount of carbon compared with woodlands, grasslands and other habitats'*.

Ponds can be considered for most sites, from small gardens to large parks. Careful design and construction are essential to ensure they are successful and deliver maximum value for the community.



Appendix 6: Making and Leaving Room for Biodiversity

Some species can benefit from additional assistance for nesting, hibernating or resting spaces. These can be in the form of habitat boxes designed specifically for this species or by leaving areas largely unmanaged - untouched by human hands! Some to consider include:

Bee Boxes

These days there are many types of bee boxes that can be made or bought. It is now advised to move away from the large Bee/Bug hotels as disease can spread rapidly where there are big numbers of insects. So small is beautiful! They can be homemade with advice from websites such as the pdf below.

<https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Nesting-2018-WEB.pdf>

Solitary Bee Banks

Patches of bare earth on well drained, sunny south or west facing banks (or an aspect in between) can provide nesting opportunities for solitary bees. It is important that there is a good supply of flowers nearby for the bees to feed from. For further details please see:

https://biodiversityireland.ie/app/uploads/2022/05/ActionSheet_Solitary-Bees-WEB-2.pdf

Swift Boxes

The Swift (*Apus apus*) is an extraordinary migrant bird species. It overwinters in Africa before coming back to Ireland in late spring / early summer. Over millennia it has evolved to live alongside humans with house gables and gutterings replacing its original cliff face nesting sites. It has suffered declines for several reasons, one of which is a lack of nesting sites due to better maintenance and draught-proofing of houses. We can help by providing nest boxes on suitable buildings. For further information please see BirdWatch Ireland's guide:

<https://birdwatchireland.ie/publications/saving-swifts-guide/>

Bat Boxes

There are nine confirmed resident species of bats in Ireland. Local groups can aid the conservation efforts by working with bat specialists to install bat boxes at identified locations in the community where it is deemed appropriate. Once installed the boxes should be monitored to see if they are being used.



<https://www.batconservationireland.org/>

The Hare's Corner

This is an old Irish tradition that was carried out on farms across the country in the past. It is a beautiful idea and the concept of creating a mini wildlife sanctuary in today's world makes so much sense. It acts a safe place for insects, birds, mammals, and plants to flourish without the constant tidying that us humans bring to nature. There is lots of potential with this action: you could have a small example in your own garden and a larger one in your local park or nearby farm. The local charity Burrenbeo Trust are helping to bring back this tradition.

Appendix 7: Common Terrestrial Plant Invasive Species


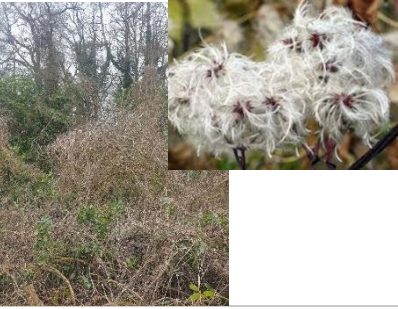


There are many types of invasive species present in Ireland. The following are just some of the more common terrestrial plant species that are found in Co Laois.

Species	Means of Spread	Main Risks	Control
 <p>Cherry Laurel <i>Prunus laurocerasus</i></p>	<p>Some spread by berries being eaten by birds but most spread is by layering and suckering.</p> <p>Still widely sold in garden centres / nurseries and used in landscaping schemes. Most popular garden hedging species.</p>	<p>Forms thick impenetrable thickets that cast year-round shade, suppressing natural vegetation. All parts of the plant contain the highly poisonous chemical compound cyanide, therefore wear gloves when dealing with it.</p>	<p>Excessive growth can be tackled by continuous cutting back. It's important to avoid it flowering and setting seed so annual cutting back controls this at least. However, professional herbicide treatment is required to eradicate it completely. With bigger plants, typically growing freely in woodland situations it grows back strongly after being cut and will spread from lateral roots and shoots. Coillte currently has a programme of laurel eradication focussing on their properties of high biodiversity value. For the Durrow community, it will be important to create awareness about the problems this plant is causing in all the local woodland sites of biodiversity value. Encourage the planting of species that are not problematic for Irish woodlands in gardens and public areas.</p>
 <p>Japanese Knotweed <i>Fallopia japonica</i></p>	<p>Plant is sterile in Ireland and only spreads through root and stem material, accidentally or deliberately moved by human action, or washed along rivers.</p> <p>As little as 0.6g of root or stem required to regenerate.</p>	<p>Seriously damages houses, buildings, hard surfaces, and infrastructure growing through concrete, tarmac and other hard surfaces, usually where weaknesses already exist. Forms dense thickets, shading out natural vegetation.</p>	<p>Control must only be carried out by professionals. Professional treatment required for several years but costs fall sharply as amount of foliage to be treated reduces.</p>

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Species	Means of Spread	Main Risks	Control
 <p>Winter Heliotrope <i>Petasites pyrenaicus</i></p>	<p>Winter heliotrope is a persistent perennial i.e. it doesn't stop growing. It has an extensive rhizome system so the plant spreads vegetatively. Ireland only has male plants so no seed is produced.</p>	<p>Winter heliotrope forms dense colonies of plants that outcompete native species. The dense growth creates abnormal shade in Irish habitats e.g. woodlands and with its strong growth in late winter & early spring this directly impacts upon native woodland spring flora preventing them from growing and negatively impacting upon the biodiversity value of an area.</p>	<p>The EPA carried out an in-depth study of the control of Winter heliotrope in 2019. The rhizomes, stems & leaves all have the potential to generate new plants, so particular care should be taken to avoid transport of soil or vegetation off site. The EPA guide contains best practice guidelines which point towards the use of Synergon herbicide as having the best results, but it cannot be used near trees. Where this plant occurs under trees, this just leaves either glyphosate use or physically digging out the plants. However, another point to consider is if a plant population is growing along a stream or waterway. Both these methods have the potential to negatively impact upon the waterway and any other sites downstream. Often the best work that can be done by a local community is to limit the extent of the Winter Heliotrope in their local area. Sometimes just being able to confine a colony to its current area can be helpful.</p>
 <p>Rhododendron <i>Rhododendron ponticum</i></p>	<p>Produces large quantities of viable seed (3000-7000 per flower head) i.e possibly one million seeds per plant! Readily layers i.e. forms new growth, where branches touch the ground. Still widely sold in garden centres/nurseries and used for game cover and in forestry landscaping.</p>	<p>Forms thick impenetrable stands that casts year-round shade, suppressing natural vegetation, exacerbated by the very acidic nature of leaf litter.</p>	<p>Excessive growth can be tackled by cutting back, but herbicide treatment is required to eradicate, with application over several years required to tackle seed bank in soil.</p> <p>Large plants will need to be dealt with professionally but small saplings can be simply pulled up, crucially before they flower after 4-5 years of growth.</p>

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Species	Means of Spread	Main Risks	Control
 <p>Pheasantberry / Himalayan honeysuckle <i>Leycestria formosa</i></p>	<p>Deciduous shrub, seeds dispersed by water and by birds and mammals.</p> <p>Still widely sold in garden centres/nurseries and popular as game cover.</p>	<p>Forms thick impenetrable thickets that shades out natural vegetation.</p>	<p>Control of this plant can be carried out by a local community. Individual plants can be dug out in early Spring (i.e. February/March) before seed is set. Leave plants on site to dry and rot down.</p>
 <p>Old man's beard <i>Clematis vitalba</i></p>	<p>A climbing species with small cream flowers in summer and woolly/hairy seed heads in autumn that will spread on the wind. A garden escape, probably deliberately planted in hedges and woodland in the past.</p>	<p>This deciduous climber can form dense thickets that blanket trees, shrubs and ground flora, ultimately depriving them of light.</p>	<p>Excessive growth can be tackled by cutting back, but herbicide treatment is required to eradicate, with application over 2-3 years required to deal with regrowth.</p> <p>Large plants will need to be dealt with professionally but small saplings can be simply pulled up.</p>
 <p>Snowberry <i>Symphoricarpos alba</i></p>	<p>Frequently planted as garden hedging in the past. It spreads vegetatively and through birds passing its seeds.</p>	<p>This deciduous shrub outcompetes & replaces native hedgerow plants and dominates woodland understoreys in some woods around Durrow.</p>	<p>Can be manually cleared by volunteers (with landowners permission) outside of the nesting season (i.e. excluding February-August inclusive annually). Where it occurs in woodlands around Durrow, contact the local Coillte Estates Manager who may already have a work programme to eradicate it.</p>
 <p>Himalayan balsam <i>Impatiens glandulifera</i></p>	<p>This pretty plant was deliberately planted in the past along river banks. Its seeds drop into the water and then get spread further downstream. This is why it must be dealt with on a catchment-wide basis.</p>	<p>It shades out native flora and then in winter when it dies back, it leaves the river/stream banks exposed and erosion</p>	<p>Despite being so problematic, it is easily pulled up and therefore is one that can be dealt with by community groups. It is worth remembering though that even if a catchment-wide project cannot be achieved, then local plant removal is still worthwhile as it will help the native flora to return and will lower the amount of seed that spreads.</p>

Appendix 8: Biodiversity of the Woodlands around Durrow & their Protection

As highlighted previously, the greater Durrow area is encircled by a large area of woodland, walkable as a trail known as the 'Durrow Leafy Loop'. There are numerous woodland habitats & species of important biodiversity value in the greater Durrow area, especially associated with the River Nore and its tributaries and this is why they are included in the River Barrow and River Nore SAC 002161 (further information relating to protected habitats & species is available at the website of the National Parks & Wildlife Service: www.npws.ie). **Please note that if works are planned in an area that is within the SAC or SPA then consultations must be made with the local NPWS Conservation Ranger before anything is carried out to ensure no wildlife laws are being inadvertently transgressed!**

1. Diversity of Woodland habitats:

Old Oak woods with Holly & Hard ferns: In the scientific terminology of the EU Habitats Directive, this is known as: *Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]*

These woodlands are dominated by Sessile oak with Holly, Downy Birch and Rowan the dominant understorey trees where soils are on the acidic side and Pedunculate oak, Ash and Hazel where soils are more neutral. Herb layers feature many species with Bilberry/Fraughans, Ling heather, Bracken and Wood sage on peaty acidic soils whereas more alkaline/limey soils feature several ferns and wildflowers such as Soft shield fern, Primroses, Wood anemones, Bluebells and Wild garlic in spring. On the woodland floor Ivy and Brambles creep along but are interspersed with mosses, lichens and fungi. The woods are filled with many bird species and good news stories such as the recent resurgence of the Jay population and the return of the Greater spotted woodpecker after its extinction in Ireland due to woodland clearances 300 years ago. The native Red squirrel and Pine marten populations have both also done well in recent years in the woodlands along the Nore valley.

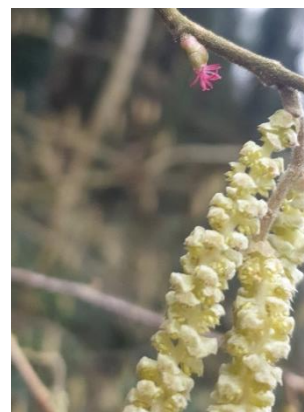
Pedunculate oak leaves



Wood anemones



Hazel: pink female flower & male catkins



Flowers & black leaf buds of Ash



Soft shield fern



Scarlet elf cup fungus



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1. Diversity of Woodland habitats:

Alluvial forests with Alder, Ash & Willow: In the scientific terminology of the Habitats Directive, this is known as: *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* [91E0]



These woodlands are very special as they have adapted to conditions that involve flooding usually in winter and drying out in summer each year. The dominant tree species include Sessile oak, Ash, Alder, Willows, Hazel and Hawthorn. The herb layer is typically dominated by Meadowsweet, Ivy and Brambles with Primroses, Enchanter's nightshade, Remote sedge, Wild garlic and Golden saxifrage. Often old drainage channels run through these woodlands and here you get Marsh marigolds and Flags. Sometimes these woods just occur along narrow strips on the river edges known as gallery woodlands. Their herb layers typically feature nettles, meadowsweet, wild angelica & reed canary grass.

Meadowsweet



Alder tree growing typically at the



water's edge with catkins & cones visible in winter

Willow flowers are of huge importance as a food source for emerging bumble bee queens in spring



Marsh marigold also known as *Kingcup*



Yellow flag iris



Grey heron



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1. Diversity of Woodland species:

Birds:

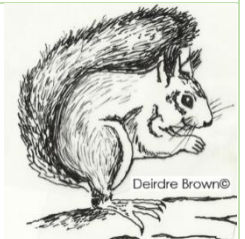
Kingfisher: This beautiful bird is so important within the wider European context that the section of the Nore that runs from Borris-in-Ossory to Inistioge is designated as a Special Protection Area for its protection. It lives along river banks perching on overhanging branches as it looks for prey in the river waters below.

Jay: This colourful bird is a member of the crow family and its beautiful plumage contrasts with its raucous, screeching calls reflected in its Irish name *Scréachóg coille!* Acorns are a favourite food and each autumn thousands are buried by Jays as food caches which support them through the winter but countless are forgotten about and these grow into oak trees making the Jay an important ecosystem engineer in its own right without any help from humans!

Mammals:

Otter (*Dobharchú*): The beautiful 'water dog' *Madra uisce* lives along our best quality waterways. It's an elusive mammal that is brilliantly adapted to the riverine environment.

Red squirrel (*Iora rua*) & Pine marten (*Cat crann*): Our native species of squirrel was in trouble but with woodland cover rising in recent decades, Ireland's red squirrel population has increased too. Interestingly, their increasing numbers are in tandem with those of another native woodland mammal, the Pine marten. It too is doing well as Ireland's woodland cover increases.



Daubenton's bat: Also known as the Water bat, this species is particularly associated with waterways as it skims over the surface of the river feeding on insects. Bats provide a fantastic ecosystem service to us humans as they eat around 3,000 midges per night in summer! They only have one baby per year and populations are therefore very susceptible to changes in conditions such as cold, wet summers leaving them hungry, unable to make enough milk for their young. Daubentons often roost in tiny gaps in the stonework of old bridges which is why it is crucial that bat surveys be undertaken prior to any works in order to avoid the entombment of the animals!



Badger: the badger, *an broc*, is a versatile mammal species found across several habitats but it generally builds its setts in wooded areas. It lives in large family groups with a very strong social structure. It is an omnivore eating a variety of food including blackberries, earthworms and wasps!

Fish:

Atlantic salmon: possibly Ireland's most well-known fish species, many are aware of this fish's anadromous life cycle – this refers to its being born in freshwater rivers and streams but spending most of its life in the salty sea only to return to its home stream to spawn. It needs really clean waters and its populations have suffered declines in recent decades.

River and Brook lampreys: these two species are closely related and belong to a very ancient group of fish known as Agnatha (jawless fish). They have no jaws or bones, just cartilage and they are known from the fossil record for at least 400 million years!



Twaite shad: like the salmon, this beautiful fish lives most of its life in the sea but returns to its home river to spawn. Like the salmon, its numbers have decreased in recent years and its conservation is imperative.

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2. Diversity of Woodland species:

Invertebrates:

Nore Freshwater Pearl Mussel: A very special species only found in the upper part of the river Nore. Its scientific name is *Margaritifera durrovensis* after its home area in and around Durrow, Co. Laois. Unfortunately, the species appears to be heading for extinction as the pristine river conditions necessary for its successful growth to adulthood sadly no longer exist in the river. This is but one reflection of our impact on our local environment.

White clawed crayfish: This small animal is a freshwater relation of the lobster and a favourite food of the otter! Its populations across Ireland are in trouble after an introduced American species of crayfish brought crayfish plague with it. This viral disease is carried by the species but it is fatal for our native species. This is why hygiene in relation to boats etc is so important in moving from one river to another. Official advice from the Marine Institute is: Anyone involved in activities in any watercourse should observe the '**Check, Clean and Dry**' protocol once they leave the river and before visiting any waterway again.

Purple hairstreak butterfly: A beautiful butterfly that is rarely seen as it spends most of its adult life up in the tops of Oak trees. Bring a pair of binoculars to your favourite Nore-side Oak wood on a warm summer's evening and you may be rewarded with a sighting!

Plants:



Summer snowflake: a rare beauty known from woodlands that flood in winter along the Nore. This native, wild relation of the daffodil flowers in late April-early May. Durrow Tidy Towns has recorded this species in woodland habitat flooded by the Erkina at the Mill Road.

Meadow saffron: this wild crocus species is known from some flood meadows along the river Nore in south Co. Kilkenny. It has a beautiful pink flower that forms a gorgeous display from August through to October. It is very rare and is listed under the Flora Protection Order – a sign that its special flood meadow habitats are disappearing.

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3. Other Native Tree species of note that occur in the greater Durrow area:

There are a host of native tree species worthy of note particularly when it comes to communities collecting and propagating seed. Local provenance is everything! Only collect seed from wild trees in your locality. The most helpful guide for growing native trees in Ireland is: 'Our trees, a guide to growing Ireland's native trees in celebration of a new millennium' This popular publication, is available to buy in hard copy from the Tree Council of Ireland or the pdf is free to download at: www.woodlandsofireland.com/publications



Guelder rose (*Viburnum opulus*) is a small understory tree with beautiful creamy flowers in summer and opalescent red berries in autumn. Many of its horticultural *Viburnum* cousins are popular bushes in Irish gardens.



Spindle (*Euonymus europaeus*) is another small understory tree whose smaller branches stay green all year round. It has insignificant white flowers but in autumn it blazes with scarlet red leaves and berries known as cardinal caps for their shape with the bright pink outer shell opening to reveal orange berries within.



Bird cherry (*Prunus padus*) is a species protected under the Wildlife Act for its rarity but it is particularly associated with woods in the Nore valley. It's a lovely small tree with small spires of white flowers borne in May followed by small black cherries beloved of the birds in August!



Purging buckthorn (*Rhamnus cathartica*):

a lovely small tree that is of special significance as it is a food plant for the beautiful yellow butterfly the Brimstone. It grows in some places near river banks and where there is seasonal flooding.



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3. Other Native Tree species of note that occur in the greater Durrow area:

Black poplar (*Populus nigra ssp. betulifolia*): this handsome tree has very particular needs so it is usually found growing along stream and river banks that periodically flood. It is not widespread but is associated with the south-east and the Nore and Barrow catchment areas. It deserves more attention and cherishing by local communities because of its interesting natural history. Often it's easier to identify in winter as it has a kind of a 'windswept and interesting' outline as seen in this photo.



Irish whitebeam (*Sorbus hibernica*): Another beautiful small tree, endemic to Ireland and particularly associated with the Slieve Bloom region where the headwaters of several Nore tributaries rise. It features handsome leaves with white-green undersides and clusters of creamy blossom in late spring followed by red berries in late summer



Scots pine (*Pinus sylvestris*) is a beautiful coniferous tree, native to Ireland and thought to have become extinct here. Recently, however, genetic tests on a group of trees in the Burren have found them to be of Irish genetic stock thus showing that we never fully lost this wonderful tree. These trees favour acidic soils and will often grow with Oak, Downy birch, Holly and Rowan with an understorey of Ling heather, Bracken and Bilberry. As they mature their trunks lengthen and they carry their branches up high, therefore even though they are evergreen, plenty of light can get through to the understorey thus allowing for lots of biodiversity in woodlands featuring Scots pine.



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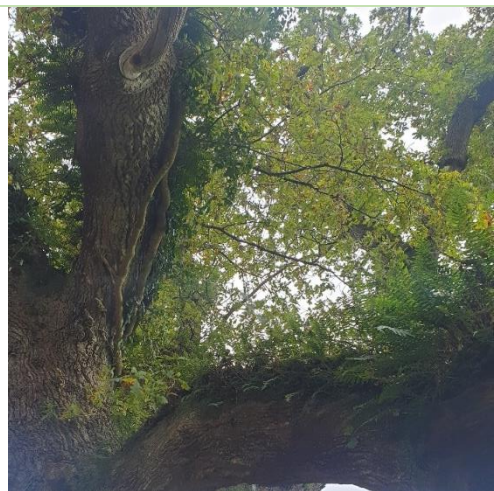
3. Other Native Tree species of note that occur in the greater Durrow area cont.:

Quaking aspen (*Populus tremula*) is a beautiful native Irish member of the poplar family. It's found in woods along the banks of the Nore and many of its tributaries. Its Irish name is *Crann creathach* – the shaking or shivering tree. This name aptly describes the tree in full leaf on a summers day where there's so slight a breeze that you wouldn't notice but the long petioles (leaf stalks) mean that the big flat aspen leaves catch even the slightest of breezes and the whole tree looks and sounds like its shivering or quaking. The sound is beautiful – a little like the tide breaking on a beach which is a welcome sound in the Midlands!



4. Ancient trees

The Nore Valley features some wonderful examples of our most venerable trees. Ancient or Veteran trees are in ripe old age which can vary from species to species but all are precious and need both understanding and conservation. We are still coming to an understanding about how best to look after these precious trees e.g. Oaks are known to send their outer boughs to the ground in old age but sometimes humans cut these boughs as we don't think trees with branches touching the ground 'look right'! However, this is not the best idea as the Oak is essentially using these outer boughs as walking sticks to balance its great weight and us humans should leave them alone, they know what they are doing!



Ancient trees often feature epiphytes i.e. plants growing on another plant as with these Polypody ferns on an Oak branch.



Ancient trees often feature branches of deadwood. This is normal and of added biodiversity value



A bough of the great Charleville King Oak in Co. Offaly touching the ground.



This ancient Pedunculate oak has a girth of 7m making it at least 500 years old according to the UK Woodland Trust calculator!

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5. Invertebrates

Woodland habitats feature many types insects and other invertebrates that occupy various niches. Here's a sample of just a few species to look out for:



Speckled wood butterfly (*Pararge aegeria*)



Brassy leaf beetles (*Phyllodecta vitellinae*) typically found on Poplars & Willows in summer



Ivy (*Hedera helix*) is hugely important for biodiversity with its flowers & fruit feeding many insects, birds & mammals. Here a hoverfly known as the **Tapered Drone fly (*Eristalis pertinax*)** feeds on an Ivy flower.

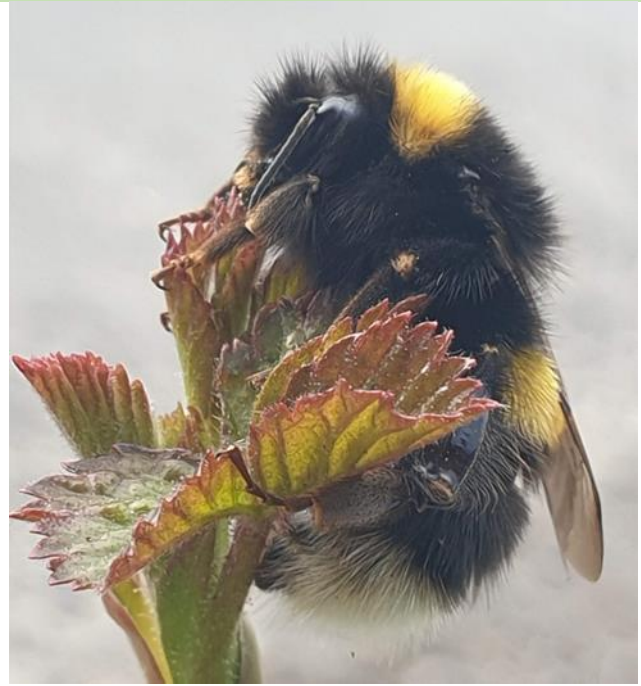


Nettles (*Urtica dioica*) are very important for biodiversity. They are the food plant for 5 species of butterfly in Ireland. These are the caterpillars of Peacock butterflies (*Inachis io*).

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Brambles (*Rubus fruticosus* agg.) are really important for pollinators as evidenced by this pair of **Silver-washed fritillaries (*Argynnis paphia*)**. They feature flowers & fruits at the same time both of which feed many insects, birds & mammals.



A **White-tailed bumblebee (*Bombus lucorum* agg.)** resting on a bramble leaf.



Areas of bare soil or sand provide habitats for our solitary bee species who are crucial pollinators in Ireland. Small holes such as this indicate the presence of solitary bee nests.

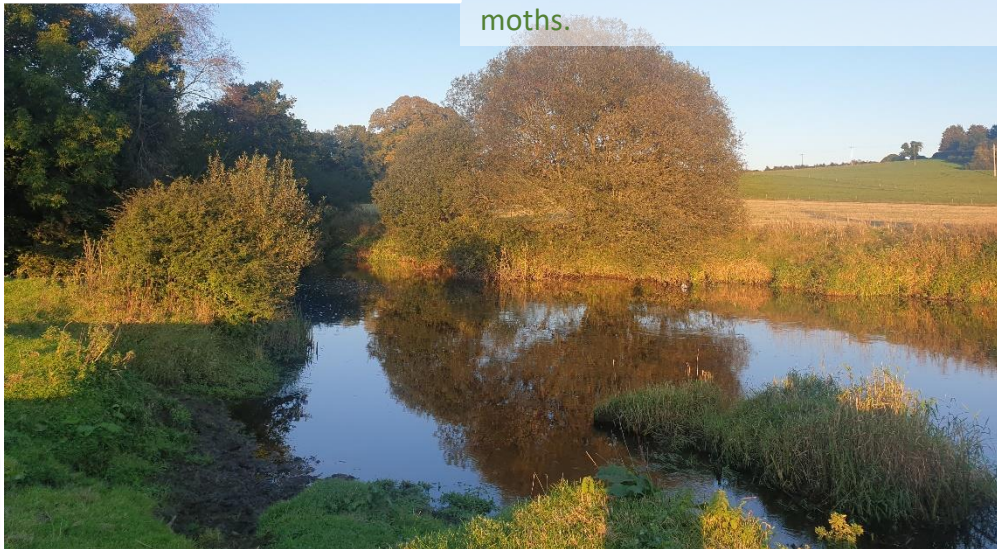


The lives of so many animals are intimately tied up with woodlands. This beautiful butterfly, the **Brimstone (*Gonepteryx rhamni*)** has wings that look like leaves, giving it excellent camouflage in the trees! Its caterpillars feed on **Purgings buckthorn (*Rhamnus catharticus*)**, an uncommon plant of wet woodland edges. Notice how their scientific names tie them together.

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A small selection of the rich diversity of life in the woodlands around Durrow from trees to wildflowers to ferns to fungi to birds, butterflies and moths.



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6: The diversity of woodland habitats and sub-habitats

Woodlands in Ireland are classified into different types of habitats. Several are native habitats and called ‘semi-natural’ by ecologists because in reality, there are no woodlands left in Ireland that have not been influenced by human activity at some stage in their history. The majority of woodlands in Ireland are in fact planted by humans but for many that are planted in areas that would have supported woodland in the past, then elements of the old woodland flora and fauna can establish very quickly.

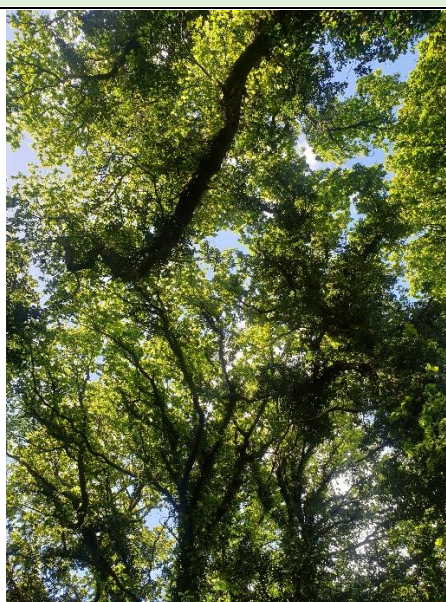
Woodland types in Ireland (according to Fossitt 2000)

Semi-natural woodlands: these are woodlands that are as close to natural as possible in Ireland and closest to the woodland types that would have existed prior to human settlement of Ireland:

- Woodland dominated by Oak, Birch & Holly
- Woodland dominated by Oak, Ash & Hazel
- Yew woodland
- Wet woodland dominated by Pedunculate Oak & Ash
- Riparian woodland
- Wet woodland dominated by Willow, Alder & Ash
- Bog woodland



Wet woodland with Willow & Alder



Canopy in Oak woodland



Riparian woodland in winter



Holly understorey in oak woodland

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Highly modified/non-native woodland: these are plantation woodlands including coniferous forestry that essentially is similar to an agricultural crop. It also includes old plantation woodlands that may be associated with 18th & 19th century landed estates such as Beech woods.

- Broadleaved woodland i.e. woods dominated by non-native species such as Beech and Sycamore
- Mixed broadleaved/conifer woodland e.g. Beech & Douglas fir
- Conifer woodland e.g. Sitka spruce commercial plantations
- Scattered trees & parkland i.e. essentially 18th & 19th century landscapes where trees were allowed to grow to maturity scattered through pastures and amenity grassland.



Sitka spruce plantation



Beech woodland



Parkland



Plantation woodland with a mix of conifers & broadleaved trees

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Woodland sub-habitats

Clearances: these are areas within a woodland where there are no large trees and light can always get down to the ground layer. Such areas are important for various species of wildflower and invertebrates e.g. several species of butterfly. Humans can help in the formation of such areas with some light pruning of small trees obviously always outside of the bird nesting season. Important species for woodland clearances are Nettles and Brambles as they are the food plants for many species of butterfly, moth and wild bee.



Woodland canopy: these are the areas seldom seen by us humans where nature gets some peace and quiet to get on with things! These are the tree tops where species such as the beautiful Purple hairstreak butterfly spend most of their time as well as many species of bird and invertebrate.

Pools: small areas of open water within a woodland add hugely to the biodiversity, especially the local fauna as they attract birds, invertebrates and amphibians.



Scrub: areas where perhaps Brambles and small trees dominate. They can be like 'nursery' areas for young trees just getting established and needing more exposure to light than they would get under the more closed canopy of areas of more mature trees. Again these are important in their own right for many different bird and invertebrate species. Over time they will change and trees will develop to maturity thus closing in the canopy.

Woodland edges: the edge areas of woodland are important for many species, again because these areas are where the all-important light can get in. These places are where many of our native species that we now associate with hedgerows such as Hawthorn would naturally have grown in the past.



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The importance of deadwood

Deadwood i.e. dead trees, branches and twigs are of huge biodiversity importance in the Irish woodland context. Their value is little appreciated by the general public and therefore awareness of its importance must be made known to both local communities and visitors alike.

Why is deadwood important? The woodland ecosystem consists of a wide range of organisms with trees at its heart. Trees are the most long-lived organisms on earth and having trees of all different ages makes for the best biodiversity. Veteran trees often feature dead branches and this is important as many invertebrate species need both dead and living wood for different parts of their lifecycles. Dead branches are often cleared away from the forest floor and this is unfortunate as its presence is vital for many species of bird, invertebrate, fungus and bacteria. When trees die naturally in a woodland then this can create new sub-habitats such as clearances thus allowing for new young trees and other plant species to reach for the light.



Standing deadwood: this is the name given to dead trees that remains upright as these can be of use for a host of different species to those using a dead tree lying on the ground. Standing deadwood provides habitats for many birds and mammals who use hollows for their nests e.g. owl species or red squirrels and their dreys. Also the once extinct Greater spotted woodpecker has returned to Ireland and it especially favours standing deadwood for its drumming.

The Fluted or Grooved bird's nest fungus (*Cyathus striatus*) lives on dead wood in Irish woodlands. Its fruiting bodies feature an ingenious design for dispersal of their spores whereby the ridges on the 'nests' guide raindrops down to splash onto the 'eggs' (they are in fact peridioles, egg-shaped structures which contain the fungal spores) causing them to splash out of the nest with the bouncing raindrop.



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Fungi: Increasingly more and more scientists would say that actually the fungi are the most important organisms in our woods. For many they are an unseen element with most of them living underground in the forest soil but their inter-relationships with trees and shrubs is absolutely crucial for a healthy woodland ecosystem. Many are termed *mycorrhizae* which literally means 'fungus-root'. These fungi live in a symbiotic relationship with the root systems of trees where the nutrient and water uptake is enhanced for both organisms by helping each other.



The fungi that us humans normally see in the woods are those that recycle those all-important nutrients by breaking down dead wood and we only notice them when they grow their fruiting bodies – mushrooms. There are many species, of many colours and forms found in Irish woodlands and they are well worth further study and celebration amongst our woodland communities.



The Branched oyster mushroom particularly favours growing on dead elm.



Candle-snuff fungus so-called as it looks like snuffed-out candlewicks. It grows on dead wood breaking it down on the woodland floor.

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3.3 The importance of seed saving

Seed saving is a valuable biodiversity action that all local communities can carry out in their localities. The Acorn Project (<https://slinacoille.ie/the-acorn-project>), a river Nore based community project, is training and guiding communities in biodiversity-friendly woodland management techniques with seed saving being a prominent activity. The importance of local communities along the Nore growing on new young trees and shrubs from locally sourced seed cannot be overestimated. There are several reasons why this activity is critical for the biodiversity of the greater Nore Valley region:

1. By appropriately harvesting seed from local native trees and shrubs, we are ensuring that we are using the species (genetically adapted over thousands of years here) best suited to the local conditions and therefore have the best chance of survival.
2. By using local native species, we are enhancing and protecting local biodiversity i.e. supporting all the myriad of other species that rely on these trees and shrubs for food and shelter.
3. By gathering seed locally in the correct manner we are ensuring that no new, invasive species or diseases are inadvertently introduced. A sad example of this being the introduction of Ash dieback disease to Ireland.
4. The knowledge and skills involved in seed harvesting and propagation are valuable tools to be cherished and passed down within communities.

The following is a list of native Irish woodland species found in the woodlands along the River Nore, many of which are currently having their seed saved and propagated by Acorn Project communities:

Canopy trees	Understorey trees	Shrubs
Sessile oak	Hazel	Spindle
Pedunculate oak	Holly	Guelder rose
Wych elm	Downy birch	Purging buckthorn
Scots pine	Hawthorn	
	Blackthorn	
	Alder	
	Crab apple	

The seed gathering and propagation of all native Irish trees and shrubs has been very well detailed in the wonderful publication for The People's Millennium Forests project of 2000: 'Our Trees – a guide to growing Ireland's native trees in celebration of a new millennium'. The pdf can be downloaded at: <https://cdn.ringofgullion.org/2015/09/OurTrees.pdf> or a hard copy can be purchased from The Tree Council of Ireland.

As highlighted above in Appendix 4, a special case needs to be made here for our beautiful but beleaguered ash trees. It will be a most valuable exercise if local communities can monitor their local ash trees over the coming years and take note of any individuals that appear to be resistant to ash dieback disease. These trees could be the future of ash in Ireland and their vegetative propagation will be most valuable. Teagasc, the state agricultural research authority, are working to identify such trees and build up a gene bank with the ultimate goal of producing tolerant ash seed and restore ash trees to Irish forests and hedgerows and therefore would be interested to learn of any such trees. For further information see:

<https://www.teagasc.ie/crops/forestry/research/ash-resistance-to-ash-dieback/>

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NPWS SITE SYNOPSIS: River Barrow and River Nore Special Area of Conservation 002162 (Version Date: 9/2/2016)

(a map showing the extent of the SAC is freely available to view at: www.npws.ie/maps-and-data)

This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlinton, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King’s Rivers on the Nore. Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones. The Nore, for a large part of its course, traverses limestone plains and then Old Red Sandstone for a short stretch below Thomastown. Before joining the Barrow it runs over intrusive rocks poor in silica. The upper reaches of the Barrow also run through limestone. The middle reaches and many of the eastern tributaries, sourced in the Blackstairs Mountains, run through Leinster Granite. The southern end, like the Nore runs over intrusive rocks poor in silica. Waterford Harbour is a deep valley excavated by glacial floodwaters when the sea level was lower than today. The coast shelves quite rapidly along much of the shore. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1130] Estuaries [1140] Tidal Mudflats and Sandflats [1170] Reefs [1310] *Salicornia* Mud [1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows [3260] Floating River Vegetation [4030] Dry Heath [6430] Hydrophilous Tall Herb Communities [7220] Petrifying Springs* [91A0] Old Oak Woodlands [91E0] Alluvial Forests* [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1092] White-clawed Crayfish (*Austropotamobius pallipes*) [1095] Sea Lamprey (*Petromyzon marinus*) [1096] Brook Lamprey (*Lampetra planeri*) [1099] River Lamprey (*Lampetra fluviatilis*) [1103] Twaite Shad (*Alosa fallax*) [1106] Atlantic Salmon (*Salmo salar*) [1355] Otter (*Lutra lutra*) [1421] Killarney Fern (*Trichomanes speciosum*) [1990] Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*) Good examples of alluvial forest (a priority habitat on Annex I of the E.U. Habitats Directive) are seen at Rathsnagadan, Murphy’s of the River, in Abbeyleix estate and along other shorter stretches of both the tidal and freshwater elements of the site. Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*). A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Palustriella commutata* and *Eucladium verticillatum*, have been recorded. The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix; at Kyleadohir, on the Delour, Forest Wood House, Kylecorragh and Brownstown Woods on the Nore; and at Cloghristic Wood, Drummond Wood and Borris Demesne on the Barrow, though other patches occur throughout the site. Abbeyleix Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the 16th century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved Bellflower and the moss *Leucodon*

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sciuroides. The rare Myxomycete fungus, *Licea minima* has been recorded from woodland at Abbeyleix. Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by oak (*Quercus* spp.), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*), with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the trees are regenerating through a cover of Bramble (*Rubus fruticosus* agg.), Foxglove (*Digitalis purpurea*), Great Wood-rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*). On the steeply sloping banks of the River Nore, about 5 km west of New Ross, in Co. Kilkenny, Kylecorragh Woods form a prominent feature in the landscape. This is an excellent example of relatively undisturbed, relict oak woodland with a very good tree canopy. The wood is quite damp and there is a rich and varied ground flora. At Brownstown, a small, mature oak dominated woodland occurs on a steep slope. There is younger woodland to the north and east of it. Regeneration throughout is evident. The understorey is similar to the woods at Brownsford. The ground flora of this woodland is developed on acidic, brown earth type soil and comprises a thick carpet of Bilberry (*Vaccinium myrtillus*), Heather (*Calluna vulgaris*), Hard Fern (*Blechnum spicant*), Common Cow-wheat (*Melampyrum pratense*) and Bracken (*Pteridium aquilinum*). Borris Demesne contains a very good example of a semi-natural broadleaved woodland in very good condition. There is quite a high degree of natural regeneration of Oak and Ash through the woodland. At the northern end of the estate oak species predominate. Drummond Wood, also on the Barrow, consists of three blocks of deciduous woods situated on steep slopes above the river. The deciduous trees are mostly Oak species. The woods have a well-established understorey of Holly, and the herb layer is varied, with Bramble abundant. The Whitebeam *Sorbus devoniensis* has also been recorded here. Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*). Indian Balsam (*Impatiens glandulifera*), an introduced and invasive species, is abundant in places. Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include water-starworts (*Callitriche* spp.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum* spp.), the pondweed *Potamogeton x nitens*, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and crowfoots (*Ranunculus* spp.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996). Dry heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The dry heath vegetation along the slopes of the river bank consists of Bracken and Gorse (*Ulex europaeus*) with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove, Common Sorrel (*Rumex acetosa*) and Creeping Bent (*Agrostis stolonifera*). On the steep slopes above New Ross the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*) has been recorded. Where rocky outcrops are shown on the maps Bilberry and Great Wood-rush are present. At Ballyhack a small area of dry heath is interspersed with patches of lowland dry grassland. These support a number of clover species, including the legally protected Clustered Clover (*Trifolium glomeratum*) - a species known from only one other site in Ireland. This grassland community is especially well developed on the west side of the mud-capped walls by the road. On the east of the cliffs a group of rock-dwelling species occur, i.e. English Stonecrop (*Sedum anglicum*), Sheep's-bit (*Jasione montana*) and Wild Madder (*Rubia peregrina*). These rocks also support good lichen and moss assemblages with *Ramalina subfarinacea* and *Hedwigia ciliata*. Dry heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Close to the Blackstairs Mountains, in the foothills associated with the Aughnabrisky, Aughavaud and Mountain Rivers there are small patches of wet heath dominated by Purple Moor-grass (*Molinia caerulea*) with Heather, Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*) and Bell Heather (*Erica cinerea*). Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites australis*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickcloney, Ballinlaw Ferry and Rochestown on the west

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bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*) are found. The very rare and also legally protected Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*). Glassworts (*Salicornia* spp.) and other annuals colonising mud and sand are found in the creeks of the saltmarshes and at the seaward edges of them. The habitat also occurs in small amounts on some stretches of the shore free of stones. The estuary and the other E.U. Habitats Directive Annex I habitats within it form a large component of the site. Extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. Good quality intertidal sand and mudflats have developed on a linear shelf on the western side of Waterford Harbour, extending for over 6 km from north to south between Passage East and Creadaun Head, and in places are over 1 km wide. The sediments are mostly firm sands, though grade into muddy sands towards the upper shore. They have a typical macro-invertebrate fauna, characterised by polychaetes and bivalves. Common species include *Arenicola marina*, *Nephtys hombergii*, *Scoloplos armiger*, *Lanice conchilega* and *Cerastoderma edule*. An extensive area of honey-comb worm biogenic reef occurs adjacent to Duncannon, Co. Wexford on the eastern shore of the estuary. It is formed by the polychaete worm *Sabellaria alveolata*. This intertidal *Sabellaria alveolata* reef is formed as a sheet of interlocking tubes over a considerable area of exposed bedrock. This polychaete species constructs tubes, composed of aggregated sand grains, in tightly packed masses with a distinctive honeycomb-like appearance. These can be up to 25cm proud of the substrate and form hummocks, sheets or more massive formations. A range of species are reported from these reefs including: *Enteromorpha* sp.; *Ulva* sp.; *Fucus vesiculosus*; *Fucus serratus*; *Polysiphonia* sp.; *Chondrus crispus*; *Palmaria palmate*; *Coralinus officinalis*; *Nemertea* sp.; *Actinia equine*; *Patella vulgate*; *Littorina littorea*; *Littorina obtusata* and *Mytilus edulis*. The western shore of the harbour is generally stony and backed by low cliffs of glacial drift. At Woodstown there is a sandy beach, now much influenced by recreation pressure and erosion. Behind it a lagoonal marsh has been impounded which runs westwards from Gaultiere Lodge along the course of a slow stream. An extensive reedbed occurs here. At the edges is a tall fen dominated by sedges (*Carex* spp.), Meadowsweet, willowherbs (*Epilobium* spp.) and rushes (*Juncus* spp.). Wet woodland also occurs. The dunes which fringe the strand at Duncannon are dominated by Marram (*Ammophila arenaria*) towards the sea. Other species present include Wild Clary/Sage (*Salvia verbenaca*), a rare Red Data Book species. The rocks around Duncannon ford have a rich flora of seaweeds typical of a moderately exposed shore and the cliffs themselves support a number of coastal species on ledges, including Thrift, Rock Samphire (*Crithmum maritimum*) and Buck's-horn Plantain (*Plantago coronopus*). Other habitats which occur throughout the site include wet grassland, marsh, reedswamp, improved grassland, arable land, quarries, coniferous plantations, deciduous woodland, scrub and ponds. Seventeen Red Data Book plant species have been recorded within the site, most in the recent past. These are Killarney Fern (*Trichomanes speciosum*), Divided Sedge, Clustered Clover, Basil Thyme (*Acinos arvensis*), Red Hemp-nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh-grass, Meadow Barley, Opposite-leaved Pondweed (*Groenlandia densa*), Meadow Saffron/Autumn Crocus (*Colchicum autumnale*), Wild Clary/Sage, Nettle-leaved Bellflower, Saw-wort (*Serratula tinctoria*), Bird Cherry (*Prunus padus*), Blue Fleabane (*Erigeron acer*), Fly Orchid (*Ophrys insectifera*), Ivy Broomrape (*Orobanche hederæ*) and Greater Broomrape. Of these, the first nine are protected under the Flora (Protection) Order, 2015. Divided Sedge was thought to be extinct but has been found in a few locations in the site since 1990. In addition plants which do not have a very wide distribution in the country are found in the site including Thin-spiked Wood-sedge, Field Garlic (*Allium oleraceum*) and Summer Snowflake. Six rare lichens, indicators of ancient woodland, are found including *Lobaria laetevirens* and *L. pulmonaria*. The rare moss *Leucodon sciuroides* also occurs. The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (both *Margaritifera margaritifera* and *M. m. durrovensis*), White-clawed Crayfish, Salmon, Twaite Shad, three lamprey species – Sea Lamprey, Brook Lamprey and

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River Lamprey, the tiny whorl snail *Vertigo moulinsiana* and Otter. This is the only site in the world for the hard water form of the Freshwater Pearl Mussel, *M. m. durrovensis*, and one of only a handful of spawning grounds in the country for Twaite Shad. The freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning. The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Common Frog. The rare Red Data Book fish species Smelt (*Osmerus eperlanus*) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater mussel species, *Anodonta anatina* and *A. cygnea*. Three rare invertebrates have been recorded in alluvial woodland at Murphy's of the River. These are: *Neoascia obliqua* (Order Diptera: Syrphidae), *Tetanocera freyi* (Order Diptera: Sciomyzidae) and *Dictya umbrarum* (Order Diptera: Sciomyzidae). The rare invertebrate, *Mitostoma chrysomelas* (Order Arachnida), occurs in the old oak woodland at Abbeyleix and only two other sites in the country. Two flies (Order Diptera) *Chrysogaster virescens* and *Hybomitra muhlfeldi* also occur at this woodland. The site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois, and also along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country. The old oak woodland at Abbeyleix has a typical bird fauna including Jay, Long-eared Owl and Raven. The reedbed at Woodstown supports populations of typical waterbirds including Mallard, Snipe, Sedge Warbler and Water Rail. Land use at the site consists mainly of agricultural activities – mostly intensive in nature and principally grazing and silage production. Slurry is spread over much of the area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of the salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within the site. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. There is net fishing in the estuary and a mussel bed also. Other recreational activities such as boating, golfing and walking, particularly along the Barrow towpath, are also popular. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown. There are active and disused sand and gravel pits throughout the site. Several industrial developments, which discharge into the river, border the site. New Ross is an important shipping port. Shipping to and from Waterford and Belview ports also passes through the estuary. The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, over-grazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel (*Prunus laurocerasus*) and Rhododendron (*Rhododendron ponticum*). The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein. Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red Data Book plant species including three rare plants in the salt meadows and the population of the hard water form of the Freshwater Pearl Mussel, which is limited to a 10 km stretch of the Nore, add further interest to this site

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NPWS SITE SYNOPSIS: River Nore Special Protection Area 004233

(Version Date: 13/9/2011)

(a map showing the extent of the SAC is freely available to view at:

www.npws.ie/maps-and-data)

The River Nore SPA is a long, linear site that includes the following river sections: the River Nore from the bridge at Townparks, (north-west of Borris in Ossory) to Coolnamuck (approximately 3 km south of Inistioge) in Co. Kilkenny; the Delour River from its junction with the River Nore to Derrynaseera bridge (west of Castletown) in Co. Laois; the Erkina River from its junction with the River Nore at Durrow Mills to Boston Bridge in Co. Laois; a 1.5 km stretch of the River Goul upstream of its junction with the Erkina River; the Kings River from its junction with the River Nore to a bridge at Mill Island, Co. Kilkenny. The site includes the river channel and marginal vegetation. For a large part of its course the River Nore traverses Carboniferous limestone plains; it passes over a narrow band of Old Red Sandstone rocks below Thomastown. The site is a Special Protection Area (SPA) under the E.U. Birds Directive of special conservation interest for the following species: Kingfisher. A survey in 2010 recorded 22 pairs of Kingfisher (based on 16 probable and 6 possible territories) within the SPA. Other species which occur within the site include Mute Swan (35), Mallard (267), Cormorant (14), Grey Heron (45), Moorhen (14), Snipe (17) and Sand Martin (1,029) – all figures are peak counts recorded during the 2010 survey. The River Nore SPA is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive.

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This Biodiversity Action Plan was produced for Durrow Tidy Towns and funded under the Community Foundation for Ireland.

FUNDED BY

**Community
Foundation
Ireland**

Produced by:



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