Slane Community Biodiversity Action Plan 2016-2020

An Chomhairle Oidhreachta
The Heritage Council

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Slane

Community Biodiversity Action Plan 2016-2020

By

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Cover photo: River Boyne, Slane

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Introduction

Ireland is a land of contrasting landscapes - peat bogs and limestone pavement, steep cliffs and rolling coastal dunes, rugged mountains and damp lowland pastures defined by a patchwork of hedgerows and stone walls. Our landscape, celebrated in arts, music, literature and folklore, is intrinsic to our identity and sense of place.

Appreciation for our natural heritage and love of nature has, for centuries, been engrained in many of us. Recent scientific studies have linked exposure to nature with increased energy, a heightened sense of well-being and numerous health benefits (Maller *et al.* 2008, Townsend *et al.* 2015). These studies confirm what we instinctively know and feel already.

People are spending more time outdoors; walking, running, cycling, gardening and reconnecting with nature to recharge their batteries. Communities are coming together to look after their local environment, preserving their patch and learning more about their natural environment.

While there are both global and national efforts to conserve the natural environment through legislation and policy, the role of local communities in the guardianship and conservation of our natural heritage is crucial in order to effect conservation on the ground.

The aim of this biodiversity plan is to raise awareness of biodiversity and to empower the local community to undertake actions for the conservation and enhancement of biodiversity in their local area.

> *"Everybody needs beauty as well as bread, places to play in and pray in, where nature may heal and give strength to body and soul alike."*
>
> John Muir

How was this plan drawn up?

This biodiversity plan is the result of collaboration between members of Slane community and Meath County Council. Community groups were invited to participate including Tidy Towns groups, Pride of Place, residents associations, members of the Public Participation Network (PPN) and schools. Workshops were advertised locally and the public were invited to attend.

Deborah D'Arcy Consultant Ecologist, worked with the community groups and interested individuals on behalf of Meath County Council to facilitate the development of this plan. Desktop research was carried out including a review of rare and protected species from the National Parks and Wildlife Service, records from the National Biodiversity Data Centre, site synopses of designated sites, habitat surveys and habitat mapping from the National Survey of Native Woodlands and the Irish Semi-natural Grassland Survey. In addition, The *County Meath Development Plan 2013-2019* and the *Meath Heritage Plan 2015-2020*, together with Local Area Plans and Tidy Town reports, were reviewed.

A series of four training workshops were held in Slane. The first of these involved a walkover survey of the village with the community groups to review the natural resources and areas within the locality. This was then followed by a series of three workshops addressing key concepts in biodiversity, local biodiversity in Meath and actions that can be taken to help conserve, enhance and raise awareness of biodiversity in the local area.

These workshops were participative and facilitated the generation of project ideas, discussion and consultation with the community regarding their interests and aspirations for their local area. A range of biodiversity projects were identified that reflect the natural resources in the local area as well as the capacity, interests and expertise of the community groups. The result is a community biodiversity plan with a range of biodiversity projects to be carried out by the community over the next five years.

Implementation of the plan

It is proposed to establish a local (community) implementation group in Slane, facilitated by Meath County Council. Each year, a work programme will be agreed along with project partners and funding sought. The progress of projects will be reviewed annually.

What is biodiversity?

Biodiversity or biological diversity describes the variety of life on earth. It includes all living things, people, plants, animals, fungi and microorganisms and the places (habitats) where they live.

Biodiversity is just another term for nature, flora and fauna, natural heritage, wildlife and the living environment.

Biodiversity is all around us, from gardens to hedgerows, woodlands to wetlands, rivers to coastlines. We all interact with biodiversity and the living environment every day as we go about our daily lives.

Habitat

A habitat is the natural home of an animal, plant or other organism. It can be an area such as woodland or grassland or a feature such as a tree or a stone wall.

The importance of biodiversity

Biodiversity sustains life on earth. It provides us with fertile soils, the air we breathe, our food and fuel and is important in regulating our climate, nutrient cycling and crop pollination. Lots of medicines are first discovered from plant and animal species. A healthy environment is important for human health, well-being and in delivering economic benefits (e.g. agriculture and tourism). Nature provides us with natural amenities to enjoy, parks and green spaces, wildlife and landscapes to admire and thus improves our quality of life. All these free services are called ecosystem services or ecoservices and are crucial to sustaining life on earth.

Protection of biodiversity

European Directives have helped shape national legislation and policies towards the protection and conservation of biodiversity. The EU Habitats Directive and Birds Directive have directed the establishment of Special Areas of Conservation (SACs) for habitats and certain species and Special Protection

Areas (SPAs) for birds. These conservation areas provide protection for important areas that contain the best examples of Irish habitats and important populations of certain species. However, these areas only contain a small fraction of Ireland's biodiversity and it is important that biodiversity is afforded protection outside of protected areas. The EU Water Framework Directive and the EU Nitrates Directive are important for the protection of our waters both marine and freshwater. At a national level, the most important legislation for the protection of wildlife is the Wildlife Act 1976 (as amended).

Conservation policy has also been driven by Ireland becoming a signatory to the Convention on Biological Diversity 1992. On signing, Ireland undertook to promote the conservation and sustainable use of biological diversity. This led to the development of a National Biodiversity Plan promoting the need for the integration of the conservation and sustainable use of biological diversity into all relevant sectors and into the development and implementation of other policies, legislation, and programmes. Local Authorities have adopted Local (County) Biodiversity Action Plans and this Community Biodiversity Action Plan complements the Meath Local Biodiversity Action Plan 2015-2020.

Despite these efforts, biodiversity is under serious threat both in Ireland and globally.

Any project or work that is carried out within a SAC or SPA may be "An Activity Requiring Consent". Check with your local NPWS Conservation Ranger to see if this is the case before commencing any project.

Threats to biodiversity

Biodiversity is under threat globally and Ireland is no exception. The Millennium Ecosystem Assessment, the most authoritative statement on the health of the earth's ecosystems has demonstrated the negative impact of human activities on the natural functioning of the planet. As a result, the ability of the planet to provide the goods and services that we, and future generations, need for our well-being is seriously jeopardized.

- **Habitat destruction and fragmentation** - changes in land use to provide for human shelter, food, fuel and material goods has resulted in loss of land that previously provided habitats for wildlife

- **Invasive alien species** – non-native plant and animal species accidentally or deliberately introduced into Ireland by human activities that displace our native wildlife

- **Pollution**– deterioration in air and water quality mainly as a result of industrial and transport activities

- **Unsustainable and excessive consumption** – increases the effects of all of the above

- **Climate change** - rapid climate change chiefly a result of burning fossil fuels to produce energy and deforestation has caused changes in climate that has an effect on the survival of other species

Case Study

Pollinators

Pollination is the transfer of pollen between flowers of plants of the same species and is necessary for the production of seeds and fruit. We rely on bees and other insects to pollinate many of our crops. The result for us is that we have a range of fruit and vegetables to eat. The result for wildlife is that it provides fruit and seeds for animals to eat and the persistence of wildflowers in the landscape.

Unfortunately, the number of bees in Ireland has declined substantially, with 30% of species considered threatened with extinction. This is due to a lack of flower-rich habitats for the bees to feed on, the use of pesticides and herbicides, climate change and pests and diseases such as the *Varroa* mite which weakens honey bee colonies.

Did you know?

100 crops provide 90% of the world's food.

71 of these crops are pollinated by bees.

What is happening to our pollinators?

Hunger and homelessness: Intensive agriculture particularly the move from hay making to silage production (and other land use change e.g. forestry and urban development), has led to a decrease in the numbers of wildflowers in the landscape.

Pests and disease: *Varroa destuctor,* a parasitic mite introduced to Ireland with imported honeybees attacks and weakens honey bees and spreads viruses to them. It can even lead to death of the honey bee colony. Other diseases may spread to wild bees from bumble bees imported for pollination in glasshouses and polytunnels.

Pesticides: Insecticides particularly systemic pesticides, such as the neonicotinoids, applied to crops reach pollinators through pollen and nectar and through the air, water and soil. Herbicides decrease the amount of wildflowers available as food in the landscape.

Climate change: Climate change is likely to bring about changes to the timing of flowering and lifecycle events of pollinators. This could lead to mismatches between the timing of flowering and the pollinators searching for food.

Pollinator planting, beautiful and plentiful for pollinators

What can we do to help pollinators?

Plant pollinator-friendly plants: Incorporate pollinator-friendly plants into gardens and village streetscapes. Not all flowers are useful to pollinators. Double or multi-petaled cultivars may lack pollen and/or nectar, or it may be difficult for bees to reach the pollen or nectar in these types of flowers. Plant a range of plants that will provide a source of nectar and pollen throughout the year. Clumps of bee-friendly plants in sunny places will be more attractive than plants that are scattered or in shade (Appendix A for guidance)

Mow less- create a wildflower lawn: Common wildflowers in lawns include white clover, red clover, dandelion and selfheal which never get a chance to flower because we tend keep our lawns so short. All these wildflowers will flower in your lawn if you raise the blades on your lawn mower and cut the lawn less often allowing the flowers to bloom. Dandelion is a very important early nectar source in spring.

Make hay: Manage an area of grassland or road verge/bank as a wildflower meadow.

Avoid the use of herbicides: Herbicide use kills our native wildflowers which are an important food source for our pollinators and are an integral part of the natural Irish landscape.

Provide nest sites for bees Areas of long grass will provide nesting sites for bumble bees. Compacted bare earth (soil, sand, clay) will suit solitary mining bees; south facing stone walls, masonry, wooden structures or purposefully made nest boxes will suit cavity nesting solitary bees.

National Pollinator Plan

In 2015, *The All Ireland Pollinator Plan 2015-2020* was launched by the National Biodiversity Data Centre. The main objective of the plan is to make Ireland pollinator friendly by taking action on farmland, public land and private land.

More Actions for Biodiversity

Native planting

Native planting is best for wildlife. Native plants are those species of plants that colonised the landscape of Ireland naturally. These species found their way to Ireland by themselves without being brought here by humans. They are adapted to the environmental conditions here in Ireland and provide food and shelter for lots of other native wildlife in Ireland.

There are many plants that were introduced into Ireland by humans as garden plants and trees. These plants do not provide as many resources for our native animals and can also look very "out of place" when planted in the countryside or in semi-natural areas. Our natural heritage is unique to Ireland so avoid planting non-native species in semi-natural areas as this contributes to the erosion of our distinctive Irish landscape.

Road verges

With the loss of lowland meadows and pastures across Ireland, grassy road verges, in particular, offer vital refuges for plants and other wildlife of flower-rich grassland. Road verges are hugely important for the diversity of flowering plants that they support, and consequently important to all the animals up the food chain including invertebrates, small mammals and birds.

Appropriate management of road verges is where verges are managed for wildlife as a matter of course, so that flower-rich habitats along our road network are restored and expanded. This, ensures the survival and natural spread of both common and rare species, for their own sake, for the sake of the wildlife they support, and for the environmental benefits they bring. It will also enhance the contact with nature experienced by users of Ireland's road network.

Road verges provide wildlife corridors across Ireland, linking habitats and allowing wildlife to re-colonise landscapes fragmented by modern agriculture.

Road verges are one of the most viewed habitats in the country, giving millions of people direct contact with the changing seasons and colours of the countryside every day. For many, the flower-filled verges seen on their daily commute or trip to the shop are their only contact with nature.

Ten Tips to Help Conserve Biodiversity

Everyone in Slane is encouraged to get involved in the implementation of this community biodiversity plan and to assist with the projects, however, it is equally important and effective to take action as individuals in our homes and gardens. The following are some simple ways that we all, as individuals, can help to conserve biodiversity. The actions below can be carried out by incorporating some simple features in our gardens or by taking some simple actions.

1. **Plant native trees (Appendix C) and pollinator friendly plants (Appendix A)**
2. **Change the grass-mowing regime to create a wildflower lawn (Appendix B)**
3. **Leave some areas of grass to grow long as habitat for insects**
4. **Let a clump of nettles grow for butterflies to lay their eggs on**
5. **Leave piles of leaves in quiet corners for hedgehogs**
6. **Create a pond/water feature in your garden**
7. **Avoid the use of herbicides, pesticides and rodenticides**
8. **Erect bird boxes and feeders (Appendix E)**
9. **Compost your garden waste and vegetable peelings**
10. **Record your sightings of wildlife and send them to the National Biodiversity Data Centre or use their Biodiversity App (Appendix G)**

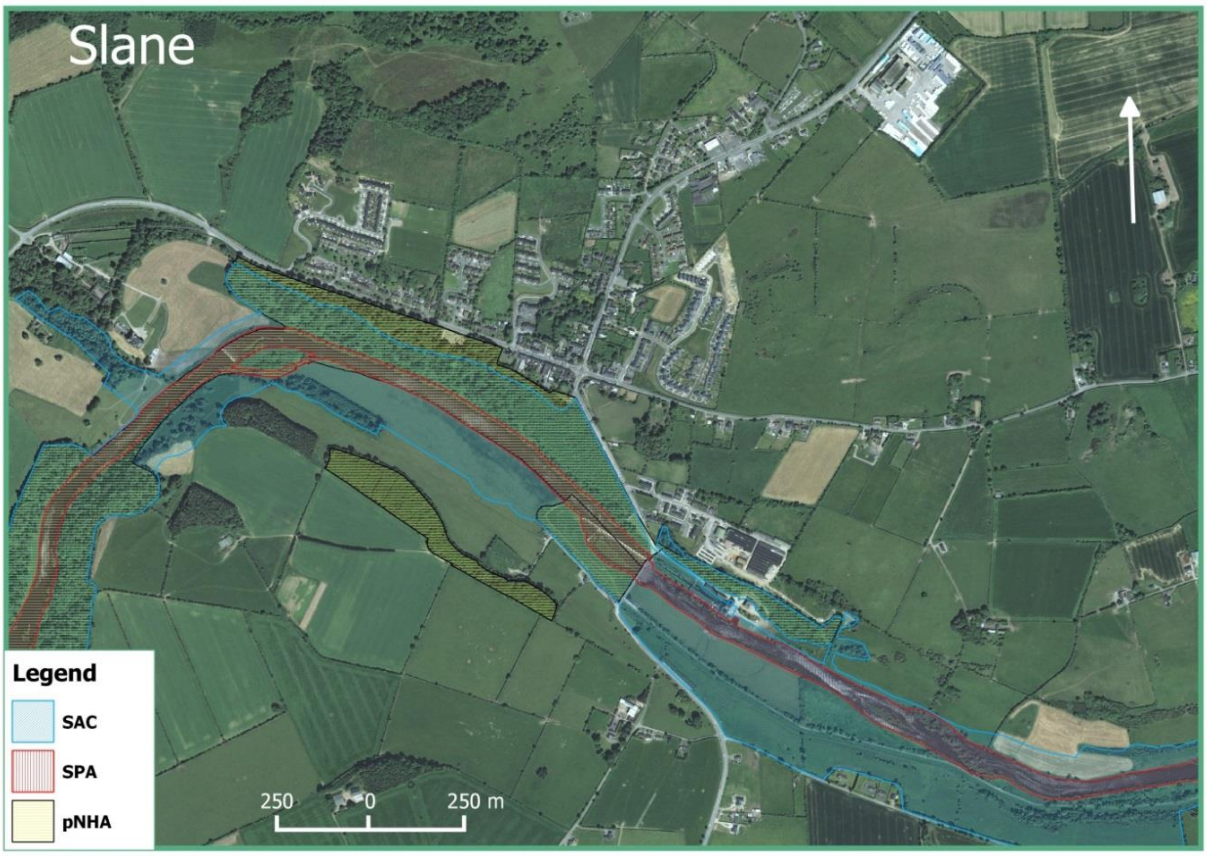
You could also make a bug hotel!

Building a bug hotel can provide a variety of nest sites for invertebrates

Local Setting

The environment

Slane is located in the east of County Meath close to the border with County Louth. Slane is set in a unique environmental landscape, against the backdrop of the Hill of Slane, mature woodlands and the Boyne Valley. The village is famous for Slane Castle, and the Boyne River runs southwest of the town, alongside the Castle demesne. The village centre of Slane acts as a crossroads between the N2 and N51 national routes, extending along four roads radiating from the square at the centre of the crossroads



Aerial image of Slane taken in 2011 showing sites protected for nature conservation
SAC: Special Area of Conservation; SPA: Special Protection Area; pNHA Natural Heritage Area

Slane is located in the heart of the Boyne Valley and is designated as a County Heritage Village given its particular wealth of archaeological, architectural and cultural heritage. This is largely attributable to its historical development around Slane Castle Demesne, which extends deep into the

village, making it visually picturesque and unique. The Boyne Valley is associated with a diverse range of attractive and important habitats, including a wooded river corridor and wet grassland, reed swamp and marsh areas flanking the river. These semi-natural habitats are of high conservation value to local biodiversity supporting a diverse range of plant and animal species in an otherwise predominantly improved agricultural landscape.

The Boyne Valley Landscape Character Area, in which the heritage town of Slane is located, is characterised by a steep river valley with areas of rolling lowland adjacent to the River Boyne. It is potentially the most significant and highly valued landscape in the county as it contains the Brú na Bóinne World Heritage Site which is one of the largest and most important prehistoric megalithic sites in Europe. Brú na Bóinne lies 2 km to the east of the village.

There are a number of designated sites within Slane. The River Boyne and River Blackwater Special Area of Conservation (SAC) and Special Protection Area (SPA) includes the river course and adjacent areas of woodland and some fields. There are also two proposed National Heritage Areas (pNHA) in and around the Slane area, which are: Boyne Woods, comprising a stretch of the River Boyne and adjacent woodland which mostly overlaps with the SAC and Slane Riverbank, an area flanking the river bank that was once home to a rare rush species round-fruited rush (*Juncus compressus*).

Littlewood just north of the village is a mixed deciduous owned by Coillte and it is a valuable resource for the community with walking trails and interpretative signage in place highlighting the wildlife of the wood.

The community

Slane village and community run a very successful and active Tidy Towns Committee and Slane Community Forum supported by Tús, Community Employment (CE) and Gateway teams. Foróige Slane Youth Café is also involved in these local projects. Local resident associations are very proactive in maintaining their gardens and green areas in their estates. These organisations are supported by other volunteers in the community and work in partnership with a number of organisations including Meath County Council, Inland Waterways Association of Ireland (IAWI), National Parks and Wildlife

Service (NPWS) and the Slane Craft Collective amongst others. A major initiative of the Tidy Towns Committee has been the creation of a community space in the village centre which is nearing completion and will include a garden/village space area and a stage to host community events. St Patrick's National School has created a wonderful wildlife garden, including a wildflower meadow, native hedgerow and a bug hotel, as well as making novel use of recycled materials. There are raised beds for growing vegetable and other plants. The garden is a fantastic educational resource and a fun space for the children to engage with nature. The village planting already has a number of flower beds planted up with perennial plants suitable for pollinators, such as bees and butterflies and this is a great action to support biodiversity within the village.

The garden at St Patrick's National School, Slane

Proposed biodiversity projects

This Biodiversity Action Plan proposes a number of ambitious projects and actions to be carried out by the community of Slane. The following list of projects was drawn up in consultation with the community and includes actions to conserve, raise awareness of and celebrate biodiversity in Slane. Detailed practical steps for carrying out the projects are provided in the appendices.

Map showing locations of proposed projects as numbered in the following table

Slane Community Biodiversity Plan 2016-2020					
Project No.	**Location**	**Project**	**When**	**Potential Partner(s)**	**Appendix**
1	Village	Continue with pollinator-friendly planting Create wildflower lawns in green areas by raising the blades on the lawnmower e.g. the lawns outside the castle entrance and in Murray Park. This management could be to other areas extended if successful.	Years 1-5	Tidy Towns	A B.3
2	Village community garden/space	Celebrate biodiversity by installing a large bird feeder as a sculptural feature in the community garden. If feasible, provide community allotment beds adjacent to garden.	Year 2	Tidy Towns Slane Craft Collective	
3	Boyne river and canal walk	Conduct and ecological survey of the river and canal corridor to inform about appropriate management and to identify the content of interpretative signage to raise awareness of the SAC, SPA and local wildlife. Erect nest boxes and bat boxes to facilitate wildlife along the walk.	Year 2	Slane Community Forum Tidy Towns NPWS An Taisce IWAI Boyne Branch Local landowners	D, E
4	Car park	Continue to control dogwood (*Cornus sericea*), an invasive species particularly in wet woodlands. Do this by cutting back yearly to prevent its spread.	Years 1-5	Tidy Towns NPWS	
5	Murray park	Plant native tree such as pedunculate oak and ash to extend the wooded area. Plant native bluebells under the canopy to enhance the area visually and for biodiversity. Manage lawn as a wildflower lawn.	Year 1	Tidy Towns	C.1 B.3
6	Lynch's Field	Implement a habitat management plan for the wet grassland adjacent to River Boyne. Consider baseline survey and re-survey annually to monitor improvement in diversity and the success of management.	Year 1-5	NPWS Tidy Towns	B.1

7	Slane	Conduct a barn owl nest box project: install a barn owl nest box in a suitable location and monitor it.	Year 1-5	Tidy Towns	E.4
8	Ledwidge Hall estate	Plant an orchard for the residential community and consider keeping a bee hive with appropriate training for residents.	Year 1 , 2	Ledwidge Residents Association Local beekeepers	C.3
9	Village area	Conduct a bluebell project to investigate the occurrence of non-native bluebells in the village. Bluebells can be lifted from village areas and grown on in pots for accurate identification with the help of National Botanic Gardens and Dublin School of Horticulture.	Year 1	Tidy Towns National Botanic Gardens	
10	Nest boxes	Erect bird boxes and bat boxes in suitable locations around the village.	1-5	Tidy Towns Youth Café Men's Shed	E, F
11	Boyne River	UndertaKe an invasive species project: Himalayan balsam mapping and control. Raise awareness of invasive species.	Year 1-5	NPWS Slane Heritage Forum Tidy towns	D
12	Littlewood walk	Extend the Littlewood walk to the Hill of Slane. Erect waymarking signs. Consider opportunities for raising awareness of biodiversity along the walk.	Year 1-5	Slane Community Forum National Trails Office Coillte Local landowners	
13	Community events	Invite wildlife interests groups to conduct guided walks along the River Boyne.	Year 1-5	Slane Heritage Forum Tidy Towns	H
14	Slane Youth Cafe	Conduct a Citizen Science project in collaboration with EcoUnesco .	Year 2-5	Slane Youth Club	G
15	Community	Participate in and encourage biodiversity recording and submission of records to the NBDC online or by using the Biodiversity App. Run a wildlife gardening course for residents. Produce a catalogue of pollinator-friendly plants to facilitate	Year 2	Tidy towns Aileen Muldoon Byrne	G

		pollinator planting by residents.			
16	Schools and community	Consider development of a biodiversity awareness project to facilitate transfer of biodiversity awareness from school to home environment.	Year 2-5	Slane National School	
17	Slane	Awareness programme on bird life in the locality.	2-5	Birdwatch Ireland	
18	School	Promote school biodiversity projects.	1-5	Meath County Council Local Schools	
19	Local community	Develop an annual biodiversity awareness programme and interpretation activities.	1-5	Meath County Council Local community	
20	Slane	Conduct a habitat survey and produce a habitat map for the local area.	1-5	Meath County Council	

Details of Selected Projects

Lynch's field

The Tidy Towns Committee manage in trust approximately 2.3 acres of wet grassland adjacent to and within the floodplain of the River Boyne. The area lies within the SAC and consultation with the NPWS is required regarding the management of the area. Historically, the area was grazed but there has been no grazing in this area in recent years resulting in tall rank vegetation which reduces the botanical diversity of the area. The area was surveyed during the Irish semi-natural grassland survey (Martin *et al.*, 2013) and was classified as a swamp community. The Tidy Towns Committee plans to manage the grassland area appropriately to promote the botanical diversity of the grassland. A rare rush, round-fruited rush (*Juncus compressus*) was once recorded in this area but has not been recorded recently. With appropriate management, there may be potential for this species to reoccur.

The community plan to consult with a local farmer to investigate the possibility of grazing this field. Grazing is recommended during the drier seasons at a very low stocking density appropriate to the ground conditions in the area. If this is not possible, then the area should be left alone to allow natural succession to take place.

Wet grassland is a very important habitat for a wide variety of wildlife, including breeding birds, such as Lapwing, Redshank and Snipe. Wet grassland is also rich in plants and insects, providing a feeding habitat for a wide variety of bird and bat species. To maximise their benefit they need to be managed sympathetically. (See appendix B for management guidance).

View of Lynch's Field from Slane

Ledwidge orchard project

The Ledwidge Resident's Association plan to plant a community orchard which will provide benefits for wildlife, particularly pollinating insects, and the community. Orchards are a great way to re-connect people with nature and to raise awareness of our reliance on the pollination services provided by bees. The orchard will be planted as a community planting project sourcing heritage fruit tree varieties. Consideration will also be given to setting up a bee hive in the orchard. (Appendix C for orchard planting guidelines).

Apple blossom
Image: Sandy, Bedfordshire, UK
[CC BY-SA 2.5 via Wikimedia Commons]

The bird feeder

The community plan to commission the design and manufacture of a bespoke bird feeder, which will take the form of a sculptural piece in the community garden located in the centre of the village. Working with the Slane Craft Collective, an elaborate sculpture will be designed featuring the kingfisher as the designated species of the River Boyne and Blackwater SPA. Once in place, the bird feeder will provide hours of entertainment for the local community as they watch the bird feeding antics and are reminded of the wonder of nature on our door steps.

Common kingfisher
Image: Andreas Trepte
[CC BY-SA 2.5 via Wikimedia Commons]

Boyne river and canal walkway

Slane community are involved in the development of a walking trail along the Boyne River and Canal Waterway. To assess the impact of this walking trail on the adjacent habitats and species using the area, an ecological survey and impact assessment is recommended. This study will also provide information for the content of interpretative signage panels for the walkway.

Slane walkway towards Navan with Lynch's field adjacent

Project Guidelines

The following appendices contain detailed guidance for carrying out biodiversity projects including detailed specifications for bird and bat boxes and guidance on planting an orchard and surveying invasive species. The guidance on woodland planting should be useful when extending the wooded area nest to the car park.

Some additional guidance has been included on hedgerow planting and roadside verge management as these actions may be appropriate following the findings of the habitat survey or may be useful guidance for other groups who get involved in the implementation of the plan e.g. residential associations or businesses in Slane.

Some extra activities have been included. “Building a bee nest site” is a fun activity to do with children and “tracking mammals” is a very good science project that is suitable for both primary and secondary students.

Appendix A: Planting for Pollinators

Not all flowers are useful to pollinators. Double or multi-petaled cultivars may lack pollen and/or nectar or it may be difficult for bees to reach the pollen or nectar in these types of flowers. Also F1 hybrids are sterile and so do not produce pollen.

Plant a range of plants that will flower at different times of the year to provide a source of nectar and pollen throughout the year. Clumps of bee-friendly plants in sunny places will be more attractive than plants that are scattered or in shade.

A.1: Pollinator friendly plants

Here is a list of some pollinator friendly plants to get you started but there are plenty more to choose from. Many garden centres now have sections selling pollinator-friendly plants. The Royal Horticultural Society provides a free list of pollinator plants at: www.rhs.org.uk/perfectforpollinators and in 2016 the National Biodiversity Data Centre will provide a full list of plants suitable for pollinators www.biodiversityireland.ie

A range of pollinator-friendly plants are blooming in this flower border

Some Pollinator-friendly Plants

Winter	Spring	Summer	Autumn
Snowdrop (*Galanthus)*	Apple (Malus)	Columbine (*Aquilegia*)	Borage (*Borago*)
Hellebores (*Helleborus*)	Horse chestnut (*Aesculus*)	Yarrow (*Achillea*)	Majoram (*Origanum*)
Barberry (*Mahonia*)	Field maple (*Acer campestre*)	Bistort (*Persicaria bistorta*)	Knapweed (*Centaurea*)
Winter aconite (*Aconitum*)	Cherry (*Prunus*)	Angelica (*Angelica*)	Larkspur (*Delphinium*)
Ivy (*Hederea helix)*	Lime (*Tilia)*	Bell flowers (*Campanula*)	Heathers
Willow (*Salix)*	Hawthorn (*Crataegus monogyna*)	Chives (*Allium*)	Lavender (*Lavandula*)
Japanese aralea *(Fatsia japonica)*	Willow (*Salix*)	Comfrey (*Symphytum*)	Nasturtium
	Rosemary (Rosmarinus officinalis)	Foxglove (*Digitalis*)	Catmint (*Nepeta*)
	Barberry (*Mahonia*)	Hebe	Raspberry (*Rubus*)
	Hebe	Lupin (*Lupinus*)	Runner beans (*Phaeolus coccineus*)
	Broom (*Cystisus*)	Monkshood (*Aconitum*)	Scabious (*Knautia, Scabiosa*)
	Bluebell (*Hyancinthoides non-scripta*)	Sage (*Salvia*)	Snapdragon (*Antihirrhums)*
	Bugle (*Ajuga reptans*)	Thyme (*Thymes*)	Sunflowers (*Helianthus*)
	Aubrieta	Coneflower (*Echinacea purpurea*)	Ivy (*Hedera helix*)
	Barberry (*Berberis*)	Bell Heather (*Erica cinerea)*	Chrysanthemum
	Wallflower(Erysimum)	Red Turtlehead (*Chelone obliqua*)	Ice plant (*Sedum*)
	Cranesbills (*Geranium*)	Bugbane (*Actaea simplex*)	Honeysuckle (*Lonicera*)
	Blueberry (*Vaccinium*)	Bee Balm (*Monarda*)	
	Cowslip (*Primula veris*)	*Heliopsis*	
	Primrose (Primula vulgaris)	Black-eyed Susan (*Rudbeckia*)	
	Spurges *(Euphorbia*)	Wallich milk parsley (*Selinum wallichranum*)	
	Pasque flower (*Pulsatilla vulgaris*)	Burnet (*Sanguisorba*)	
		Sneezeweed (*Helenium*)	
		Bramble (*Rubus fruticosus*)	

A.2: Gardening tips for butterflies

Butterflies need both a nectar source for the adults and food plants for the caterpillars. Some caterpillars are very specific about the food plants they will eat. Don't forget to provide some hibernation sites for butterflies during the winter.

Nectar source	Food plant	Hibernation
Hebe	Nettles for small tortoiseshell, peacock, red admiral, painted lady, comma	Do not trim back dense ivy. Brimstone butterflies will use it for hibernation and the late summer/autumn generation of the holly blue will use it for breeding if it is allowed to flower
Ice plant (*Sedum spectabile*)	Thistles for painted lady	A log pile in a shaded, wooded part of the garden could be used as a hibernaculum by peacock butterflies
Lavender (*Lavandula angustifolia*)	Alder buckthorn for brimstone larvae	A wooden garden shed with the door or window left open in September/October will attract small tortoiseshell butterflies prospecting for a hibernation spot. Make sure that they can leave in March
Verbena (*Verbena bonariensis*)	Blackthorn for brown hairstreak/moth larvae	A gap in stonework or in a wall vent allows access for hibernating small tortoiseshells, so don't be in a hurry to make unnecessary repairs
Majoram (*Origanum vulgare*)	Hazel for moth larvae/shelter	
Chives (*Allium schoenoprasum*)	Holly for Holly Blue larvae	
Wild thyme (*Thymus praecox*)	Oak for Purple hairstreak/moth larvae	
Michelmas daisy (*Aster novae-belgii*)	Bird's foot trefoil for cryptic wood white, wood white, common blue, dingy skipper, green hairstreak	
Grape hyacinth (*Muscari neglectum*)	Cuckoo flower for green-veined white, orange-tip	

Appendix B: Habitat Management Methods

B.1 Managing wet grassland "Lynch's field"

As Lynch's field is a floodplain, the area will need to be monitored to assess when the ground conditions are suitable for grazing. Livestock should only be grazed when there is no risk of excessive poaching of the surface.

- The aim is to produce a botanically rich sward and good habitat for nesting birds and wider biodiversity including invertebrates but to discourage the growth of rank vegetation.
- An autumn grazing regime may promote a botanically rich sward as grazing and trampling helps to create regeneration niches for plants.

Teagasc guidance recommends an annual stocking rate during the grazing season of 0.5 LSU per hectare for wet grassland as good practice [Teagasc Farming to Enhance Habitats Series: wet grassland]. For Lynch's field with an approximate area of 2.3 acres (1.5 hectares) this would be about 2 cattle annually. However this stocking density would apply to a site which is grazed constantly. The stocking density would be adjusted to take account of the fact that Lynch's field is in a flood plain area, it will only be possible to graze the area for short periods during the drier seasons. The area should be managed in consultation with the farmer and the NPWS to provide a seasonal grazing regime preferably by cattle at an appropriately low stocking rate for this particular site.

The stocking density should be monitored and reviewed regularly so as to prevent the development of rank vegetation or conversely excessive poaching of the grassland.

B.2: Managing roadside verges

[Adapted from Plantlife 2015 www.plantlife.org.uk]

Where health and safety considerations for road safety and traffic management allow, roadside verges in the countryside should be managed as semi-natural grasslands to allow native wildflowers to bloom.

As it is not normally possible to graze roadside verges, two cuts per year are usually required one in early spring and one in autumn. The cuttings should be removed and composted. This is important to prevent the buildup of nutrients in the soil.

Under the Wildlife Act, it is an offence to cut, grub, burn or destroy vegetation on land not then cultivated between the **1st March and 31st August**. This legislation applies to all roadside verges in the countryside (except where road safety considerations apply).

A. Management of unshaded grassy road verges

The following should be undertaken on all grassy road verges (apart from those where safety is a priority):

If only one cut is possible:

- Cut the full width of the verge once a year, during September. This allows plants to flower and, importantly, gives time for seed to be set. Remove the cuttings.

If more cuts are required

- Then cut once more before March. This is the ideal option to conserve and enhance wild flowers, as it mimics the pattern of traditional meadow management. Remove the cuttings.

If it is not practical to cut the whole width of the verge:

- On large verges, cut a 1 m strip at the edge of the verge during February and remove the cuttings. Grass at the back of the verge can be allowed to grow longer, providing a diversity of habitat that is especially important for invertebrates. Cut the full width of the verge during September.

B. Management of roadside verges shaded by hedgerows and treelines

Roadside verges that are shaded by treelines or hedgerows will have a more woodland type ground flora such as bluebells, dog's violets and wood sorrel. They may only need one cut a year if vegetation growth is impeded by shading. Cut these verges in September. No cutting should be carried out from the end of January. This will allow early woodland flowers to grow and set seed.

Collection of clippings: It is essential to gather and remove grass cuttings, either by hand or by use of suitable cut-and-collect machinery. Try to collect the cuttings after they have had a few days to dry out as this will promote seed dispersal. Removing the cuttings will reduce the build of up organic material (i.e. a thatch of cut grass), keep nutrient levels low, and ensure that there is plenty of bare ground for plants to regenerate from seed. The cuttings, rich in wildflower seed, can be used as green hay to benefit other local verges or grasslands or they can be composted locally.

Don't use commercial seed on roadside verges: Sowing of artificial seed mixes is unnecessary and costly, and is often unsuccessful in the long term: The resulting verge vegetation bears little resemblance to naturally-occurring plant communities, has a uniform structure that results from the even distribution of species within sown mixes, and ultimately does not reflect the local character of vegetation that develops naturally. It may also introduce species that are not characteristic of the area.

B.3: Creating a clover or wildflower lawn

Identify some green areas or lawns that have clover growing in them. Clover is easily identified at any time of year by the characteristic three leaflet structure of the leaves. If there are other species of wildflower such as dandelions, bird's foot trefoil or even self-heal growing in the lawns then that is even better.

Raise the blades on your lawn mower to the highest setting and cut the lawn less often. How often you cut will depend on the time of year and how fast the lawn is growing. The aim is to allow the dandelions, clovers and other wildflowers to grow and bloom but you can maintain a neat appearance by topping the grass when it grows taller than the flowers.

If you only have clover in your lawn and would like to try introducing more wildflowers then you could try scarifying the lawn and adding seeds of dandelion, selfheal or bird's foot trefoil to increase the diversity of wildflowers in your lawn. Only buy native Irish wildflower seeds or better still collect some from your local area.

Appendix C: Habitat creation

C.1: Planting a woodland

[Source: Department of Agriculture Native Woodland Scheme Manual 2011]

Plant native trees of Irish or local stock during the tree planting season from November to February. A good way to ensure that the tree you are buying is native is to always check the scientific name (the Latin name) and make sure it is the same as the Latin name of the native species you are looking for.

Check with your tree nursery or supplier whether the trees are grown from seed collected in Ireland. Imported trees may not grow as well in Ireland as they are not adapted to our climate or soil conditions and also risk introducing diseases from other parts of Europe. This is what caused ash dieback disease in Ireland

Even better still, collect native seed such as acorns, ash keys, rosehips etc. from local woodlands and hedgerows and grow your own. Start them off in pots to give them the best chance and plant them out when they are big enough.

Suitable tree species for planting as groves, woodlands and hedgerows in Meath include:

- Ash (*Fraxinus excelsior)*
- Hazel (*Corylus avellana)*
- Pedunculate Oak (*Quercus robur)*
- Downy Birch (*Betula pubescens)*
- Elm (*Ulmus glabra)*
- Rowan (*Sorbus aucuparia)*
- Hawthorn (*Crataegus monogyna)*
- Holly (*Ilex aquifolium)*
- Spindle (*Euonymus europaeus)*
- Blackthorn (*Prunus spinosa*)

Choose species from the above list that are already growing in the hedgerows and /or woodlands in your local area.

Woodland planting mixtures

On dry soils

Ash (*Fraxinus excelsior*). (50%), pedunculate oak (*Quercus robur*) (25%) in pure groups. hazel (*Corylus avellana)* and hawthorn (*Crataegus monogyna*) (5%) scattered throughout. Other species (5%) positioned along edges and glades; downy birch (*Betula pubescens*), holly (*Ilex aquifolium*), spindle (*Euonymus europaeus*), rowan (*Sorbus aucuparia*), wild cherry (*Prunus avium*) and crab apple (*Malus sylvestris*).

Wet or waterlogged soils

Alder (*Alnus glutinosa*), Grey Willow (*Salix cinerea*) and Ash (*Fraxinus excelsior*).

Planting mixture: Alder (*Alnus glutinosa*) (50%), Ash (*Fraxinus excelsior*) (10%), Grey Willow (*Salix cinerea*) (10%) and Downy Birch (*Betula pubescens*) (10%). Hawthorn (*Crataegus monogyna*) (5%) scattered throughout. Minor species (15%) pedunculate oak (*Quercus robur*), holly (*Ilex aquifolium*), hazel (*Corylus avellana,.* guelder rose (*Viburnum opulus*) positioned between the above pure groups.

C.2: Planting a native hedgerow

[Adapted from Teagasc 2009 Countryside Management Series 4 New Farm Hedgerows]

Hedgerow planting should be done during the tree planting season between November and February. To make planting easier, cover the ground with black polythene at least 6 months before hand to supress existing vegetation.

Choosing Species

- Native species, adapted to Irish conditions benefit wildlife more.
- Locally grown plants, tolerant of local conditions, are likely to thrive.
- Plants grown from locally collected seed conserves local provenance (origin), but this takes time, effort and patience.
- Thorny species such as whitethorn or blackthorn are essential for a stockproof hedgerow.
- A variety of species provides a varied food supply throughout the year for more wildlife. Include another hedgerow species or climber approximately every metre
- Include a tree species at irregular intervals, provided it will be allowed to grow up and is NOT topped when routinely trimming the hedgerow.
- Avoid trees that cast dense shade, such as sycamore, beech and chestnut.

Hedgerow Species

These species survive routine trimming as a hedgerow while individual stems can be allowed to grow up and mature into trees.

- Whitethorn (hawthorn): Predominant hedgerow species. Hardy, fast-growing and tolerates most soils except very wet.
- Blackthorn: suits most soils except very wet. Suits exposed and coastal sites. Spreads by suckers, good for gapping up, but is invasive.
- Holly: slow growing evergreen. Tolerates exposed sites and shade. Suitable under trees. Male and female plants required for berries.
- Spindle: prefers alkaline, but tolerates a wide range of soils. Open, infertile site better for fruit production.
- Guelder rose: prefers alkaline, fertile, clay soils and neutral wet soils. Acid soils unsuitable. Competitive in new hedgerows.
- Hazel: prefers heavier, fertile soils. Tolerates some shade. Understory species.

Hedgerow Planting

It is recommended to plant 7 plants/metre in a double staggered row. This means a spacing of 300mm (1') between plants in each row and at least 300mm (1') between the two rows. Of the 7 plants in every metre, at least 6 should be whitethorn for a stockproof hedgerow. The other plant in every metre should come from the list above which tolerate routine trimming: The best guide is to look at hedgerows growing locally and plant the same native species. **If native varieties are not available, do not use ornamental garden varieties as they crowd out the desired plants and are not so good for biodiversity.**

Prepare the ground and ensure that plant roots do not dry out. This can be done by keeping them in their bag in a cool place until planting or dig them into a temporary trench. During planting, avoid exposing the plants to air.

Dig a trench and plant to the same depth as previously planted in the nursery.

Whitethorn, blackthorn and dog-rose should be cut back to 100mm (4'') from ground level to promote shoots at this level. Leave a few whitethorns un-pruned, placing tree shelters on them to identify and protect as single stemmed mature trees. Identify a few other species for retention as single stemmed trees. Trees such as Peduncualte Oak and Ash are also suitable. Retain approximately ten single stemmed small trees per 300 m; too many make hedge cutting difficult and cast shade on the hedgerow.

Ongoing Management

- Water in dry weather
- Control competing vegetation to prevent smothering and allow lower branches develop, giving a dense base.
- Manual weeding
- Mulching immediately after planting helps weed control. Mulch such as wood chippings, paper or cardboard must extend 150mm outside the plants.
- Fence off livestock using temporary fencing. Consider livestock reach and future access for machine trimming, when positioning the fence. Rabbit proof fencing may be needed to protect from rabbits or hares.
- Replace plants which fail to grow.
- For the first few years after planting, cut whitethorn back to 75mm above previous level of cut, gradually shaping into a triangular profile.

C.3: Planting an orchard

An orchard is a wonderful resource to have in a community. It will provide fresh, flavoursome fruit and flowers for bees and encourage a community spirit of sharing and celebration of the earth's bounty.

Consider buying your fruit trees from the Irish Seed Savers who specialise in heritage varieties of apples and other fruit trees.

Creating an orchard

[adapted from Irish Seed Savers guide to Creating and Orchard]

Site: The perfect site for an orchard is one which has:

- a south facing slope, that receives light from early morning to late evening and has
- free draining soil with a soil pH of approximately 6.5
- avoid planting in a frost pocket as this may lead to damage of the blossoms in the spring.

Wind: Too much wind at pollination time will discourage insect movement. Poor pollination will result in poor yield. Apple trees are tolerant of moderate wind. For very exposed sites a shelter belt of trees or a hedge should be planted though the shelter belt should not shade the orchard.

Pollination: Apple trees are insect pollinated, because trees of the same variety cannot pollinate each other, another variety of apple tree needs to be grown close by. Furthermore since different varieties blossom at different times, for successful pollination to take place trees must be of the same flowering group *i.e.* they flower at approximately the same time, allowing bees to transport pollen from the flower of one variety to that of another . Apple varieties are classified as early, mid and late season flowering groups. The best fruit set is assured by having at least three varieties of apple (of the same flowering group) planted in close proximity.

Choosing varieties: When considering a variety it is best to do some research. Find out from local fruit growers and gardeners which varieties have done well in your local area. Taste is influenced by soil type, climate, and local growing conditions, and can vary from year to year depending on factors such as summer sunlight, in particular. Catalogue descriptions of taste may be unreliable.

Long-term maintenance and harvest: Choose rootstock and layout based on future work. Harvesting from large trees must be done either by ladder or by waiting for windfall but this bruises the fruit which reduces storage time. Sheep or geese can be useful for grass maintenance in an orchard but a suitable rootstock must be chosen such that the lowest branches are kept out of reach.

Think about lawnmower access when planning the layout of the orchard.

Fruit trees feed almost exclusively in the top soil as they do not have deep tap roots. They compete for nutrients with grass and other vigorous herbaceous plants. In the first few years of growth, keep a radius of 1 m completely weed free around the young tree. Regular mulching around the tree will help. Mulching can be achieved with many materials including cardboard, straw, leaf mould or commercially available fabrics. Biodegradable mulches such as cardboard or straw breakdown to improve the soil and so need to be replaced but this also allows an opportunity for feed, such as farmyard manure, to be added to the soil.

Fabric mulches do not breakdown with the result that eventually weeds, such as scotch grass and creeping buttercup take root and can be a lot of work to remove.

Mulching and maintenance weeding is an annual task. It is most efficient to do some weeding three to four times a year to catch weeds when they are small.

Orchard at Airfield Estate Dublin under planted with meadow flowers

C.4: Creating a wildlife garden

A wildlife garden is one where habitats are provided or “let be” for a variety of wildlife including mammals, birds, amphibians, lizards and invertebrates. To create a wildlife garden incorporate into your space as many of the following features as possible:

- Native trees, mini-woodlands and hedgerows
- Leave the grass grow long in strips or patches
- Leave piles of leaves in a quiet corner for hedgehogs
- A log pile will provide a home for many invertebrates
- Add a pond, even a small one by sinking a large basin into the ground. This will attract aquatic life or frogs to your garden.
- A bird feeder and bird bath is luxury for birds and entertaining to watch.
- Add a bug hotel or bee nest site (See C.5 below)
- Leave a clump of nettles for butterflies to lay eggs on.
- Try sowing a small wildflower meadow (see C.4 below)
- Erect bird boxes and bat boxes if you have a suitable place to locate them. (see E and F below)
- Rake the soil too as this helps the germination of new seedlings.
- Removing the cuttings is very important as otherwise they will rot down into the soil and make the soil more fertile which will not favour the wildflowers.
- Remove the dead thatch of grass that develops in Autumn as this can supress seedlings and cause mould.
- This management should be repeated every year.

C.5: Planting a wildflower meadow

Wildflowers thrive in areas of low fertility where they can compete successfully with neighbouring grass species.

The easiest way to create a wildflower meadow is to change the management of the grassland i.e. cut twice yearly once in Spring and a late cut in August or September and remove the cuttings. The cut is timed to allow all the wildflowers to set seed but not the grasses. This management regime will prevent the grassland becoming rank, reduce soil fertility over time and promote the growth of wildflowers. Over a few years, the number and diversity of wildflowers should increase to form a wildflower meadow but it may take some time.

In cases where the area has been seeded, for example, with lawn grass and the potential for wildflowers occurring is very low or if a more instant wildflower meadow is needed then a wildflower meadow can be sown.

Use a native Irish wildflower seed mix otherwise there is a risk of non-native species spreading out into our countryside. Native Irish seed can be bought from Sandro Cafolla Design by Nature at www.wildflowers.ie who supplies wildflower seed mix for a variety of soil types and different settings. A wildflower meadow can be sown with just wildflowers or a grass/wildflower mix.

- Clear the area to be sown removing all vegetation and rake to a tilth. Be diligent as any resprouting grass will compete with your meadow grass and flowers.
- Sow the seed in autumn or early spring.
- After flowering, cut the meadow in August or when all the flowers have set seed.
- Cut the meadow low to about 10 cm. Preferably leave the cuttings in place for a few days to dry out so that seed can fall and then remove all the cuttings by raking.
- Rake the soil too as this helps the germination of new seedlings.
- Removing the cuttings is very important as otherwise they will rot down into the soil and make the soil more fertile which will not favour the wildflowers.
- Remove the dead thatch of grass that develops in Autumn as this can supress seedlings and cause mould.

This management should be repeated every year.

C.6: Create a bumble bee nest site

This is a fun activity to do with children and an interesting feature to add to your garden!

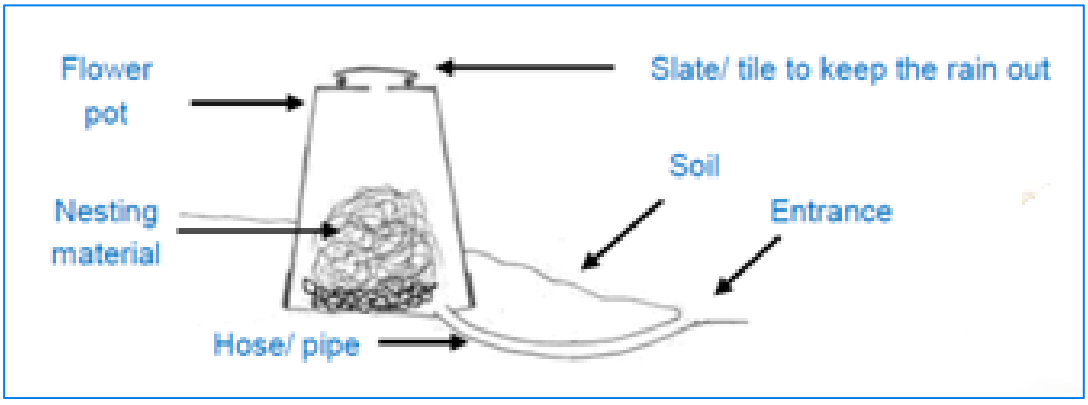
[Source: www.bumblebeeconservation.org]

What you need:

- A flowerpot (> 20cm in diameter)
- A piece of slate/ tile
- A bit of tube or pipe

Instructions:

1. Sink the upturned flower pot into the ground and use the slate/ tile to cover any drainage holes to keep the rain out.
2. Run a hose or pipe underground to the pot, leaving a prominent entrance. Be sure to make drainage holes in the pipe.
3. Finally, fill with a generous handful of nesting material, such as old bedding from a pet mouse, guinnea pig, etc.



Appendix D: Invasive Species Management

Invasive plant species

An invasive species is a plant or animal species that is not native to a specific location (an introduced species), and which has a tendency to spread to a degree believed to cause damage to the environment, human economy and/or human health. There are a number of invasive species in Ireland and invasive plants that are particularly problematic especially in riverside habitats include Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegazzianum*) and Himalayan balsam (*Impatiens glandulifera*). These plant species have a tendency to spread rapidly, out-competing with native vegetation.

Legislation

Giant hogweed, Japanese knotweed and Himalayan balsam amongst other invasive plant species are subject to restrictions under the European Communities (Birds and Natural Habitats) Regulations 2011. **This means that it is an offence to plant, or cause to disperse or spread these species, and due care must be taken in their management so as not to inadvertently cause them to spread**.

D.1: Mapping invasive species

Before attempting any control measures for invasive species, it is a good idea to map the presence of the species in your locality. This involves going around your area and taking account of the location of the invasive species and the extent of the population (i.e. how big an area is covered by the vegetation). With this knowledge, you can then plan the most appropriate control measures. Plant identification tips can be found at www.invasivespeciesireland.com

You can submit your sightings to the National Biodiversity Data Centre online at www.biodiversityireland.ie.

Control of large infestations of Japanese knotweed or giant hogweed should not be attempted by inexperienced people.

- Controlling Japanese knotweed is very difficult and the plant can inadvertently be spread very easily, as it regenerates readily from rhizomes in the soil.
- Giant hogweed can cause serious skin blistering and lesions.

It is best to get professional advice and specialists to treat areas infested with these species.

Himalayan balsam, however, can be controlled relatively easily and is a great project to undertake with community volunteers.

Japanese knotweed
Image: invasive species Ireland.com

Giant hogweed

Caution !

Giant hogweed can burn skin

D.2: Control of Himalayan balsam

[Source: www.invasivespeciesireland.ie]

Himalayan balsam (*Impatiens glandulifera*) is an invasive terrestrial plant species that was first introduced into Ireland in 1839 as an ornamental garden plant. Since it was introduced, it has spread to most parts of Northern Ireland and Ireland. In its home range, the Himalayas, it has adapted to develop thousands of seeds due to the nutrient-poor soil and cold temperatures. Unfortunately, due to our warmer climate and nutrient-rich soils, it has thrived here and became highly invasive.

The species is particularly frequent in damp soil areas such as along the banks of watercourses. It is a tall annual plant (completes its life cycle in one year) in Ireland and due to its rapid growth, it shades out most of our native species, leaving banks bare in the winter time and susceptible to erosion.

Himalayan balsam
Image: invasivespeciesireland.com

Identification

Key features of this plant include:

- Grows up to 3 metres in height.
- Large purplish to pale pink flowers in June – October.
- Hanging explosive seed pods that can throw seeds over 6 m away from the plant.
- Hexagonal hollow stems that are reddish in colour.
- Dark green, lance-shaped leaves with serrated edges.

The following provides a summary of the key impacts of the species:

- Excludes native species
- Leaves river banks exposed to erosion in winter
- Subsequent potential sedimentation impact on fish spawning areas
- Attracts pollinating insects away from native species
- Increased risk of flooding due to siltation of water courses and bank instability
- Main transmission route via water courses

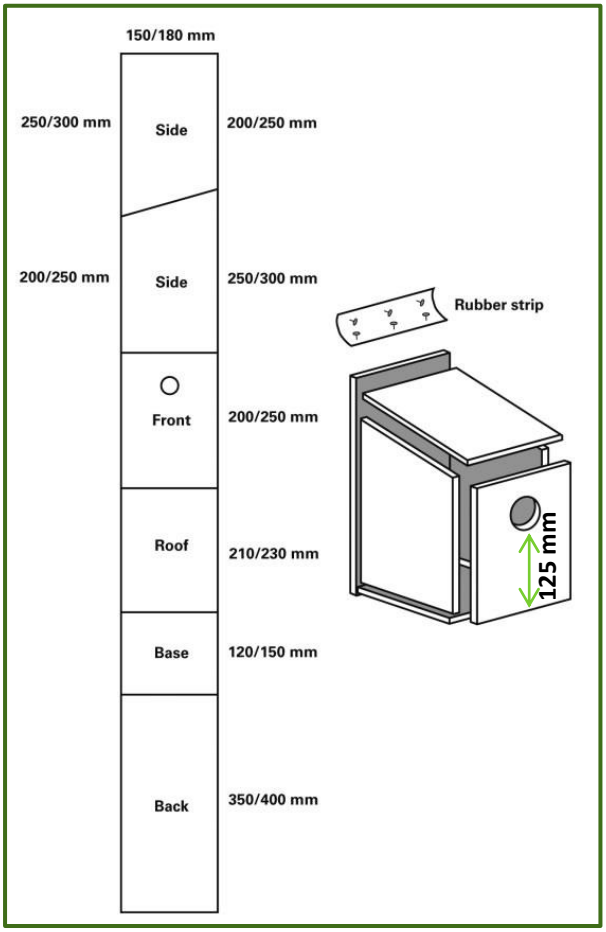
Management recommendations

- Pulling: Shallow-rooted plants can be pulled up very easily. This is the recommended approach as it is the least disturbing to the surrounding habitat and can be carried out by a group of volunteers.
- If pulling is not possible cut at ground level (the plant must be cut below the lowest node to stop regeneration) using a scythe, flail or strimmer before the flowering stage in June. Cutting earlier than this will promote greater seed production from plants that regrow. Cutting should be repeated annually until no more growth occurs.
- Biological**:** Grazing by cattle and sheep is effective from April throughout the growing season in some situations. It should be continued until no new growth occurs. Grazing on riverbank habitats can however have negative impacts such as poaching of river banks and the removal of other native vegetation, which may act as a buffer zone.

Appendix E: Bird Nest Boxes

E.1: Standard bird nest box

[Adapted from www.rspb.org.uk and www.birdwatchireland.ie]



Make the same box with the upper half taken away altogether for robin, pied wagtail and wren.

1. Use a plank of wood about 150 mm wide and 15 mm thick. Cut out pieces according to the dimensions in the diagram opposite.

The bottom of the entrance hole must be 125 mm from the floor

The inside wall below the entrance hole should be rough to help the young birds to clamber up when it's time for them to leave.

2. When assembling the box, use screws or galvanised nails.

3 Attach the lid with a brass or a plastic hinge that will not rust, or hinge it with a strip of leather or rubber (an old piece of bicycle inner tube will do). Fasten it down with a good catch. Do not nail down the lid, since you will need to clean out the box in the autumn

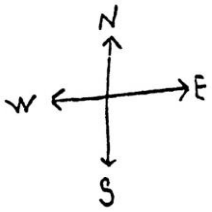
4. By altering the size of the hole you can make a box to suit different species.

- Blue tit and coal tits 25 mm
- Tree sparrow 28 mm
- House sparrow 32 mm

5. It is best to use hardwood and leave the wood untreated. Softwood boxes can be treated with selected water-based preservatives, which are known to be safe for animals, such as Sadolin.

E.2: Where to put up your nest box

Put your nest box up well before the start of the breeding season in February. If you put the box up in winter with a small handful of wood shavings, birds may even roost in it for warmth. Don't use straw as this will become damp and mouldy over the winter.



The box should be located at least 2 m from the ground (preferably 3-5 m), so that cats or other predators or curious people don't disturb the nesting birds.

Choose a site that is away from the bird table or bird feeders as nesting birds are territorial and may feel threatened by other birds feeding nearby. Unless there are trees or buildings which shade the box during the day, face the box between north and south-east, thus avoiding strong sunlight and the wettest winds.

Make sure that the birds have a clear flight path to the nest without any clutter directly in front of the entrance. Tilt the box forward slightly so that any driving rain will hit the roof and bounce clear.

Attach the box to a wall, fence or tree trunk. Use a wire strap to attach the box to a tree to avoid damage to the tree and check every year to make sure the wire is not cutting into the tree trunk.

Open-fronted boxes for robins and wrens need to be low down, below 2 m, well hidden in vegetation.

E.3: Care of your nest box

If birds take up residence in your nest box, be careful not to go near the box or to disturb the nest, as this may result in parents abandoning their young. Observe and admire the activity from afar, preferably from inside, looking through a window.

The box can be opened from the end of October and cleaned out. Empty out old nest material and any unhatched eggs and clean the inside of the box with boiling water to kill off any parasites that may be still in it.

E.4: Barn owl nest box

The following information and recommendations are adapted from the excellent Birdwatch Ireland publication "*Barn Owls in Ireland*" by John Lusby and Michael O'Clery. For further information on barn owls, please consult this publication which is available free from www.birdwatchireland.ie/Publications/eWings/eWingsIssue64January2015/tabid/1430/Default.aspx

Nest boxes are a great way to encourage owls to nest in an area which has good quality hunting habitat, but where there may not be any suitable buildings or mature trees with hollow cavities.

Outdoor barn owl nest box

If there are no suitable buildings on your land, then a mature tree is also a perfect site for a nest box. Choose an isolated tree where possible, or else a large tree which stands out in a hedgerow or at the edge of woodland. The design of outdoor nest boxes is a little more complicated than the indoor boxes, but still relatively straightforward. To stand up to the elements, it is necessary to use exterior grade marine plywood and to seal the joints.

Nest boxes are more likely to be used if there is suitable foraging habitat nearby with a plentiful supply of small mammals such as rough grassland, species rich grassland or unmanaged grassy margins at the edge of fields, hedgerows and woodlands.

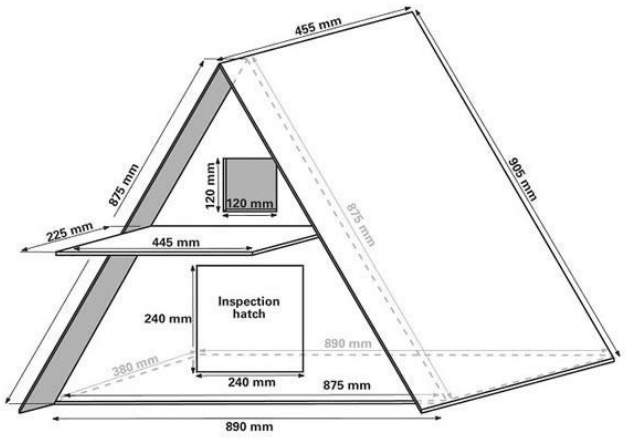
Pick a suitable site: Place the box high on a mature isolated tree, or place on a large tree on the edge of woodland or along a hedgerow.

Avoid disturbance: Barn owls generally don't tolerate regular human intrusion, so choose a site well away from normal human activity to increase the chance of uptake.

Pick a suitable position: The weight of the box can be rested on branches close against the trunk. Place the box approximately 3 m (10 ft) or higher, and position the box so it faces away from prevailing winds and faces out onto open land (preferably good quality hunting habitat –rough grassland).

Don't put a box near a busy road: Barn owls are vulnerable to being hit by cars, so don't place the nest box within approximately 200 m of a major road (national route or motorway).

Don't hide the box: Make sure an owl will see the nest box easily from a distance and has a clear flight path to the box. Bear this in mind if installing the box in winter before the leaves come on the tree. Trim the branches if necessary.



Be patient: It can be several years before an owl might find and use the nest box.

Appendix F: Bat Boxes

Bats are social animals and often congregate in large numbers. Providing bat boxes offer bats additional roosting areas, and can often help to replace lost or degraded roosting sites.

F.1: Making a bat box

[Source: Bat Conservation Trust www.bats.org.uk and Kent Bat Trust www.kentbatgroup.co.uk]

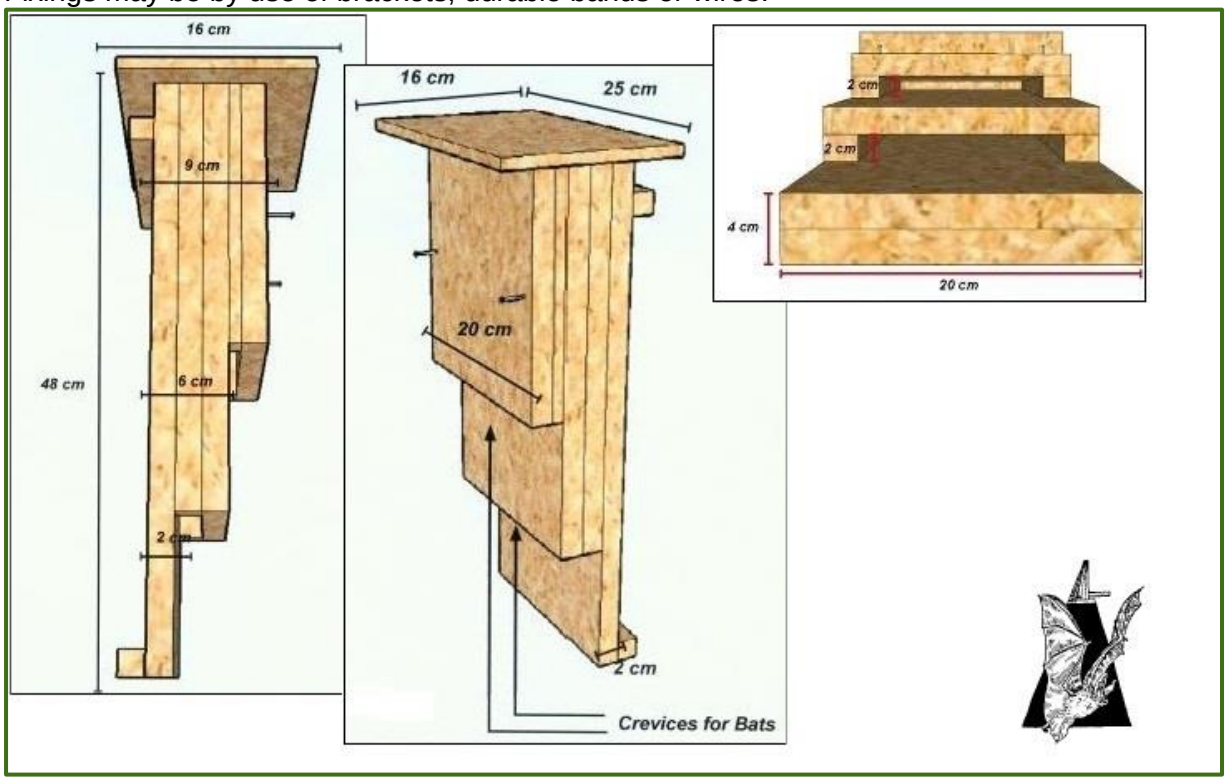
There are many designs for bat boxes. Check the resources page for alternatives. Bat boxes should be draught free and preferably painted black with a non-toxic paint to allow for maximum absorption of heat during the day to keep the bats warm.

The bat box described below is for summer occupancy, since it lacks the required insulating properties to make it suitable as a hibernation site.

Materials and construction

The only critical measurement is the width of the crevices: between 15-20 mm.

This kit requires approximately 1.6 m of rough wood and 25 screws (8 x 1 ½ inches) to assemble.
Pre-drill the holes to prevent the wood splitting.
The box should be made from untreated, rough, sawn timbers.
The timber should be about 20 mm thick.
The box should be rainproof and draught-free.
Crevices can be between 15-20 mm wide.
Fixings may be by use of brackets, durable bands or wires.



F.2: Where to put your bat box

Bat boxes are best positioned as high as possible, but at least 4 or 5 m from the ground in a sheltered wind free position exposed to the sun for part of the day (6-8 hours). They can be fitted to walls, other flat surfaces or trees. A clear flight line to the entrance is important. Ideally put up 2-3 boxes in a group with varying aspects ranging from south east to south west, e.g. around a tree trunk, as bats may move roosts to keep comfortable.

Bats are nocturnal and adapted to low light conditions. Artificial light sources should not be directed onto bat boxes or flight paths, as most bat species find artificial lighting very disturbing.

Bat boxes are more likely to succeed in areas where bats are frequently found in buildings and where there is a good mixture of habitat including trees nearby. Bat boxes may be more successful if located close to a linear feature such as a line of trees or hedgerow. Some bat species use these features for navigation between their roosting sites and feeding grounds and to avoid flying in open and exposed areas. Ensure that the bat's approach to the box is not impeded, for example by branches – clear away underneath the box so the bats can land easily before crawling up into the box.

If fixing the box to a tree, use headless or domed nails not fully hammered home, to allow the tree to push the box off without splitting, or strap the box to the tree.

On buildings, place the boxes high up, which will reduce the likelihood of the bats falling prey to cats or humans. As with trees, the aspect of the box should capture sun for part of the day.

F.3: Monitoring the bat boxes

Making and putting up bat boxes is a great conservation action but what is even more useful is to know whether they are being used, when and by which species. You will need a bat detector to find out what species is using your box or contact Bat Conservation Ireland, a local member may be able to help.

How long before bats will use the box?

Sometimes it may take several years for the bats to find the box. Be patient!
It is highly unlikely bats will shift their roost from a well-used site to a newly positioned box and there may be plenty of other suitable roosting sites in the area. However, at other times, bats will use the box within a few months, and if you are extremely lucky, maybe even within a few weeks!

How will I know if the box has been successful?

To check if the box is being used, look out for droppings, urine staining, listen for "chattering" and watch the box for an hour either side of sunset, to observe any bats leaving to feed.

Remember, disturbance of a bat roost is an offence under the Wildlife Act. Therefore you should not open or interfere with a bat box unless you are licensed to do so.

Appendix G: Citizen Science Projects

Keeping records of wildlife species that you have seen and submitting these records to the National Biodiversity Data Centre (NBDC) or other dedicated recording scheme, is a great way to get involved in biodiversity conservation, improve your skill in wildlife identification and get back in touch with nature. Such data is very important and is not only used in research and policy formation but also contributes greatly to our knowledge of biodiversity and its conservation.

The National Biodiversity Data Centre collates records of all species recorded in addition to running a number of targeted recording schemes such as those for butterflies and bumblebees. Anyone can get involved and the Centre is keen to recruit new recorders.

G.1: Biodiversity recording

How to keep and submit records

The information recorded needs to be as accurate as possible. To take an accurate record you need to:

- Correctly identify the species (or get help in doing so)
- Record when (the date) and where you saw it. For the location you need a grid reference. You can submit records to the NBDC centre through their online records submission form. This has a “find a grid reference feature” to easily find an accurate location for your record.
- You can also submit records of any wildlife species using their Biodiversity Smartphone App.

The number of conservation organisations running citizen science recording projects is growing all the time:

Birdwatch Ireland run the Garden Bird Survey and other more specialised recording schemes such as the Countryside Bird Survey, Irish Wetlands Bird Surveys (iWeBS), as well as species action projects such as the Swift Nest Box Project and Barn Owl Project which you may be able to get involved with www.birdwatchireland.ie

The Irish Wildlife Trust also run targeted recording schemes. www.iwt.ie

For botanical recording, contact the Botanical Society of Britain and Ireland (BSBI). The BSBI vice county recorder for Meath is Miss MP Norton. The BSBI runs several outings a year and is very encouraging to new and emerging botanists and members.

- Contact Maria Long BSBI Irish Officer.
- Facebook: BSBI Botanical Society of Britain and Ireland
- BSBI: http://www.bsbi.org.uk/ireland.html

Bryophytes of Ireland specialise in recording mosses and liverworts.

- Facebook: Irish Bryophytes

Submit wildlife sightings and sightings of road kill to www.biology.ie

There are a number of other conservation organisations that you can get involved with, or from which you can seek advice. Please refer to the list in Appendix H.

G.2: Small mammal footprint tunnel

[Adapted from: Denise O'Meara *et al*. 2015 Small Mammals in School Yards – A Report for Schools]

This is a great science project to do with children and teachers resources and lesson plans can be found at www.miseproject.ie/publications/education.

The tunnels are baited with food and as the mammal enters it leaves a footprint of paint on the paper. The footprints can then be identified to find out what type of mammal visited the tunnel

- The tunnels can be made from a folded large sheet of poster board (corrugated plastic) formed into a tunnel with a triangular cross-section.
- Two blank sheets of white paper are fixed onto the floor of the tunnel with sellotape, one at either entrance inside the tunnel.
- A small pad of absorbent material (e.g. a j-cloth) is painted with non-toxic poster paint or ink on either side of the tunnel (below).
- The innermost section of the tunnel is baited with hot dogs and peanut butter to attract hedgehogs and other small mammals.
- The tunnel is secured with cable ties and then left overnight, next to or close to a hedgerow.

When a hedgehog or other animal enters the tunnel to get the bait, the feet are covered in paint and footprints are left behind on the sheet of paper, which are examined the following morning. Compare the prints to a mammal footprint identification sheet such as that found at www.scouts.org.uk/news/2015/01/wildlife-tracking

Small mammal footprint tunnel

Image from www.mammal.org.uk

Appendix H: Conservation Organisations and Special Interest Groups

General

An Taisce	www.antaisce.ie
Coillte Raised Bog Restoration Project	www.raisedbogrestoration.ie
Conservation Volunteers Ireland	www.cvi.ie
Environmental Protection Agency	www.epa.ie
Friends of the Earth	www.foe.ie
Friends of the Irish Environment	www.friendsoftheirishenvironment.net
Golden Eagle Trust`	www.goldeneagle.ie
Heritage Council	www.heritagecouncil.ie
Inland Fisheries of Ireland	www.fisheriesireland.ie
Irish Peatland Conservation Council	www.ipcc.ie
Irish Wildlife Trust	www.iwt.ie
Louth Nature Trust	www.louthnaturetrust.org
Meath County Council Heritage Officer Loreto Guinan	Tel: (046) 907000 E-mail heritage@meathcoco.ie
Meath Naturalists Field Club	www.meath.ie
National Biodiversity Data Centre	www.biodiversityireland.ie
National Parks & Wildlife Service	www.npws.ie
Notice Nature	www.noticenature.ie
NPWS District Conservation Ranger	Tel. 076 1002625
NPWS Local Conservation Ranger	Tel. 076 1002636

Trees and Plants

Botanical Society of Britain and Ireland	http://www.bsbi.org.uk/ireland.html
Coillte	www.coillte.ie
Crann	www.crann.ie
Irish Bryophytes	Facebook: Irish Bryophytes
Irish Seed Savers Association	www.irishseedsavers.ie
Native Woodland Trust	www.nativewoodlandtrust.ie
The Tree Council of Ireland	www.treecouncil.ie
Wildflowers of Ireland	www.wildflowersofireland.net
Woodlands of Ireland	www.woodlandsofireland.com

Birds and Bats

Bat Conservation Ireland	www.batconservationireland.org
Bat Conservation Trust	www.bats.org.uk
Birdwatch Ireland	www.birdwatchireland.ie
Birdwatch Ireland Meath Branch	www.facebook.com/BirdwatchIrelandMeath
Duhallow Raptor Conservation Trust	http://duhallow.blogspot.ie
Royal Society for the Protection of Birds	www.rspb.org.uk

Other groups

Butterflies of Ireland -	www.irishbutterflies.com
Irish Whale and Dolphin Group	www.iwdg.ie
Lichens	www.lichens.ie
Limerick's Buzzing	www.limericksbuzzing.ie

References

All-Ireland Pollinator Plan 2015-2020. National Biodiversity Data Centre Series No. 3, National Biodiversity Data Centre, Beechfield House, Waterford Institute of Technology West Campus, Carriganore, Waterford.

Bat Conservation Trust www.bats.org.uk

Bumblebee Conservation Trust www.bumblebeeconservation.org

Crofts A. & Jefferson R.G. (Eds) (1999) *The Lowland Grassland Handbook* English Nature/The Wildlife Trusts. www.publications.naturalengland.org.uk/publication

Department of Agriculture (2011) Native Woodland Scheme Manual 2011. Forest Service Department of Agriculture, Fisheries & Food Johnstown Castle Estate Co. Wexford

ENVISION 2013 - Community Heritage Project Road Verge Pilot 2012/13 – ISSUE 1 (November 2013) National Museums Northern Ireland

Invasive species Ireland www.invasivespeciesireland.com

Irish Seed Savers Association Guide to Planting and Orchard www.irishseedsavers.ie

Kent Bat Trust www.kentbatgroup.org.uk

Lusby J. & O'Clery M. (2014) *Barn Owls in Ireland: Information on the Ecology of Barn Owls and their Conservation in Ireland*. Birdwatch Ireland.

Maller C., Townsend M., St Leger L., Henderson-Wilson C., Pryor Anita, Prosser L. and Moore M. (2008) *Healthy Parks, Healthy People: A Review of Relevant Literature* 2nd ed. School of Health and Social Development Faculty of Health, Medicine, Nursing and Behavioural Sciences, Deakin University Burwood, Melbourne, Australia.

Meath Biodiversity Plan 2015-2020. Meath County Council.

Meath County Development Plan 2013-2019. Meath County Council.

Meath Heritage Plan 2015-2020. Meath County Council.

O'Meara D., Harrington A., O'Neill D., Coffey L., Turner P., Guest B. and O'Reilly C. (2015) *Small Mammals in School Yards – A Report for Schools (2015)* www.mise.ie

Plantlife (2015) *Road Verges and Wildlife Management Guidelines*) www.plantlife.org.uk

Royal Society for the Protection of Birds www.rspb.org.uk/makeahomeforwildlife/advice/helpingbirds/nestboxes/

Teagasc, *Managing Meadow Grass* Farming to Enhance Habitats Series. www.teagasc.ie

Teagasc (2009) *New Farm Hedgerows* Countryside Management Series. *www.teagasc.ie*

Teagasc (2009) *Managing Meadow Grass* Farming to Enhance Habitats Series *www.teagasc.ie*

Teagasc (2009) *New Farm Hedgerows* Countryside Management Series 4 *www.teagasc.ie*

Townsend M. Henderson-Wilson C., Warner E., and Weiss L. (2015) Healthy Parks, Healthy People the state of the evidence 2015. Parks Victoria, State Government Victoria.