

A Local Biodiversity Action Plan for Blessington 2017 – 2020



Compiled by Ecologists Seán Meehan MSc & Deborah D’Arcy MSc

On behalf of the Heritage Office of Wicklow County Council

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An Chomhairle Oidhreachta
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INTRODUCTION

During the winter of 2016/2017 ecologists Seán Meehan and Deborah D’Arcy were commissioned by the Heritage Office of Wicklow County Council to work with the community in Blessington to facilitate the development of a local biodiversity plan. The principal aim of this council-led initiative is to increase the awareness of the importance of biodiversity in communities and empower individuals and groups to make positive contributions for the benefit of both wildlife and people.

The biodiversity plan was drawn up following a review of the existing biodiversity resources in Blessington and a series of workshops in the community which provided training in biodiversity awareness and allowed collaboration to identify projects to conserve and enhance biodiversity in Blessington.

An emphasis was placed on incorporating the objectives of the All-Ireland Pollinator Plan 2015 - 2020 into the biodiversity projects. This national plan proposes actions that will increase habitat and food sources for a range of pollinating insects and provides a useful foundation from which other biodiversity related projects can evolve.

Blessington is one of a number of towns and villages in Wicklow taking part in the initiative. It is encouraging and commendable to see that all communities to date have taken biodiversity into account when designing past and current projects thus reflecting their awareness and concern for wildlife and habitats. The aim of this project is to further build on these achievements and to strive for greater community participation to ensure that as many people as possible are made aware, included in and educated about the value of biodiversity in their localities.

1. PROJECT METHODOLOGY AND APPROACH

The underlying theme of this project is to identify practical opportunities for community led actions for biodiversity. A walkover survey was conducted with Blessington Tidy Towns group to review the local area to identify areas of biodiversity interest and opportunities for projects. Two workshops for the public were held in the Coimín Centre and were well attended by members of the Tidy Towns group, individuals involved in the Blessington Lake Greenway project, teachers from St. Mary’s school, representatives from local resident’s associations and other interested individuals including a local ecologist and ornithologist. Short presentations were delivered that focussed on biodiversity related topics, project ideas and resources for the communities to reference and use.

In addition, desktop research was carried out to identify local habitats and species of conservation interest, such as the National Biodiversity Datacentre online search tool. Reports and documents including the Blessington Local Area Plan 2013 – 2019 and the Blessington Biodiversity and Habitat Management Plan 2014¹ were also consulted. Aerial mapping also aided in identifying areas in and around the town that may be suitable for biodiversity projects.

Criteria for choosing local projects are:

- They will have a significant benefit for wildlife and habitats in the town.
- They will raise awareness of biodiversity among the local community and highlight the importance of this resource to all our lives.
- They are inclusive and will involve those of all ages and abilities.
- They are mostly achievable in the short to medium term and will reap rewards for biodiversity almost immediately upon implementation (one project is considered long term).

¹ Blessington Biodiversity and Habitat Management Plan 2014. Flynn Furney Environmental Consultants.

- They have been agreed in consultation with the community and are appropriate for the scale and resources of the town.

Projects agreed are discussed in **Section 7** of this report.

2. WHAT IS BIODIVERSITY?

Biodiversity refers to the variety of life on earth (including humans) and the interactions of species with each other, between each other and with their environments. The term is made up of two words, 'biological' and 'diversity'. This biological diversity includes a vast array of life with scientists estimating that there may be up to one trillion species on earth currently with the majority yet not described by science. There are three main components of biodiversity:

- **Species:** A group of organisms (living things) capable of interbreeding, i.e. producing offspring.
- **Habitats:** A place where an organism lives. Habitats need to provide sufficient food, water and shelter for its inhabitants. In addition, the habitat must support more than an individual of each species type to ensure population continuity, for example a badger in a woodland must find a mate if the badger population is to continue at that location.
- **Genes:** The genetic makeup of an organism is unique. It is a combination of the parents that produced it (unless it was produced asexually in which case it is a clone of its parent). Variety in the gene pool allows species to overcome disease and to adapt and evolve in a changing environment.

Interacting together, species, habitats and genes make biodiversity what it is. Humans are a component of biodiversity and we are dependent on biodiversity to provide a range of ecosystem services. Human activities such as agriculture, forestry and fishing depend on services provided by biodiversity. We rely on biodiversity for the provision of clean air and water, food and medicines, natural landscapes, flood control, noise pollution control and much more. A healthy environment is important for human health and well-being. Biodiversity provides us with natural amenities to enjoy, parks and green spaces, wildlife and landscapes to admire and thus improves our quality of life. It is estimated that all these benefits and services provided by biodiversity are worth billions in monetary terms on a global scale.

2.1 What is pollination?

In plants, the transfer of pollen between flowers of the same species by animals, wind, water and in some instances by self-means, results in fertilisation which is necessary to enable plants to produce seeds. This process is known as **pollination**. For wildlife, this provides fruit and seeds for animals to eat and the persistence of wildflowers in the landscape. For humans, this means we have a range of fruit and vegetables to eat. Many plants produce nectar to entice insects, especially bees and flies, to visit and inadvertently carry pollen between flowers. Unfortunately, many of our wildflower habitats such as meadows have disappeared resulting in a decline in pollinator species numbers.

2.2 What's Happening to our Pollinators?

In Ireland, there are 98 different species of bee including the honey bee (1 species), bumble bees (20 species). The remaining species are solitary bees. All bees pollinate flowers. Hoverflies also provide pollination services as do other insects such as butterflies, moths, beetles, wasps and ants but to a lesser extent. The number of bees in Ireland has declined substantially with 30% of species considered threatened with extinction. So why is this happening?

- **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 destructor*, a parasitic mite introduced to Ireland with imported honey bees, attacks and weakens honey bees and spreads viruses to the bees. It can 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 the neonicotinoids applied to crops reach pollinators through pollen and nectar and through the air, water and soil. Herbicides decrease abundance of wildflowers available as food in the landscape.
- **Climate change:** Climate change is likely to bring 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.

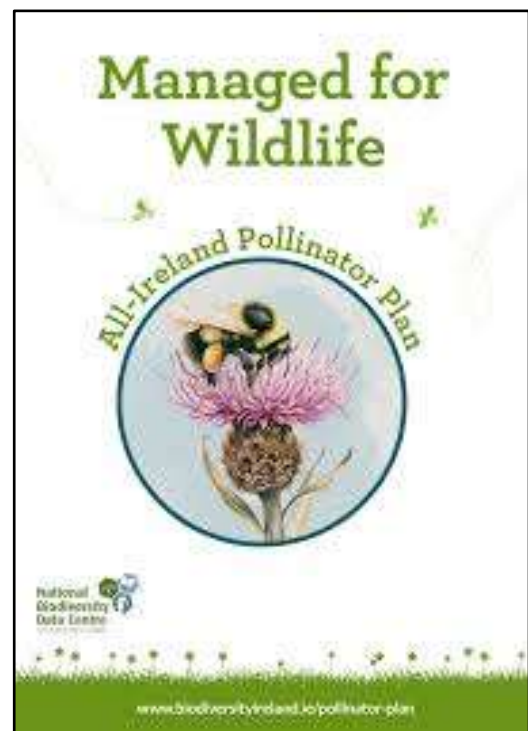
2.3 Actions to conserve pollinators

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 targeting farmland, public land and private land.

The All-Ireland Pollinator Plan is available to download from www.biodiversityireland.ie along with a range of other resources including a bi-lingual public 'Managed for Wildlife' signage template.

The following guidelines are available to download:

- 'Local communities: actions to help pollinators' – aimed at Tidy Town groups, cemetery management committees and local wildlife groups.
- 'Gardens: actions to help pollinators' – aimed at small, medium, large or community gardeners and at gardeners of all skill levels.



Managed for Wildlife signage template

- ‘Councils: actions to help pollinators’ – aimed at local authorities
- ‘Businesses: actions to help pollinators – aimed at employees of any business
- ‘Schools: actions to help pollinators (junior version) – aimed at schoolchildren
- How-to-guide: Creating wild pollinator nesting habitat
- How-to-guide: Collecting and using pollinator friendly wildflower seed
- How-to-guide: Hedgerows for pollinators



2.4 How can we help pollinators in our community?



Plant pollinator friendly plants - Incorporate pollinator friendly plants into gardens and urban streetscapes, with an emphasis on choosing native species. Bear in mind that not all flowers are useful to pollinators. Double or multi-petal 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. A list of suitable plants is listed in Appendix A.



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. Remember, ‘weeds’ are wildflowers and denigrated species such as dandelions are hugely important for flowers for early emerging insects in spring.



Mow less! Create a wildflower lawn - Common wildflowers in lawns include white clover, red clover, dandelion and selfheal. Unfortunately, these rarely get a chance to flower because we tend to keep our lawns tightly mown. These wildflowers will bloom in your lawn if you raise the blades on your lawn mower and cut the lawn less often. The rich colours of these flowers throughout a lawn are far more pleasing than the monotonous green colour of grass. Incidentally, grasses are wind pollinated, so offer no benefit to pollinators.



Make hay! Manage an area of grassland or road verge / bank as a wildflower meadow. Mow grassland once per year and ensure all cut grass is removed to avoid soil enrichment



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 are ideal for cavity nesting solitary bees.



Get the community involved in a bumblebee survey – The National Biodiversity Datacentre run an annual bumblebee survey. The results collected from these nationwide surveys help to monitor the populations of bumblebees over time. See www.biodiveristyireland.ie for information.

3. 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.

In addition, a network of Natural Heritage Areas (pNHAs) has also been created to protect areas of national importance throughout Ireland.

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 County Wicklow Biodiversity Action Plan and the biodiversity actions of the County Wicklow Heritage Plan.

The role of local communities in the conservation of biodiversity is widely recognised. Everyone has a role to play. Planting some native flowers in their garden, leaving an area of their property unkempt for wildlife, walking to the shops instead of driving are all small steps that most of us can carry out. By undertaking more ambitious projects such as woodland planting, hedgerow maintenance and wildlife surveys, the reward for biodiversity can be immense. It is important that communities liaise with the relevant authorities such as county councils and NPWS to ensure that threats to biodiversity in their localities are reported and addressed.

This community biodiversity project aims to encourage communities to take small steps that cumulatively will result in real and tangible benefits for biodiversity in their communities and further afield. The national Tidy Towns competition places a focus on biodiversity in the scoring category

‘Wildlife, Habitats and Natural Amenities’ which, taken together with the newly introduced ‘Pollinator’ Special Award, provides the impetus for community led wildlife friendly initiatives to gather momentum. At primary school level, the biodiversity message is further instilled through the Green Schools program.

4. ENHANCING BIODIVERSITY

Biodiversity enhancement is often best brought about by changing the management style of the area to promote the growth of long grassy verges and wildflowers, or by additional planting of native trees or hedgerows, gardening in a more wildlife friendly manner and by providing additional sites for shelter (bat and bird boxes).

4.1 Habitat Creation

Habitat creation is one way to increase the diversity of habitats and enhance an area for biodiversity. Even small habitats can effectively increase biodiversity in area. Examples of small-scale habitat creation that may be appropriate in an urban setting and practical for community groups, schools and residents to undertake include managing an area as meadow grassland or wildflower lawn, planting hedgerows, treelines or groves of trees or creating a pond.

Specific projects for enhancing biodiversity have been outlined below but there are some general guidelines for habitat creation or management that are advisable to follow for any biodiversity project.:

- Habitat creation should only be attempted in an area that is currently of low biodiversity value such as amenity grassland.
- Introducing a habitat uncommon in an area such as a pond may be of more benefit than planting more trees in an area that already has good tree cover.
- Creating a small complex of habitats such as a small woodland or grove of trees along with some meadow grassland around the edges to create a collection of semi-natural habitats will be of more benefit to biodiversity as it will provide resources for a greater number of species.

4.2 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 lots of plants that were introduced to Ireland by humans as garden plants and trees. These plants do not provide as many resources for our native animals and they also can 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.

However, in urbanised areas non-native trees are often planted and sometimes have a cultural and historic value as well as providing resources for wildlife. Mature trees and old veteran trees both native and non-native can be particularly valuable for many specialized invertebrates, fungi and lichens. In addition, the planting of pollinator friendly garden plants is appropriate in urban areas

where they provide visual and aesthetic interest as well as vital sources of nectar for pollinating insects in a built-up environment.

4.3 Habitat management

Meadows

The traditional hay meadows which once dotted the landscape of Ireland are very scarce now due to changes in farming practices. These hay meadows were once a haven for wildlife in summer being rich in wildflowers and the insects and birds that depend on them. Roadside verges represent remnants of these traditional hay meadows. If managed correctly these verges can be an important resource and refuge for invertebrates, birds and small mammals. Managing amenity grassland areas or part



This meadow grassland has abundant dandelions in April as forage for pollinators. Later in the summer tall wildflowers will provide resources through the summer

of them as a meadow is another way to increase the resources available to wildlife.

Not only does this allow the growth of wildflowers which provide essential pollen

for our pollinating insects, long grass hosts a variety of other insects and invertebrates and produce seed, both important food sources for birds. Long grass also provides cover and nesting habitat for small mammals.

In general areas of meadow grassland or long grassy verges should be cut once a year in autumn and the cuttings removed. Removing the cuttings is important to prevent the build-up of nutrients in the soil. Wildflowers flourish in a nutrient poor soil where they can compete successfully with the more competitive grasses. It may take several years before you see an increase in the number and diversity of wildflowers. However, avoid using commercially available wildflower mixes to enhance your meadow. These mixes often contain species that are not native to Ireland and are only suitable for gardening and not for creating natural habitats such as meadows. In addition, some species in these mixes are plants of disturbed ground or arable fields and are unlikely to thrive in meadow grassland.

To increase the species diversity of a meadow, collect seed from a grassland that is already more species rich such as from a roadside verge or collect green hay from these areas and spread on your meadow. Planting the seeds in pots and introducing them as plug plants may help their survival and could be a fun project to do with schoolchildren.

Hedgerows

Hedgerows are valued as linear woodland habitats which provide resources for insects, birds, bats and other small mammals. They serve as ecological corridors through which species can move and are very important to maintain connectivity between fragmented habitats. A dense hedgerow provides suitable nesting habitat and if there is also the occasional tall trees this further increases the structural diversity of the habitat and provides song posts for birds. Without management hedgerows can



Hedgerows act as wildlife corridors, linking habitats across the landscape

become 'gappy' reducing their value to wildlife and their stock-proofing function. Under the Wildlife Act 1976 as amended, it is illegal to cut hedges between **1st March and 31st August**, to protect nesting birds.

Hedgerows should be cut approximately every 3 years in rotation. This means that not all hedgerows are cut in any one year but some are left uncut to provide resources for wildlife. Hedgerows can be cut between September and March but cutting hedgerows later in the autumn, in November or December is less disruptive to pollinating insects. Hedgerows should be cut to an A shape which allows sunlight to reach the bottom of the hedge promoting a full and dense growth. The top of the hedge should be left uncut to leave some fruit and seeds through the autumn and winter months for birds to feed on.

Stone walls and other stonework

Stone walls, bridges, headstones and other stone work can be valuable habitats for both plants, invertebrates, birds and bats. Small plants such as mosses and ferns and small wildflowers commonly found on stone walls such ivy leaved toadflax do not have extensive roots systems and do not normally cause damage to the wall structure. A variety of lichens are often found growing on stonework. Such vegetation should not be cleaned from stonework allowing a diversity of species to persist.



Furthermore, moss, ferns and wildflowers add visual interest and character to the stonework. Where dense covering of ivy or heavy growth of plants with bigger roots such as red valerian or tree saplings are threatening the structural integrity of a wall it may be appropriate to remove or control the growth. On modern walls trimming of ivy should be undertaken in September or early October as this is outside of the bird nesting season and before the winter hibernation period of bats, to avoid disturbing these species. Where removal of the ivy is necessary, cut the ivy at the base and allow the leaves to wither and fall off before removing the dead plant to minimise the impact on wildlife. When clearing ivy from older walls, the Wicklow Heritage Officer should be consulted beforehand to avoid damaging fragile historic features.

Herbicides and pesticides

Avoid the use of herbicides and pesticides where possible as they can harm non-target species either directly or indirectly. For example, using slug killer might result in fewer thrushes, hedgehogs and other slug-eating wildlife. In some cases, such as in the control of invasive exotic species, careful use of herbicides or pesticides may be necessary. Such chemicals should not be used in or near watercourses without consulting with Inland Fisheries Ireland, as only certain pesticides are approved for use near freshwater habitats and are generally applied only to control or eradicate invasive species. Using herbicides to control “weeds” along grassy verges and around trees kills wildflowers. Remember a “weed” is only a plant growing where it is not wanted! It is a matter of deciding whether you want to let these small wildflowers grow or not.

Invasive species

An invasive species is a plant or animal species that is not native to a specific location (an introduced species), and tends to spread to a degree believed to cause damage to the environment, human economy and/or human health. There are a number of invasive plant species in Ireland which are particularly problematic, especially in riverside habitats, including Japanese Knotweed (*Fallopia japonica*), Giant Hogweed (*Heracleum mantegazzianum*) and Himalayan Balsam (*Impatiens glandulifera*).



Japanese knotweed often grows along riversides

These plant species spread rapidly, out-competing our native vegetation. Giant Hogweed, Japanese Knotweed and Himalayan Balsam, along with 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.** A licence may be required from the Department of Arts, Heritage and the Gaeltacht when working in an area with invasive plant species. Always check with the NPWS Conservation Officer first before tackling invasive species.

5. BIODIVERSITY AWARENESS AND CITIZEN SCIENCE

Raising awareness of biodiversity and encouraging or facilitating people to engage with and appreciate wildlife is an important tool in biodiversity conservation. Providing opportunities for people to experience and understand more about wildlife in their local area can instil respect, remind them of how they value nature and lead to effective conservation.

Interpretative signage highlighting the biodiversity present in an area or promoting a project is useful to draw peoples’ attention. Even more effective, however, is increasing the amount of time

people spend outdoors connecting with nature. Furthermore, the health benefit of spending time with nature is widely recognised with known benefits for both physical and mental wellbeing.

Raising awareness of biodiversity can be facilitated by organising wildlife-themed walks, bat walks, wildflower walks and bird watching or competitions, such as best wildlife-friendly estate, best garden for wildlife or a wildlife photography competition. Better still is providing opportunities for people to volunteer on a project, such as invasive plant species removal, tree planting or encouraging people to get involved in citizen science projects. It is often the social benefits of such events that will attract people to get involved.

Citizen science engages the public to participate in recording wildlife. Keeping records of wildlife species and submitting these records to the National Biodiversity Data Centre (www.biodiversityireland.ie) or other dedicated recording scheme is a great way to get people involved in biodiversity conservation, improve skills in wildlife identification and foster a personal appreciation of nature. All records are valuable even of common species seen every day. Such data is very important and is used in research, policy formation and contributes greatly to our knowledge of biodiversity and its conservation.

Blessington has already to date carried out impressive biodiversity friendly projects, such as a pollinator friendly road roundabout known as 'The Bumble Bee Roundabout'. Going forward, much more is planned and this biodiversity plan outlines several projects for the next three years which will conserve, enhance and raise awareness of biodiversity in Blessington.



The Bumble Bee roundabout in Blessington. This habitat provides a source of pollen for insects, notably bees and is an example of how small spaces in often hostile urban areas can be transformed into wildlife refuges. This project (and others in Blessington) won the Wicklow County Council Environmental Awards – Wildlife and Amenity category in 2016.

6. BLESSINGTON – OUR PLACE IN THE LANDSCAPE

Blessington is a medium sized town situated in the north west of Co. Wicklow, close to the county border with Kildare. The town is an important retail and social hive and serves a significant hinterland both in Wicklow and Kildare. The N81 national primary route passes through the town and another important link road is the regional R410 to Naas. The town underwent a huge population increase between 2002 and 2008 due to people being forced out of the Dublin housing market. Today, Blessington is considered a commuter town, being only 25km from Dublin. The 2011 national census counted 4,784 people living in Blessington. The results of the 2016 census, not yet available, is likely to show an increase on this figure.

Co. Wicklow is internationally renowned for its scenery and landscapes and the environs of Blessington are no exception. Situated beside Poulaphouca Reservoir and enjoying vistas of the Dublin and Wicklow mountains, a diverse range of habitat types occur adjacent to the town. However, like many other urban areas in Ireland, a rapid growth in population has resulted in an increase in housing estates and infrastructure. The bulk of this recent development land was to the west and north west of the town. Agricultural land and forestry plantations are found throughout the surrounding countryside. Extensive quarrying is also carried out to the north and north west of the town.

The closest Natura 2000² site to Blessington is Poulaphouca SPA reservoir, created by the damming of the river Liffey for a hydroelectric scheme in 1944 and as a source of water for Dublin. Approximately 3km north of the town centre is the Red Bog SAC, located within Co. Kildare, designated for its EU Annex I habitat, transition mires.



Location of Natura 2000 sites within a 5km radius of Blessington

² Natura 2000 sites, commonly referred to as European sites, are part of a European network of protected sites composed of SACs (Special Areas of Conservation) as per the EU Habitats Directive and SPAs (Special Protection Areas) as per the EU Birds Directive. In Ireland, the NPWS (National Parks and Wildlife Service) are responsible for their management.

To the east of the town lies the Wicklow Mountains SPA and SAC. This site is designated for several reasons such as the presence of blanket bog, old oak woodlands, wet heath, otter and peregrine falcon. Whilst these sites are of international importance for biodiversity, it is important to emphasise that habitats not afforded conservation designation such as SAC are just as necessary and beneficial for wildlife. Habitats such as hedgerows which also serve a connectivity function across the landscape around Blessington enable the movement of species and serve as substitute native woodlands for many of our wildflowers such as primrose, bluebell and stitchwort. Detailed information on designated sites is available on www.npws.ie

- **Poulaphuca Reservoir SPA** – This reservoir covers an area of approximately 20 square kilometres and is fed by two rivers, the Liffey and King’s River. The lake is a designated SPA due to the importance of the site for Greylag Goose (the site is of national importance), Lesser Black-backed Gull and the EU Annex I species, Whooper Swan. In addition, Great crested grebe, lapwing and snipe occur at the site.
- **Red Bog SAC** – This site is a wetland complex of lake, fen and bog and is designated due to the presence of the EU Annex I habitat, transition mires. The site hosts a number of plant species associated with wetland habitats that are considered rare in lowland areas of Co. Wicklow such as Bogbean, Marsh cinquefoil, Hare’s-tail cottongrass and a number of Sphagnum moss species.
- **Wicklow Mountains National Park, SAC and SPA** – A large complex area of upland habitats, this national park is the largest in Ireland, covering approximately 20,000 hectares. The area contains a wealth of habitat types, many of which are EU Annex 1, including blanket bog, heathland, grasslands and oak woodlands. In addition, the area is designated a SPA due to the presence of two EU Bird’s Directive Annex 1 species, merlin and peregrine falcon. Other bird species of national interest that occur here are Ring Ouzel and Red Grouse.



A greylag goose

7. BIODIVERSITY PROJECTS

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 Blessington. The location of projects A - D are shown on the map below. A map showing the location of each project is provided with each project description.

A. Management of calcareous grassland with orchids on an embankment along the N81 to the north of the town

B. Enhancing Oak Drive planting for biodiversity

C. Biodiversity enhancements at Dempsey's Lane

D. Creation of a woodland on waste ground adjacent to the Mountain View Estate / Gleann na Carraige.

E. Review of the hedgerow connectivity in Blessington and identifying opportunities to plant new hedgerows and improve ecological connectivity.

F. Other events. Holding of public events in 2017, such as biodiversity themed photographic competition and walks/talks (approach NGOs such as Birdwatch Ireland, Irish Wildlife Trust or use ecologists or local people with relevant expertise). Liaising with local schools etc.



Location of principal projects selected for Blessington

7.1 Description of projects

Project A. Management of a calcareous grassland with orchids along the N81

A small area of calcareous grassland occurs on an embankment on the eastern side of the N81 on the northern side of the town. It is likely that the calcareous conditions result from the construction of the road cutting into bedrock or deposited piles of limestone aggregates. On the day of the walkover in November, numerous orchid spikes were observed along with other calcareous loving species such as quaking grass, knapweed and birds foot trefoil. Habitats found along this embankment correspond to Fossitt 'Dry calcareous and neutral grassland (GS1)', 'Dry meadows and grassy verges (GS2)' and 'Ornamental and non-native shrub (WS3)'.

The grass has not been managed resulting in the grass becoming overgrown and tufted ('rank'). It is likely that common spotted orchids dominate the orchid species here but it is possible that other orchid species may also occur. The area of interest is small, approximately 20 x 10 metres. One orchid spike was noted on the opposite side of the road so it would be beneficial to also manage a small area on that side also. This should maintain and possibly increase the orchid population. In addition to this management benefitting orchids, other wildflower species will also benefit resulting in additional opportunities for pollinators. The 'Managed for Wildlife' template should be used for signage to alert and inform local authority staff and the public that this particular stretch of roadside verge is being managed.



Common spotted orchid (*Dactylorhiza fuchsia*) generally at peak bloom during June and July

Calcareous grassland with orchids - management

Objective: To maintain the orchid population in dry calcareous grassland

Actions:

- Conduct a survey of the grassland area between May and July. Engage a botanist, ecologist or other person skilled in the identification of wildflowers to survey the grassland.
- The survey should identify and record the plant species and their abundance.
- In late August or September, cut the grass to 10 cm height. Leave the cuttings to dry out for a week or so and then remove all the cuttings. Compost the cuttings or use as hay to seed other areas of grassland.
- If the weather is mild during autumn and winter and a heavy growth of after-grass grows back, then cut it again in late autumn or early spring (February).
- Do not cut the grassland from March through to September and enjoy the wildflowers!
- Erect simple signage to highlight the action for biodiversity
- Register your action for pollinators on the NBDC website www.biodiversity.ie
- Send the plant records to the NBDC and the BSBI county recorder www.bsbi.org to pass on

Evaluation: Monitor the grassland and your management by resurveying the grassland annually to observe whether there is any change in the plant species abundance.

Send your plant species records to the NBDC. Record sightings of bumblebees and butterflies visiting the flowers and submit your records to the NBDC www.biodiversityireland.ie

Resources: *Ireland's Wild Orchids* by Brendan Sayers and Susan Sex.

There are 30 species of orchid native to Ireland. Some species are very rare/threatened and are protected by the Flora Protection Order.

When out identifying wildflowers for surveys, never pick them! Bring the book to the field. Take a close up photo to aid identification when back home.



Project A location

Project B. Enhancing Oak Drive planting for Biodiversity

This area of recently planted shrubs and immature trees has potential to provide as potential to support a much wider range of plants. There is also potential to include an urban orchard by planting fruit trees throughout this area.



Enhancing Oak Drive planting for Biodiversity

Objective: To incorporate trees, shrubs and plants that provide resources for wildlife.

Actions

- Remove some plants to create space for native plant species and pollinator friendly plants.
- No shrub and vegetation removal should be carried out between March 1st and August 31st as this period coincides with the bird breeding season.
- Choose native tree species for replacements. If large trees are not desirable, plant natives such as hawthorn, elder and rowan. These three species are renowned for their blossoms and fruit which benefits not only pollinators, but also birds.
- Consider planting apple trees as a small community orchard. Choose heritage varieties for apple trees to help conserve Irish crop varieties.
- Plant shade tolerant species of plants in the middle of the area. Native Irish ivy is a plant that has adapted to life in shaded woodlands and provides cover for ground dwelling invertebrates. Ivy will not harm healthy trees. Broom is also a valuable low growing shrub.
- Plant pollinator friendly plants around the periphery of the area. A list of suitable species is provided in Appendix A.
- Reduce the frequency of cutting of the grass around the periphery of this planted area to allow the grass to grow as a wildflower lawn. Cut the grass every 6 weeks or so. This will allow plants such as daisy, clovers, and selfheal to flourish.
- Involve nearby residents in the planting and management of the area to raise awareness of wildlife friendly gardening
- Erect bird boxes on the larger trees to provide additional nesting opportunities for birds.
- Erect simple signage to highlight the action for biodiversity.
- Register your action for pollinators on the NBDC website www.biodiversity.ie

Evaluation

- Record sightings of bumblebees, butterflies and birds visiting the and submit your records to the NBDC www.biodiversityireland.ie

Resources

- NBDC Gardens Actions to help pollinators NBDC Series No.9
http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Gardens_actions-to-help-pollinators-July-2016.pdf
- Advice on planting heritage varieties of apple trees is available from The Irish Seed Savers
www.irishseedsavers.ie



Project B location

Project C. Biodiversity enhancements at Dempsey's Lane

Dempsey's Lane is a small urban amenity area in the town noted for its avenue of mature beech trees. Enhancement works have already been carried out and further enhancements are planned. There is a line of mature beech trees however due to old age some are beginning to show signs of decay, with some having to be felled for health and safety reasons. Where a large tree is felled, an opportunity to replant arises. The laneway would benefit from some up to date signage outlining the benefits of biodiversity.



Biodiversity enhancements at Dempsey's Lane

Objective: To incorporate trees, shrubs and plants that provide resources for wildlife.

Actions:

- Replace fallen trees. Beech is acceptable but an alternative could be pedunculate oak
- Quick growing native tree species such as elder and rowan should be considered for their blossoms and fruit.
- Plant the open glade areas with pollinator friendly plants e.g. native bluebells
- Erect bird boxes and bat boxes on the mature trees to provide additional nesting opportunities for birds. Appendices B and C provide details on construction and erection of both.

Evaluation

- Monitor and record birds nesting in the boxes. Submit your records to the NBDC www.biodiversityireland.ie
- Monitor the bat boxes by checking for droppings on the outside of the box. Do not open or disturb the boxes. Bats are a protected species. It is an offence to disturb their resting places.

Resources

- NBDC Gardens Actions to help pollinators NBDC Series No.9 http://www.biodiversityireland.ie/wordpress/wp-content/uploads/Gardens_actions-to-help-pollinators-July-2016.pdf
- http://www.batconservationireland.org/wp-content/uploads/2015/05/BCIrelandGuidelines_TidyTowns.pdf.



Project D. Creation of a woodland on waste ground adjacent to the Mountain View Estate / Gleann na Carraige.

This site is primarily an open grassland with some existing treelines and hedgerows situated between the housing estates and the reservoir. Scattered scrub also occurs. This area has huge biodiversity potential but is classified as a long-term project due to its scale, associated costs and liaising with various organisations. The installation of dedicated pathways would limit human impact by containing people to designated areas. A nature themed trail with signage would enhance the public's experience and increase the awareness of biodiversity of the general area. This site is close to the Blessington Lakes Greenway and could potentially function as a spur to the Greenway. Habitats corresponding to Fossitt include 'Dry meadow (GS2)', 'Scrub (WS1)', 'Treelines (WL2)', 'Scattered Trees (WD5) and 'Hedgerows (WL1)' are found here.



Creation of a woodland on waste ground - Mountain View Estate

Objective: Creation of a public amenity / natural area linking the town with the lake shore

Actions:

- Maintain existing treelines and hedgerows. Plant species that are in keeping with what already grows there. This increases wildlife connectivity.
- Consider planting a native woodland using species that reflect what grows in the area.
- Consider managing an area of open grassland as a wildflower meadow.
- Create a network of pathways through the site. Provide information signage.

Evaluation

This is designed as a long-term project so it would take numerous years for positive rewards for biodiversity to become apparent. However, in the case of wildflower grassland areas, an increase in wildflower species should become apparent after one or two seasons.

Resources

- Native Woodland Scheme – information available at <https://www.agriculture.gov.ie/media/migration/forestry/formsdownloads/formsandschemedocuments/NWS18-06-08-fixedgrantrate.pdf>
Wildflower meadow information available at
- <https://ww2.rspb.org.uk/get-involved/activities/give-nature-a-home-in-your-garden/garden-activities/startawildflowermeadow/>
Native tree planting information available at
- www.nativewoodlandtrust.ie
- www.crann.ie



Project D location

Project E. Review of hedgerow connectivity in Blessington

The role of hedgerows in facilitating the movement of wildlife across the Irish landscape is well recognised. In the absence of sufficient woodland habitat, hedgerows act as linear woodlands supporting a vast range of biodiversity including pollinating insects, mammals, birds and flora. This project aims to increase awareness of the importance of hedgerows and the idea of a connected landscape. Access to land requires permission from landowners.



Review of hedgerow connectivity in Blessington

Objective: To identify hedgerows that are candidates for maintenance (planting and management) to improve their functions as wildlife corridors and habitats. Some examples of hedgerows to assess are provided below.

Actions:

- Assess hedgerows that are 'gappy' or that potentially could link two habitats together e.g. an area of scrub and a nearby piece of woodland. This can be done by walkover surveying and aerial photography e.g. Bing maps.
- Replace gaps mainly with plants of the same species as the existing hedgerow. Around Blessington, hawthorn is the dominant species in hedgerows. Adding in some additional species such as blackthorn and holly add diversity to the hedgerow.
- If possible, replace non-native species with native ones. Avoid potentially invasive species such as cherry laurel and grisolenia.
- Consider holding a hedge laying demonstration.

Evaluation

- Monitor plants annually and replace any failed individual plants.

Resources

- Hedge laying association in Ireland. Visit www.hedgelaying.ie

Examples of hedgerows identified for planting and enhancement (indicated in yellow)



Blessington School No. 1 and GAA grounds



Mountain View Estate

Project F. Ongoing Initiatives

Blessington Tidy Towns group benefits from having a good network of like-minded groups and individuals who they can work with to achieve project aims. There are a number of national events and schemes that the committee can participate in. Possible initiatives and projects to enhance and promote biodiversity in Blessington include:

- Undertaking pollinator friendly plans to enter the All Ireland Pollinator Award category of the Tidy Towns competition. See www.biodiversityireland.ie/pollinator-plan for ideas on types of projects.
- Working with local 'Green Flag' schools to increase awareness and participation in local biodiversity projects. Construction of bug hotels, mammal tracking (see Appendix E), planting pollinator friendly flowerbeds in school yards etc. are activities that children enjoy doing.
- Blessington Tidy Towns committee are organising a biodiversity themed photographic competition in 2017. A local supermarket will also select the best photographs to use in their 2018 calendar. This event could be timed to coincide with National Heritage Week in August.

- Liaising with the Blessington Greenway committee, especially in relation to sections of the route that are within or adjacent to Blessington. Organising bird watching events on the lake or a bat walk along the Greenway.
- Hosting events during National Biodiversity Week. Events could include a Birdwatch Ireland dawn chorus walk or to invite Bat Conservation Ireland or Irish Wildlife Trust expert to lead a walk or deliver a talk.
- Monitor their area for invasive species such as Japanese knotweed. This species is not yet a major issue in the Blessington area but this situation requires regular monitoring.
- Liaise with local resident's associations to initiate local biodiversity themed projects for their estates.
- Initiate a 'Citizens Science' project. One idea already referred to is a bumblebee monitoring scheme. See Appendix F for further information.

8. PROJECT FUNDING - SOURCES

Applications for project funding can be made to Wicklow County Council who coordinate several schemes designed to allocate funds to small scale local environmental projects. Examples of such schemes include LA21, Wicklow Community Awards and funding for trees for the annual National Tree Week. In addition, funding applications for projects and events can be submitted to the Heritage Council.

9. CONCLUSION

Blessington is fortunate in having active individuals and groups who strive to promote biodiversity in their community. To date, they have undertaken ambitious projects and have set an example for other towns and villages. It is hoped that the contents of this report will aid them in their future endeavours.



10. APPENDICES

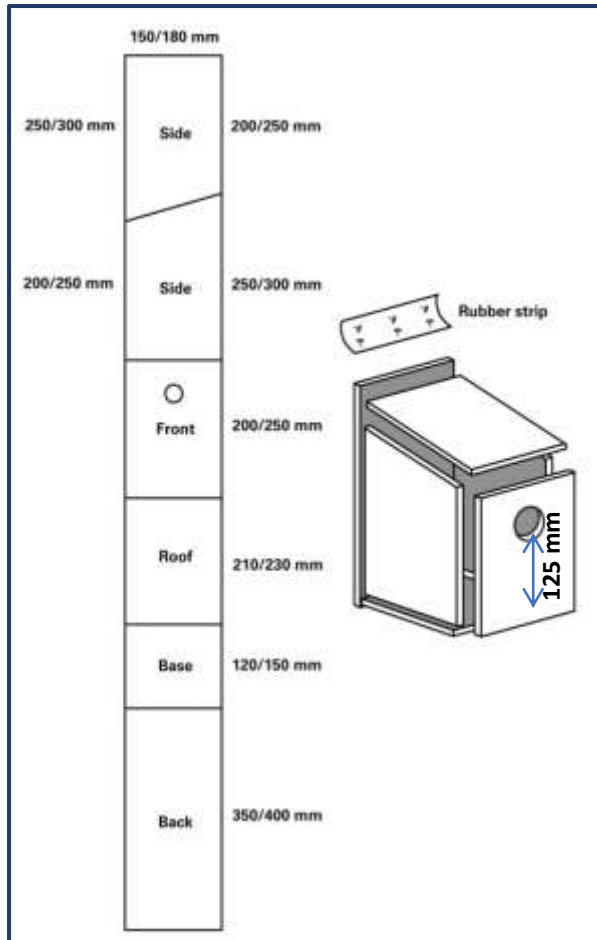
Appendix A. List of pollinator friendly plants and their optimum flowering times

Some Pollinator-friendly Plants				
	Spring	Summer	Autumn	
Trees and shrubs	Apple (<i>Malus</i>)	Rock Rose	Hebe	
	Horse chestnut (<i>Aesculus</i>)	Bramble	Ivy	
	Field maple* (<i>Acer campestre</i>)	Deutzia	Russian Sage	
	Willow (<i>Salix</i>)	Firethorn		
	Crab apple (<i>Malus sylvestris</i>)	Laburnum		
	Wild Cherry (<i>Prunus avium</i>)	Viburnum		
	Rowan (<i>Sorbus acuparia</i>)			
	Broom (<i>Cystisus</i>)			
	Forsythia			
	Viburnum			
	Barberry (<i>Mahonia</i>)			
	Plants and herbs	Hellebores (<i>Helleborus</i>)	Columbine (<i>Aquilegia</i>)	Heathers
		Rosemary	Yarrow (<i>Achillea</i>)	Lavender (<i>Lavandula</i>)
Hebe		Bistort (<i>Persicaria bistorta</i>)	Aster	
Castor Oil plant <i>Fatsia japonica</i>		Angelica (<i>Angelica</i>)	Catmint (<i>Nepeta</i>)	
Bugle* (<i>Ajuga reptans</i>)		Bell flowers (<i>Campanula</i>)	Raspberry (<i>Rubus</i>)	
Aubrieta		Chives (<i>Allium</i>)	Eupatorium	
Wallflower (<i>Erysimum</i>)		Comfrey (<i>Symphytum</i>)	Scabious (<i>Knautia, Scabiosa</i>)	
Cranesbills (<i>Geranium</i>)		Foxglove (<i>Digitalis</i>)	Snapdragon (<i>Antihirrhums</i>)	
Blueberry (<i>Vaccinium</i>)		Hebe	Sunflowers (<i>Helianthus</i>)	
Spurges (<i>Euphorbia</i>)		Lupin (<i>Lupinus</i>)	Ivy (<i>Hedera helix</i>)	
Pasque flower (<i>Pulsatilla vulgaris</i>)		Monkshood (<i>Aconitum</i>)	Chrysanthemum	
		Sage (<i>Salvia</i>)	Ice plant (<i>Sedum</i>)	
		Thyme (<i>Thymes</i>)	Honeysuckle (<i>Lonicera</i>)	
		Coneflower (<i>Echinacea purpurea</i>)	Borage (<i>Borago</i>)	
		Bell Heather (<i>Erica cinerea</i>)	Marjoram (<i>Origanum</i>)	
		Red Turtlehead	Knapweed	

		((<i>Chelone obliqua</i>)	(<i>Centaurea</i>)
		Bugbane (<i>Actaea simplex</i>)	Larkspur (<i>Delphinium</i>)
		Bee Balm (<i>Monarda</i>)	
		<i>Heliopsis</i>	
		Black-eyed Susan (<i>Rudbeckia</i>)	
		Wallich Mil Parsley (<i>Selinum wallichranum</i>)	
	Snowdrop (<i>Galanthus</i>)	Burnet (<i>Sanguisorba</i>)	
Bulbs	Winter aconite (<i>Aconitum</i>)	Sneezeweed (<i>Helenium</i>)	
	Bluebell* (<i>Hyacinthoides non-scripta</i>)		
	Crocus		
	Allium		
	Grape hyacinth (<i>Muscari armeniacum</i>)		
	Single flowered dahlia		

Appendix B. Constructing bird boxes and selecting their location³

B.1 Construction



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 as per dimensions 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.

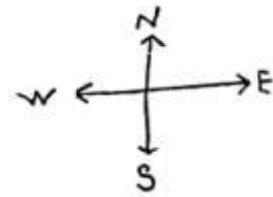
- Blue tit and coal tits~25 mm
- Tree sparrow~28 mm
- House sparrow~32 mm

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.

³ Adapted from www.rspb.org and www.birdwatchireland.ie

B.2 Location selection

Put your nest box up before the start of the breeding season in February. If you put the box up in winter and put a small handful of wood shavings inside, birds may 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 cats, other predators and curious people (especially children) don't disturb the nesting birds.



Choose a location that is situated away from bird tables and 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 box without any obstructing vegetation directly in front of the entrance. Tilt the box forward slightly so that any driving rain will hit the roof and bounce clear.

Use a wire strap to attach the box to a tree to avoid damaging the tree and check annually to ensure the wire is not cutting into the tree trunk.

Open-fronted boxes for robins and wrens need to be situated low down, below 2 metres and well hidden in vegetation such as dense bramble thickets.

B.3 Nest box care

If birds take up residence in your nest box, avoid going near the box or disturbing the nest as this may result in the parent birds 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 the box.



Appendix C. Constructing bat boxes and electing their location

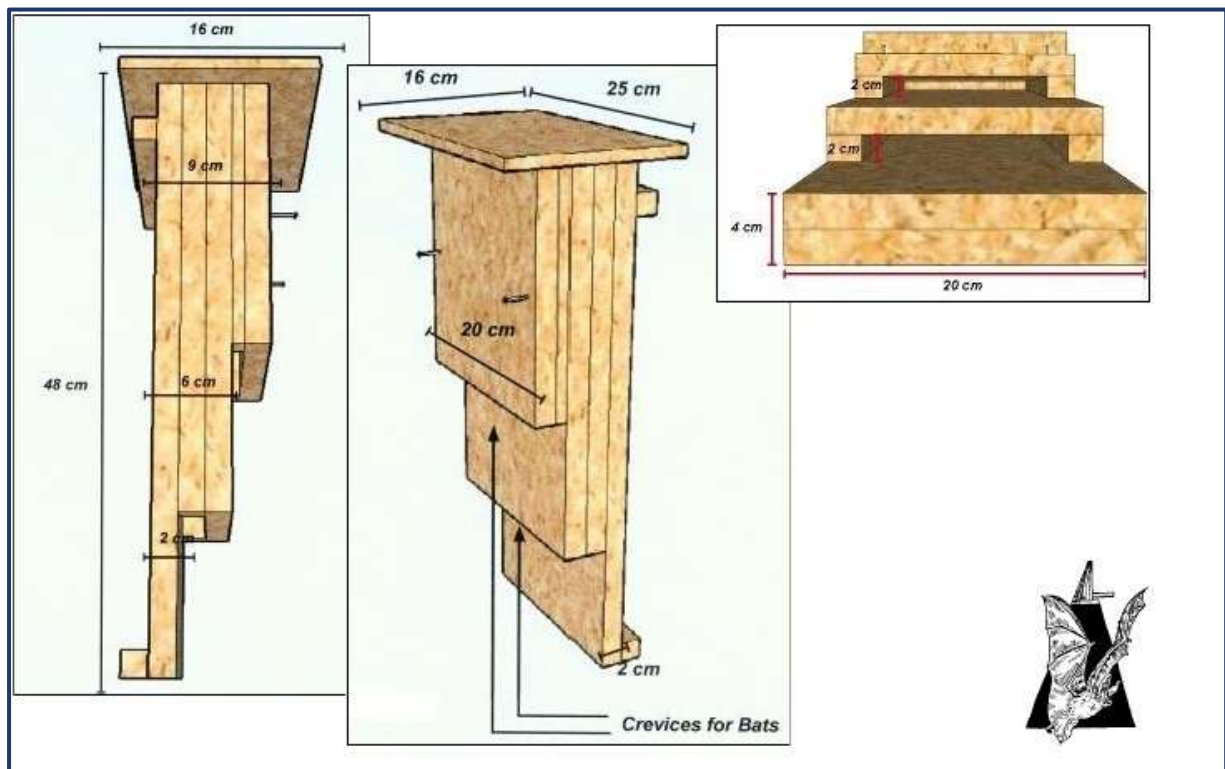
Bats are social animals and often congregate in large numbers. Providing bat boxes offer bats additional roosting areas, or can often help to replace lost or degraded roosting sites such as demolition of old buildings.

C.1 Bat box construction⁴

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 that keep the bats warm. The bat box described below is for summer occupancy since it lacks the required insulating properties to make it suitable for a hibernation site.

Materials and construction

- The only critical measurement is the width of the crevices: between 15-20mm.
- This kit requires approximately 1.6m of rough wood and 25 screws (8 x 1 ½ inches) to assemble
- Pre-drill the holes to prevent the wood splitting.
- Box should be made from untreated rough sawn timbers.
- 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



C.2 Locating 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 and wind free position, exposed to the sun for part of the day (6-8 hours). They can be fitted to walls, other flat surfaces and trees. A clear flight line to the entrance is important. Ideally put up 2-3 boxes in

⁴ [Source: Bat Conservation Trust www.bats.org and Kent Bat Trust www.kentbatgroup.org]

a group with varying aspects ranging from south east to south west, e.g. around a tree trunk, as bats may move between roosts to remain 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. Don't position bat boxes in areas that are illuminated at night.

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 such as 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 thus avoiding flying in open and exposed areas. Ensure the bats 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. Iron nails can be used on trees with no commercial value. Copper nails can be used on conifers, but aluminium alloy nails are less likely to damage saws and chipping machinery.

On buildings, place the boxes as high as possible to reduce the likelihood of the bats falling prey to cats or being disturbed by humans. As with trees, the aspect of the box on the building should capture sun for part of the day.

C.3 Monitoring bat boxes

Making and erecting bat boxes is a great conservation action but what is more beneficial is to establish whether they are being used, at what time of year and by which species. There are nine species of bat found in Ireland.

~ How long before bats 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 Acts 1976 and 2000). Therefore, a bat box should not be opened or interfered with unless the person is licensed to do so.

Appendix D. Creating a woodland

D.1 Tree species selection⁵

Plant native trees of Irish or local stock during the tree planting season between November and February. A good way to ensure that the trees you are buying are native is to always check the scientific name (the Latin name) and ensure it is the same as the Latin name of the native species. For example, if buying native hawthorn, look for *Crataegus monogyna*.

Check with your tree nursery or supplier that 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 risk introducing diseases from other parts of Europe. This is what caused Ash dieback disease in Ireland.

Better still, collect native seed such as acorns, ash keys, rosehips etc. from local woodlands and hedgerows and grow your own. Propagate these in pots to give them the best start and plant them out when they are big enough.

Suitable tree species for planting as groves, woodlands and hedgerows in Blessington 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*
- Elder *Sambucus nigra*

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

D.2 Woodland planting mixtures

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 (25%) 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.

*Ash may not currently be obtainable due to the threats posed by ash die-back disease

⁵ Source: Dept. of Agriculture - Native Woodland Scheme Manual 2011

Appendix E. Mammal tracking

E.1 Small mammal footprint tunnel⁶

- 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 sticky tape, one at either entrance inside the tunnel.
- A small pad of absorbent material (e.g. a j-cloth) was soaked with non-toxic poster paint or ink and placed on either side of the tunnel.
- 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. The tunnel is 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



Photo credit: Wexford Naturalist's Field Club

⁶ Adapted from: Denise O'Meara et al. 2015 Small mammals in school yards – a report for schools

Appendix F. Citizen Science

Submitting records of species that you have observed and submitting them to the National Biodiversity Data Centre (NBDC) or another dedicated recording scheme is a great and practical means to become involved in biodiversity conservation. You are also improving your wildlife identification skills and getting 'back in touch with nature'. Such data is very important and is used in research, policy formation and contributes greatly to our knowledge of biodiversity and its conservation.

The NBDC collate records of all species recorded, in addition to running targeted recording schemes such as the butterfly and bumblebee recording schemes. Anyone can get involved and they are keen to recruit new recorders. Visit www.nbdc.ie for details.

F.1 Biodiversity recording

How to store 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 for any wildlife species using their Biodiversity Smartphone App.

The number of conservation organisations running citizen science recording projects in Ireland is continually increasing:

- Birdwatch Ireland run the Garden Bird Survey and other more specialised recording schemes such as the Countryside Bird Survey, Irish Wetlands Bird surveys (iWeBS). They also coordinate 'species action projects' such as the Swift Nest Box project and Barn Owl Project which you may be able to get involved with. Visit www.birdwatchireland.ie
- The Irish Wildlife Trust also run targeted recording schemes such as for smooth newt and common lizard. Visit www.iwt.ie
- For botanical recording contact the Botanical Society of Britain and Ireland (BSBI). The BSBI run several outings a year and are very encouraging to new and emerging botanists and members. Visit <http://www.bsbi.org.uk/ireland.html>
- Submit wildlife sightings and sightings of road kill to www.biology.ie

There are numerous organisations / individuals that you can get involved with or seek advice from. Some of these groups are:

Deirdre Burns, Heritage Officer, Wicklow County Council – dburns@wicklowcoco.ie

Co. Wicklow Environmental Awareness Office – eao@wicklowcoco.ie

Wildlife Ranger ~ www.npws.ie

Inland Fisheries Ireland (IFI) - local regional office (Dublin) – blackrock@fisheriesireland.ie

Bats ~ www.batconservationireland.org

Birds ~ www.birdwatchireland.ie

Botany ~ www.bsbi.org

Native seeds and plants ~ www.seedsavers.ie

Trees ~ www.nativewoodlandtrust.ie www.crann.ie

Mammals ~ www.mammals-in-ireland.ie

Heritage Council ~ www.heritage.ie