



National
Biodiversity
Data Centre

Documenting Ireland's Wildlife



pollinators.ie

How-to-guide 9

Pollinator-friendly
management of:

TRANSPORT CORRIDORS

All-Ireland
Pollinator Plan

www.pollinators.ie



Implementation coordinated by the

National Biodiversity Data Centre

pollination

poli'nei(ə)n/

noun

The movement of pollen to allow plant fertilisation

'Bees are our most important insect pollinators'

Pollination, which plays a vital role in the reproductive cycle of flowering crops and wild plants, brings substantial economic benefits to agriculture, tourism and exports, as well as human health and wellbeing.

WHO are our pollinators?

In Ireland, some plants are pollinated by the wind, but many are pollinated by insects. Most insect pollination is carried out by bees. We have one type (species) of managed honeybee and 98 different wild bees. That includes 21 bumblebee and 77 solitary bee species.

If we want to protect pollination service, we need healthy honeybees, but we also need to have an abundance and diversity of wild bees, as well as other insects like flies, moths and butterflies.

WHAT do our pollinators need to survive?

Like us, pollinators need food and a safe place to live. It is lack of food (hunger) that is the main cause of declines. Bees rely solely on pollen and nectar from flowers for food. Wild bees don't make honey so they have no way of storing food. This means

that they are never more than a few days away from starvation – so it's very important that there is a continual supply of flowers for them to feed on. To have a healthy balanced diet, pollinators need to be able to forage from a range of different flowers from MARCH right through to OCTOBER. Spring is when they are most at risk of starvation.

Pollinators also need plenty of safe nesting habitats. Bumblebees nest in long grass (often at the base of hedgerows). Most solitary bees nest by making little tunnels in bare soil, while a small number nest in existing cavities in dry stone walls, masonry or wood.

It is important that we protect pollinators from chemicals that can be harmful to them. Insecticides harm them directly, but equally importantly, the use of herbicides greatly reduces the wildflowers that pollinators depend on for food, making it hard for them to survive.

Cutting, mowing and spraying so that the countryside looks tidy - to us - means that we are squeezing nature out and risk losing its important free services, like pollination.

Large Carder bumblebee



There are 99 different types of bee in Ireland:



Honeybee (1)



Bumblebees (21)



Solitary bees (77)

WHY do we need to help our pollinators?

Pollinators are important to farmers who grow pollinator-dependent crops and to those of us who want to grow our own fruits and vegetables. **Even if we don't currently grow these crops, we should aim to retain the ability to do so for future generations.** We know that three quarters of our wildflowers also benefit from being pollinated by insects – without bees we will lose the colourful and distinct natural beauty of our landscape, which makes it a pleasant place to live, an attractive destination for tourists, and a selling point for our agricultural produce abroad.

All-Ireland Pollinator Plan

Unfortunately our pollinators are in decline, and the problem is serious. **One third of our 99 bee species are threatened with extinction from the island of Ireland.** If we want them to be there to pollinate crops and wild plants for future generations, we need to manage the landscape in a more pollinator-friendly way.

The All-Ireland Pollinator Plan is supported by over 90 governmental and non-governmental organisations who have pledged to deliver 81 actions to achieve this goal and make Ireland, North and South, more pollinator friendly. It is a shared plan of action.

Everyone, from farmers to councils, local communities, businesses, schools, gardens and transport authorities have a role to play in the Pollinator Plan. See www.pollinators.ie for how each sector can help through evidence-based actions.

“Protect pollinators so that you can grow your own fruit and vegetables, shop for local produce and have flowers and wildlife in your local landscape”



Transport Corridors

The island of Ireland is crisscrossed by a range of linear transport corridors ranging from local roads to motorways, canal towpaths to trams and railways lines, greenways to walking trails. The range of landscape types through which our transport corridors travel demonstrates the enormous potential for positive and sustainable interactions with these local landscapes – from small scale planting beds to wider habitat enhancements – all the while addressing transport safety concerns and maintaining performance standards.

Roads:

The roadside landscape is made up of a number of components, including cuttings, embankments, verges, hedgerows, drains/attenuation ponds and tree belts, some or all of which are common to many types of roads and have the potential to be managed in a more pollinator-friendly way.

Transport Infrastructure Ireland (TII), as a provider of transport infrastructure, manages the Republic of Ireland's Motorway and National Roadside landscaping, in addition to the landscape and tram stops associated with the Luas tram network. Landscapes that have been planted and are being maintained by TII, along transport routes, are designed to be largely self-sustaining, using native species (but not exclusively) and species with high ecological value. The aim is to establish linear transport landscapes that ensure ecological connectivity is maintained through the Irish countryside while maintaining transport safety and performance criteria. Currently, TII has over 35km² (3,500ha) of roadside landscaping, approximately five times the size of the Phoenix Park, in addition to the landscape and public realm associated with the Luas network

Northern Ireland Department for Infrastructure (DfI) maintains, develops and manages 26,000km of roads, 10,000km of footways and 5,800 bridges and is a key contributor to the draft Executive's 'Programme for Government' Outcome 2 – 'We live and work sustainably – protecting the environment'. As well as the maintenance of the road network, DfI is responsible for the delivery of the Strategic Road Improvement programme and is progressing a programme of major road improvement schemes across Northern Ireland. DfI ensures their activities are compatible with sustaining Northern Ireland's many environmental assets, including natural habitats and native species, while addressing the threats to biodiversity and taking precautions to prevent any damage to the environment.

Railways:

Under Iarnród Éireann, the operational railway network in the Republic of Ireland encompasses 2,400km of operational track corridor across the island, in which there are many natural and built heritage features that provide a mosaic of linear terrestrial habitats for our native flora and fauna. There is also an additional approx. 450km of non-operational track corridors, which are not subject to extensive vegetation management requirements, providing a relatively undisturbed haven for birds, mammals and plant species.

For Translink, the transport network and in particular the railway environment is an important biodiversity resource, offering important habitats for many species of flora and fauna. Railway land acts as a 'green network', linking cities and towns within the countryside and creating more 'natural' corridors through intensively managed agricultural areas. The extent as well as type of property that Translink manages includes over 200 miles of railway corridor, along with 700 bridges, both underline and overline, 290 culverts, 3 tunnels, 10 viaducts, 23km of sea defences, 144 embankments and cuttings, and 124 platforms. There is also an array of depots, garages and clerical support facilities spread right across Northern Ireland. Many of these locations, particularly the rail network, runs through or adjacent to areas that are important for conservation such as Special Areas of Conservation (SAC), like the Bann Estuary, and also other designated sites such as Areas of Special Scientific Interest (ASSI), Areas of Outstanding Natural Beauty (AONB), and Nature Reserves, eg. Brakagh Bog, just south of Portadown.



Our road, rail, greenway and other transport routes can provide important linking corridors for pollinator movement through the countryside.



Actions for pollinators along our transport corridors

A Identify and protect existing areas that are good for pollinators

- Action 1:** Protect existing sources of food and shelter for pollinators
- Action 2:** Limit habitat loss during project or maintenance works
- Action 3:** Protect embankments and rock cuttings for pollinators
- Action 4:** Protect boundary walls for pollinators
- Action 5:** Protect 'Habitat islands' at junctions and interchanges for pollinators
- Action 6:** Consider transport corridors for nocturnal pollinators

B Reduce the frequency of mowing of grassy areas

- Action 7:** Manage immediate verge for pollinators
- Action 8:** Manage wider verge area for pollinators

C Pollinator-friendly planting

- Action 9:** Incorporate new native hedgerows into planting for new transport corridor landscape schemes
- Action 10:** Create a native wildflower meadow
- Action 11:** Incorporate ornamental pollinator-friendly trees and shrubs into planting for new linear infrastructure landscape schemes (only where native planting is unsuitable)
- Action 12:** Plant pollinator-friendly trees along streets in towns and villages
- Action 13:** Plant pollinator-friendly seasonal beds
- Action 14:** Plant pollinator-friendly bulbs
- Action 15:** Make the area around service stations/ Luas stops/train stations/Park and Ride stops pollinator-friendly.

D Provide wild pollinator nesting habitat: hedgerows, earth banks, bee hotels

- Action 16:** Manage native hedgerows as nesting habitat
- Action 17:** Protect embankments and rock cuttings for solitary bees
- Action 18:** Include shelter for solitary bees at train stations and service stations

E Reduce the use of pesticides

- Action 19:** Reduce the use of Pesticides (Herbicides, fungicides, insecticides)

F Promote the aims of the All-Ireland Pollinator Plan in planning of new infrastructure and make staff aware of management actions for pollinators

- Action 20:** Promote the aims of the All-Ireland Pollinator Plan when designing new linear transport schemes, and make staff aware of management actions for pollinators
- Action 21:** Log your actions

Large carder bee



A Identify and protect existing areas that are good for pollinators

Most transport routes will already have some areas that are very good for pollinators. The **most important action** you can take is to recognise and protect these areas.



Verges often act as refuges for biodiversity in an otherwise inhospitable landscape



Silvermine railway lines, which have been left to nature.

Action 1

Protect existing sources of food and shelter for pollinators

Where these exist, you should try to protect them, for example: flowering hedgerows (food); patches of wildflowers (food); wild areas with bramble/ivy (food); existing earth banks or embankments (nesting sites); dry stone walls (nesting sites).



Protecting naturally species-rich sites is always preferable to planting areas using commercial seed mixes.

MANAGING HEDGEROWS FOR POLLINATORS

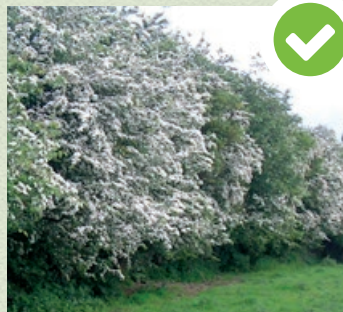
Native hedgerows line many of our roads and railways. These hedgerows are important corridors for pollinators and other wildlife and help create and maintain linkages within the Irish landscape.

Flowering hedgerows that contain Willow, Whitethorn, Blackthorn and Hazel, provide vital food in spring when bees emerge from hibernation. Bramble is a good source of food in summer, and Ivy in autumn. Bumblebees often nest in long grass at the base of hedgerows.

While some hedges will be trimmed, especially where sightlines and transport safety requires the control of growth, others can be left to thicken into managed belts which are a great source of food and shelter for pollinators.



Intensively managed hedgerows don't offer flowers for bees or shelter for livestock.

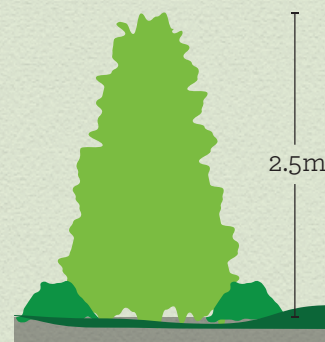


The ideal native hedge is made up of 75% Whitethorn and 25% of at least 4 other species.



Hedgerow management to encourage flowering:

- A pollinator-friendly hedgerow should be flowering, at least 2.5m in height, and should be trimmed in an A-shape.
- Where hedgerows must be cut for safety, allow the inside to flower.
- Let some hedgerows grow wild, side-trimming only.
- Where possible, cut hedgerows on a minimum 3-year cycle. Cutting annually stops the hedgerow flowering and fruiting.
- Where possible, cut in rotation rather than all at once - this will ensure some areas of hedgerow will always flower (Blackthorn is white in March. Whitethorn flowers in May).
- Hedges managed for pollinators should ideally be cut between November-January. If they must be cut outside this, cut sections in rotation, so some areas remain undisturbed.
- Let some Bramble and Ivy grow in hedgerows, as key nectar and pollen sources in summer and autumn.
- Where hedgerows can't be regularly cut (due to, for example, access issues), they can be allowed form into scrub belts.



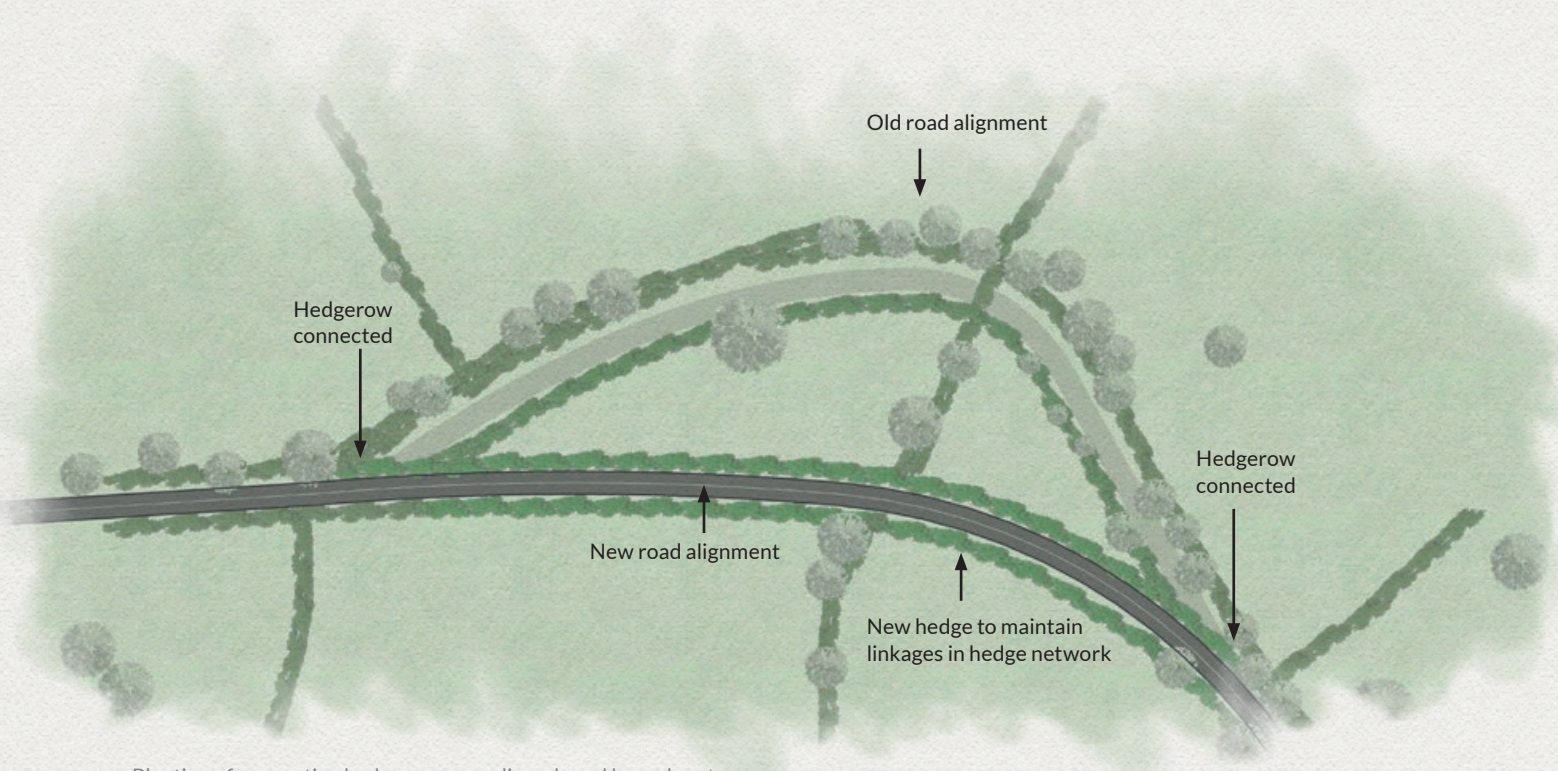
A pollinator-friendly hedgerow should be flowering, at least 2.5m in height, and should be trimmed in an A-shape.

(For guidelines on planting new native hedgerows, please see Action 9)

Action 2

Limit habitat loss during project or maintenance works

Corridor widening and realigning works have the potential to cause the removal of verges and the fragmentation of hedgerows, which can reduce their ecological and habitat value. When carrying out project or maintenance works, if hedgerow or verge removal cannot be avoided, ensure that the impact on the habitat is minimal and appropriate mitigation and replacement planting is put in place. Identify opportunities to create new linkages where there are gaps in the roadside hedgerow network.



Planting of new native hedgerow on realigned road boundary to retain effectiveness of roadside hedgerows as pollinator corridors.

A NOTE ON TOPSOIL:

If topsoil has been removed because of project or maintenance work, not replacing topsoil should be considered. This could become a perfect site for natural regeneration of pollinator-friendly verges. Verges on poor soil will naturally become more flower-rich due to the existing seed bank and because the wildflowers won't have to compete with grasses in less fertile soil. As part of larger infrastructure projects, earthworks including new banks and cuttings do not need to be top-soiled.



Action 3

Protect embankments and rock cuttings for pollinators

Many infrastructure projects have large areas of south or east facing rock face or cuttings which can be maintained as important solitary bee nesting sites.



Action 4

Protect boundary walls for pollinators

If, as part of project or maintenance works, existing boundaries, such as traditional stone walls, are being realigned or replaced, where appropriate, ensure that new or reinstated boundary features are detailed and constructed to allow opportunities for nesting sites for solitary bees be replaced.



Stone walls provide nesting habitat for some solitary bees.



A leafcutter solitary bee

Action 5

Protect 'Habitat islands' at junctions and interchanges for pollinators.

Many road junctions, especially on motorways, cover large areas and the layout of slip roads and access roads can result in areas of ground that are severed and isolated from the surrounding landscape. Make best use of these 'habitat islands' or leftover spaces on the road network by managing isolated pockets as bee nesting sites or feeding areas (sightlines permitting).

While pollinators may have to fly over busy roads to access some of these areas, the benefit to pollinators from roadside native habitats outweighs the hazard from passing traffic.



Action 6

Manage transport corridors for nocturnal pollinators

Where safety allows, there may be opportunities to reduce excess transport route lighting on some of our transport corridors for the benefit of nocturnal pollinators such as moths. In addition to saving money and energy, research has shown that night-lighting disrupts nocturnal pollination by attracting moths upwards, away from the surrounding landscape and hedgerows so they spend less time feeding and therefore less time pollinating. A successful pilot scheme was carried out on a number of Irish motorway junctions including on the M1 (J6 Balbriggan), M6 (J3 Rochfordbridge), M9 (J3 Athy) and the M4 (J9 Enfield) where excess traffic route lighting has been switched off. New technology and lighting systems can be considered along transport routes and streets, where switching off our street lights, even for short periods, may benefit our nocturnal pollinators.



“our study suggests that turning off street lights in the middle of the night is a win-win scenario, saving energy and money for local authorities whilst simultaneously helping our nocturnal wildlife.”

- Newcastle University study, 2019

B Reduce the frequency of mowing of grassy areas

Transport routes provide valuable wildlife corridors across Ireland, linking habitats. Both immediate grass verges and larger areas, such as embankments, have a role to play. Large areas of low-habitat-value mown grass can be transformed into high-value meadows, as well as contributing to cost-effective landscape management and maintenance.

Reducing the frequency of mowing allows common pollen-rich wildflowers such as Dandelions, Clovers, Knapweed, and Bird's-foot-trefoil to naturally grow among long grass. This is the most cost-effective way to provide food for pollinators and other insects.



Tightly mown grass is like a barren desert for bees, devoid of food and nesting sites.



A new approach to grass-cutting encouraged by the local Tidy Towns group as an action to help pollinators, at Kilcullen, Co. Kildare.



If roads are used as walking routes, a 'layered' mowing approach can be of use. A one-metre strip along the roadside can be maintained as short turf for walkers, while the rest of the verge could be cut every 6 weeks or annually to allow wildflowers to grow.

"Road verges and their associated hedges can provide hotspots of resources for pollinators in agricultural landscapes, but their capacity to do so is reduced by heavy traffic and summer verge cutting. Beneficial management for pollinators should prioritise wider road verges (at least 2m), roads with less traffic, and areas away from the immediate vicinity of the road. Where possible, verge cutting should not be carried out during peak flowering times"

– Journal of Applied Ecology, 2019

On roads with very heavy traffic, such as motorways, "Studies show that pollinators do not use the verge edge as much, so it may be beneficial to cut the first couple of meters from the road more regularly for safety purposes, if this means that areas further away from the road can be managed more favourably (with less cutting or better timing of cutting)"

Journal of Applied Ecology, 2019

Action 7

Manage immediate verge for pollinators.

Along many transport corridors, an area along the corridor may need to be kept more intensively maintained for the maintenance of sightlines/provision of signs and lighting/ drainage.

Create short flowering '6-week meadows' on the strip immediately beside the corridor, in clear zones and sightline areas. Working within the confines of safety guidance, identify areas where vegetation needs to be kept low to allow sightlines by changing from mown grass to 6-week meadows which will still ensure sightlines are kept clear, but which will also provide food for pollinators where short-mown grass does not.

Aim to align the timing and frequency of mowing of grass areas with the flowering habits of common wildflowers such as dandelions and clover. Transport managers can combine the practical aims of grassland maintenance and addressing safety in ways that also benefit pollinators.



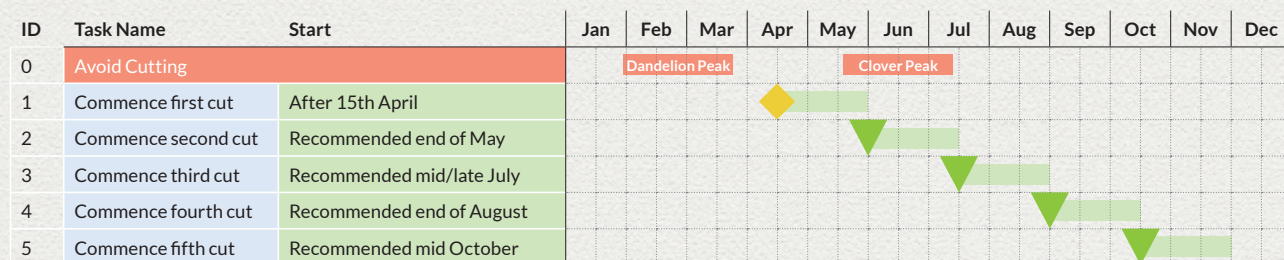
Important wildflowers from spring to autumn



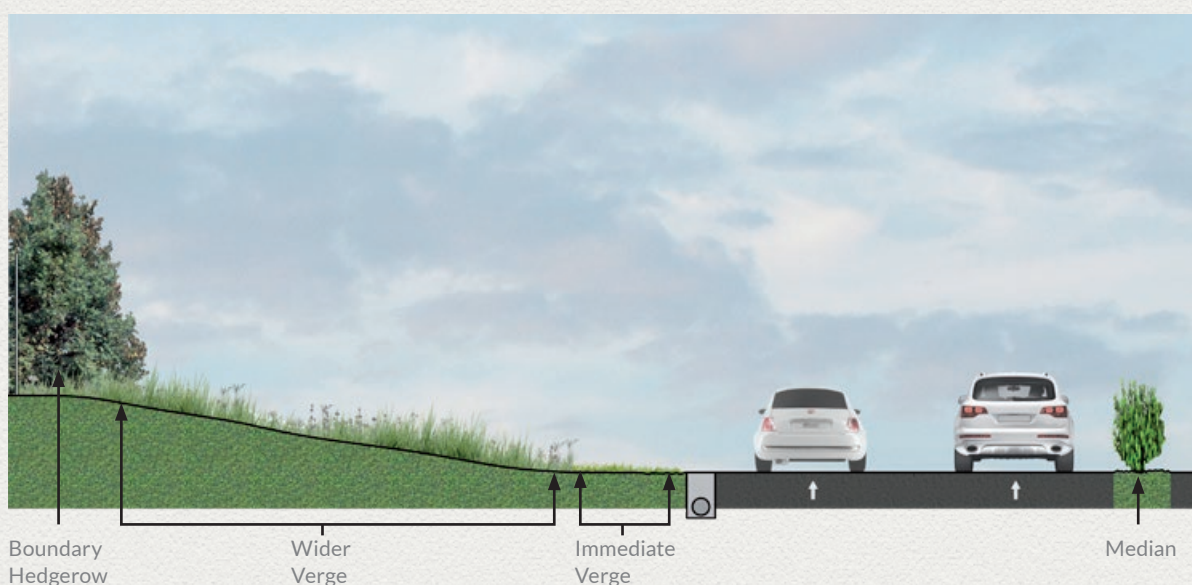
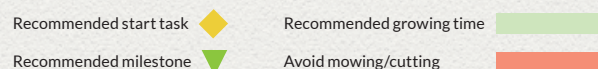
Spring

Autumn





Suggested programme for 6-week meadow mowing regime



TIPS TO CREATE POLLINATOR-FRIENDLY 6-WEEK MEADOWS

- **First cut after 15th April.** (this will allow Dandelions to flower. Dandelions are a vital food source for pollinators in spring)
- **Second cut at end of May.** (Cutting at the end of May and not again until mid-late July will increase the growth of important plants like Clover, Selfheal, Cuckooflower and Bird's-foot-trefoil).
- **Third cut in mid-late July.** (maximises growth of Clovers and other wildflowers)
- **Fourth cut end August.**
- **Fifth cut after mid-October.**



Natural regeneration from the native seed bank is often pollen-rich and offers food to which our native bees have adapted.

Action 8

Manage wider verge area for pollinators.

(Zone can vary significantly in width from a few to several metres and provides a margin of safety between the transport corridor and its boundary.)

Where there are still clear zone or access requirements, this area may still need to be kept mown to an agreed length. Where the wider verge falls outside clear zone areas and where safety is not an issue, a more varied landscape with longer meadow grass can be considered. This area can be managed to help restore connections between the road corridor and surrounding habitats.

When developing a wildflower area, the best guidance is always to remove all cuttings. This helps to keep soil fertility at a minimum which encourages wildflower growth (leaving cut grass or mulching adds fertility to the soil and will only encourages grasses to grow).



Identify '**Wildflower meadow**' areas that could be left uncut until September. One cut and lift per year. The annual cut should be removed to reduce soil fertility over time.

It may not always be possible to cut and lift clippings from wider verges or areas identified as '**grass meadows**' annually. Where wider verge areas are not cut every year due to access or maintenance issues, these areas are still important for biodiversity.



Carriknakielt-Magherafelt, Co. Derry. Different types of roads will have varying areas of verge and opportunities for roadside landscape.



A layered approach to mowing on M9 motorway allows wildflowers to grow on wider verge.



Garvagh, Co Derry, entrance road.



Year 1



Year 3

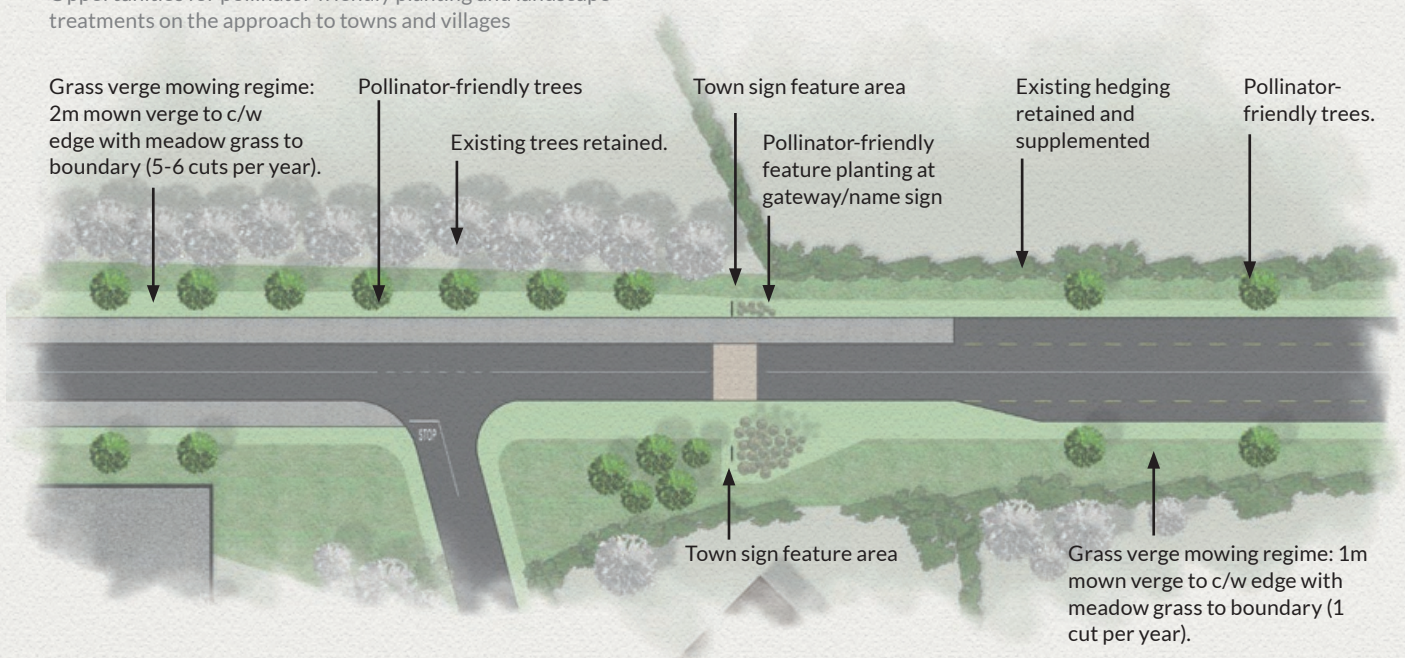
Naturally regenerated meadows will improve over time. It is vital that clippings are removed after each cut to reduce soil fertility. This will produce an increase in abundance and diversity of wildflowers each year.

C Pollinator-friendly planting

Promote the use of native trees, plants and wildflower seed from indigenous seed sources within transport corridor landscape treatments. Promote the use of species that are found in the vicinity of the scheme in order to improve local habitat connectivity.

It is possible to create a habitat network working alongside and in tandem with our transport networks. Ensure good connectivity between hedgerows and other natural and semi-natural habitats. Linking habitats through linear planting and hedgerows will make it easier for pollinators to travel along and across routes.

Opportunities for pollinator-friendly planting and landscape treatments on the approach to towns and villages



Roadside verges with pollinator-friendly planting at Glasnevin by Dublin City Council. This also aids way-finding and traffic calming by highlighting the junction and alerting drivers of crossings.



Pollinator-friendly roundabout in Fingal, Co. Dublin

Action 9

Incorporate new native hedgerows into planting for new transport corridor landscape schemes.

The ideal native hedgerow is made up of 75% Whitethorn and 25% of at least 4 other species, for instance: Blackthorn, Hazel, native Willows, Wild Cherry, White beam, Spindle, Rowan, Wild Roses, or Elder.

To be pollinator-friendly, a native hedgerow must be managed so that as much as possible is allowed to flower each year.

For tips on managing a pollinator-friendly hedgerow, see box on page 8.



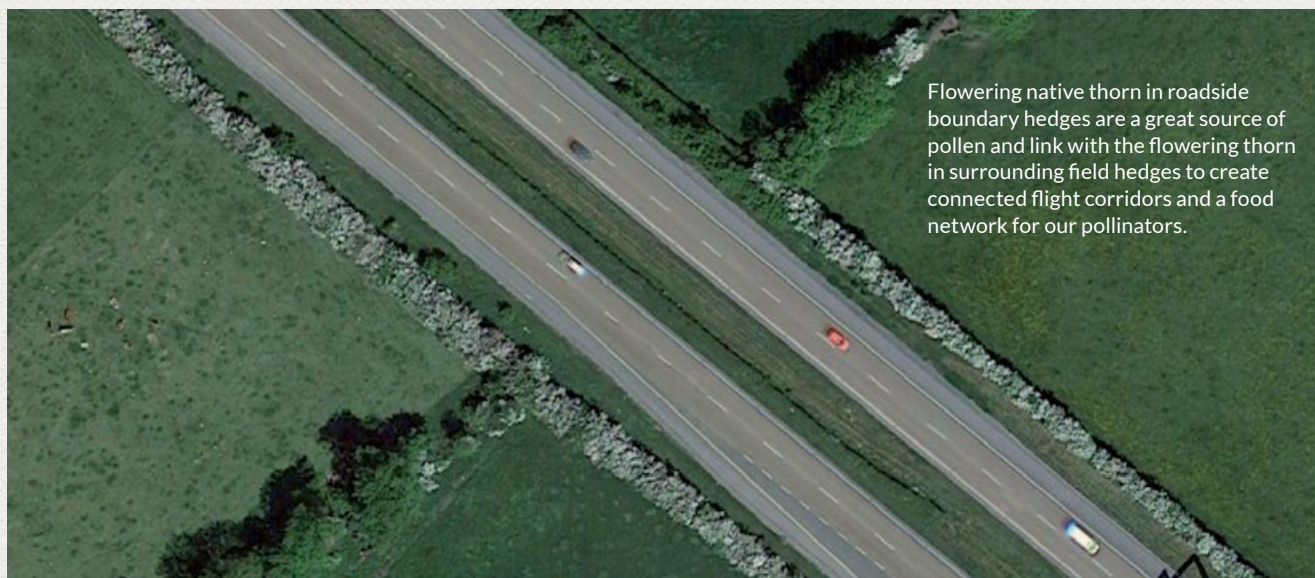
Willow is a very important food source in early spring when queen bumblebees emerge from hibernation.

Native flowering hedgerow plants that are good for pollinators:



Spring

Autumn



Flowering native thorn in roadside boundary hedges are a great source of pollen and link with the flowering thorn in surrounding field hedges to create connected flight corridors and a food network for our pollinators.

Action 10

Create a native wildflower meadow

When establishing new meadows, seed mixes for roadside/roundabout planting should include flowers with overlapping flowering times to provide pollinators with a continuous source of food. *Native* wildflower seed mixes should always be used. Wildflower meadows are also suitable for difficult-to-access areas, such as slopes, due to their reduced maintenance needs compared to mown grass.



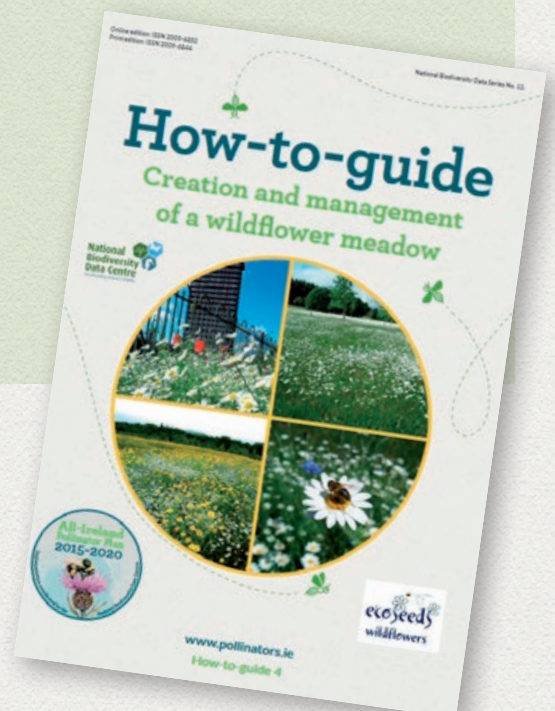
Kilmacud Luas Stop. Wildflower meadow planted on a steep, difficult-to-access slope, where they add great value for pollinators in this suburban landscape. The slope also allows tram users to get close-up views of the vibrant native wildflowers and helps promote the aims of the All-Ireland Pollinator Plan. It is advisable to look for expert advice on location and soil type to ensure greatest chance of success.

Planting a native wildflower meadow (as opposed to natural regeneration) can be complex and costly. Please note:

- You should put a lot of research into choosing the right area for this, and it is advisable to try this in a small area. Your local authority Biodiversity Officer or Heritage Officer may be able to assist in advising where this will work best.
- Get advice on the existing soil type and what seed mix will suit that soil.
- Source native seed of **local provenance**.
- There are perennial seed mixes and annual mixes and management will differ between the two.
- Refer to the Pollinator Plan's *How-to-guide: Creation and Management of a Wildflower Meadow*



Hoverflies are important pollinators.





Chairman Martin Behan and the local Tidy Towns group created this pollinator-friendly roundabout in Clonmel in 2018.



A Kildare roundabout, 2018. Also acts as a gateway to the town to aid way-finding and place-making.

Wildflower areas on traffic islands at junctions:

Many local roads or streets in our towns and villages have leftover grass verges that can be planted with pollinator-friendly plants to improve the appearance of the street and benefit pollinators.



A bright and colourful temporary summer wildflower meadow planted in what was a pollinator-unfriendly patch of mown grass. 'Before and after', at Kells, Co Meath.

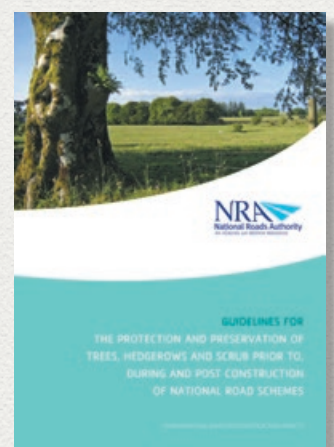
Action 11

Incorporate ornamental pollinator-friendly trees and shrubs into planning for new linear infrastructure landscape schemes.

While native planting is always the first choice, this action might be suitable for transport interchanges, train stations, motorway service areas, Luas stops, etc.

Along transport networks, plants often perform a variety of functions such as visual screening, boundary delineation or erosion control and often in harsh growing conditions. While native planting is always the first choice, sometimes non-native or ornamental planting may be used. There are a diversity of pollinator-friendly plant types, with overlapping flowering times, which will provide food for pollinators throughout the seasons.

For more details on landscape treatments for road networks refer to TII documents:



The Common
carder bumblebee

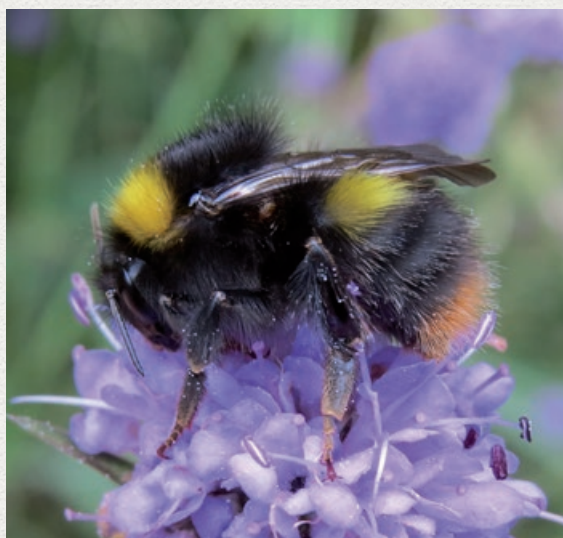


<https://www.tii.ie/tii-library/environment/>

Red-tailed bumblebee and a bee mimic hoverfly



The early bumblebee



Mixed ornamental planting for seasonal colour along the Luas track at Ballyogan Road



Beds of pollen-rich lavender between the Luas and Irish Rail platforms at Broombridge, Dublin



Action 12

Plant pollinator-friendly trees along streets in our towns and villages.

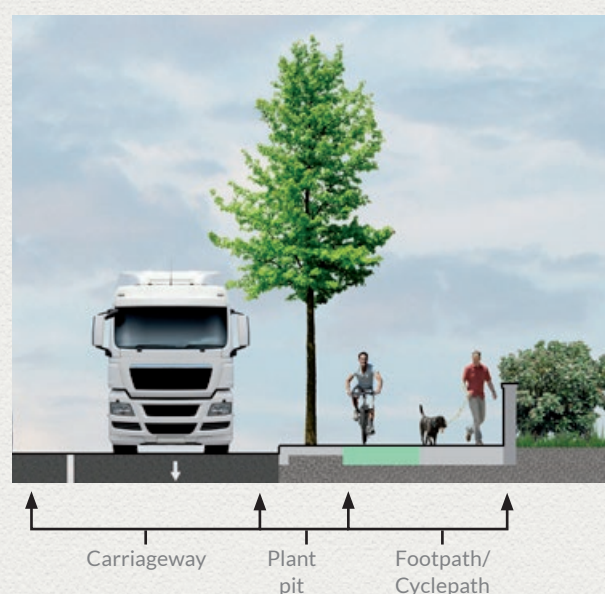
When planting urban street trees, remember that some species provide large quantities of pollen and nectar. Incorporate a mix of pollinator-friendly trees.

However, when planting trees along transport corridors, there may be issues around road safety, speed limits, canopy clearance and future trunk diameter that also need to be considered when compiling planting lists.

If on a roadside, trees should have a clear stem height of 2.5 metres so they do not impact on pedestrians or cyclists passing underneath the canopy. Roadside, including street trees in hard surface or in soft verges, can be difficult locations in which to establish trees.

Pollinator-friendly Trees:

The trees suggested below are pollinator friendly, resistant to pruning and, where planted and managed correctly, should not create health and safety issues. Lime (*Tilia*) species have fragrant flowers and produce a lot of nectar, however care is needed in the selection of cultivars as many can grow to large tree size proportions that will exceed allotted roadside space. Some are also very attractive to aphids and can lead to honeydew drip onto cars below (e.g., *Tilia × europaea*, *T. platyphyllos*). Those Limes suggested below don't attract aphids, therefore producing no dripping.



Street tree options in 60kph zones in towns and villages:

Small	Value for pollinators
<i>Crataegus monogyna</i> 'Stricta'	White flowers May
<i>Prunus avium</i> 'Pleana'	White flowers May
<i>Sorbus aucuparia</i> var	White Flower May - June
<i>Alnus glutinosa</i>	Flowers February
<i>Malus</i> var eg 'John Downie' 'Profusion' etc	Flower April- May



White-tailed bumblebee

Medium	Value for pollinators
<i>Acer campestre</i> 'Elsrijk'	Yellow green flowers May
<i>Sorbus intermedia</i>	White flower May-June
<i>Tilia cordata</i> 'Green Spire'	Pale yellow flowers in June- July
<i>Pyrus calleryana</i> 'Chanticleer'	White flowers April- May
<i>Sorbus aria</i> 'Majestica'	White Flowers May
<i>Prunus</i> sp	Flowers April-May

Tall	Value for pollinators
<i>Corylus colurna</i>	Catkins feb-March
<i>Aesculus</i> var.	White flowers May-June
<i>Tilia tomentosa</i> var	White flowers in Summer
<i>Tilia platyphyllos</i> var	White flowers in Summer
<i>Acer planinoides</i> 'Emerald Queen'	Yellow green in April

* This is a suggested species list only, based on eventual height and their value for pollinators.



See the Pollinator-friendly Planting Code for more plant lists:

<http://pollinators.ie/resources/>



Action 13

Plant pollinator-friendly seasonal beds

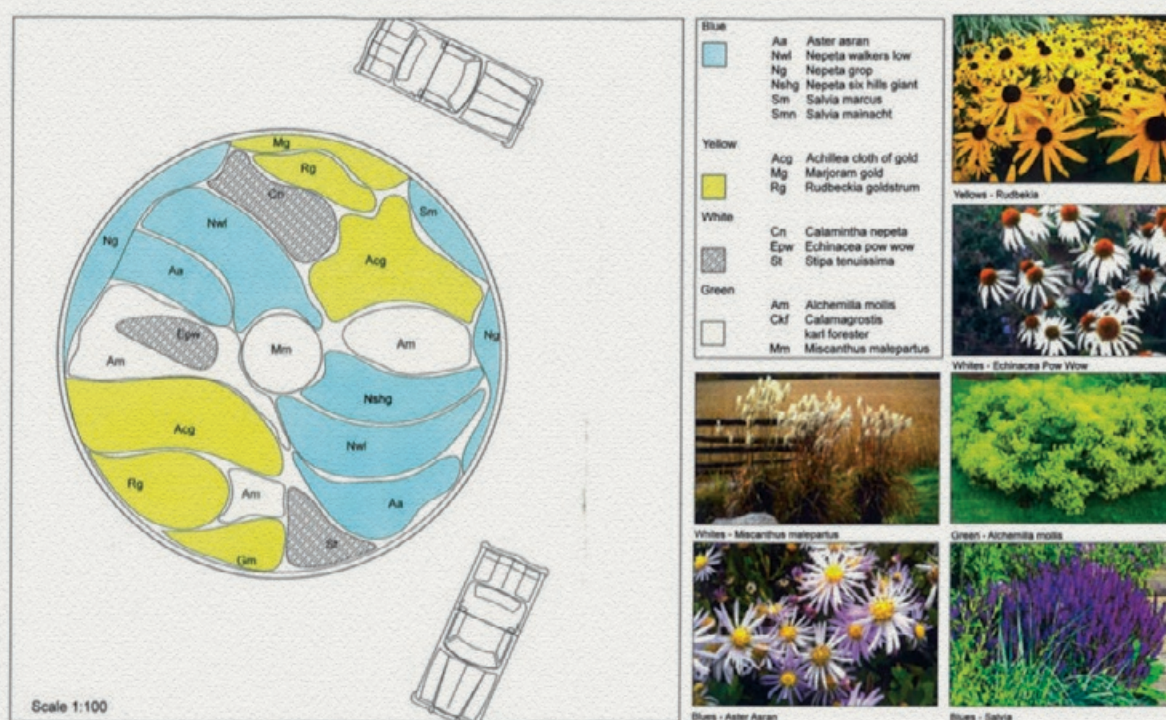
Areas this action might apply include roundabouts, the base of signs, and verges on town approach roads, along cycle paths, at Light rail stops, and bus stops.

Traditionally, a lot of planting in public spaces for display and to provide seasonal colour has often included Daffodils, Tulips, and annuals such as Begonias, Primula or Busy Lizzie. Unfortunately these are not good sources of pollen or nectar (as they have been bred to be very 'showy') and do not provide food for bees and other pollinators. There are many other plants that can look similarly attractive during all seasons, but will also support our pollinators.

Incorporate perennials and pollinator-friendly shrubs into more ornamental landscape areas along streets, urban areas and around transit stops. Planting a range of pollen-rich flowers of varying colours and shapes will benefit a wide range of pollinator species.



Pollinator-friendly roundabout in Fingal, Co. Dublin



A sample pollinator-friendly roundabout design, kindly provided by Peter Cuthbert, Horticultural Services.

Heathers are a good pollinator-friendly addition to roundabout planting schemes and are low maintenance



There may be areas where new planting can reinvigorate streets and add interest to an area while also benefiting pollinators.

High Street, Dublin.

The central median has been planted with a holly hedge and a mix of seasonal planting which contain pollinator-friendly plants. An otherwise sterile paved strip has been transformed into a planted area which is now a food source for urban bees and other pollinating insects.



Pollinator-friendly planting in Dungarvan, Co. Waterford

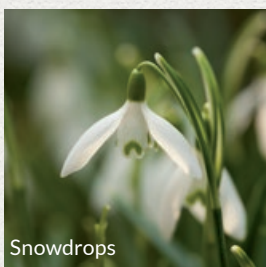
Action 14

Plant pollinator-friendly bulbs

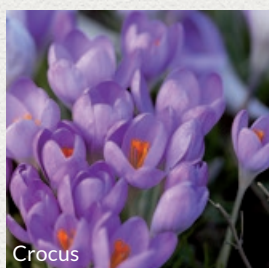
Bulb planting is often used along roadsides or in central reservations and can really add a sense of place and distinctiveness when they are in bloom. Use pollinator-friendly varieties from the Pollinator-friendly Planting Code (e.g. Snowdrop, Crocus, Allium).



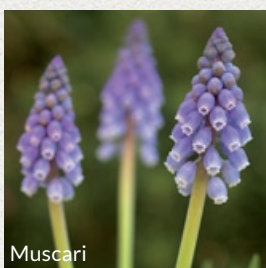
Allium



Snowdrops



Crocus



Muscari



Wallflowers

Pollinator-friendly planting can be mixed in with traditional bulb planting.

The influence of colour

Use of colour in roadside beds can help to alert drivers to driving conditions and aid traffic calming.

These vibrant seasonal planting colours – reds, yellows, orange – are warm colours that will excite and energize. Red, yellow and orange will garner the most attention from motorists. Yellow is the first colour to which the human eye reacts, and so is most visible.

Muted seasonal planting with pinks, whites and blues – Cool colours tend to be more calming and have been proven to reduce stress. Green is the easiest colour for the eye to process.

Blocks of a single colour are most effective and eye-catching for motorists, and will also function to slow down traffic and highlight the entrance to a town or village.



Crocus

Tulips and **Daffodils** create attractive visual displays in spring but are not a good food source for pollinators. Where used, it is recommended they be combined with more pollinator-friendly bulb planting (e.g., Snowdrop, Crocus, Muscari, Allium).

Action 15

Make the area around service stations/tram stops/train stations/Park & Ride facilities pollinator-friendly

Service stations, where people gather, offer an opportunity to create awareness as well as offering a feeding pitstop for pollinators and nesting opportunities.



Outdoor signage; and indoors, posters or fliers can be used to identify to the public areas that are important for pollinators

The very natural approach to the building design and landscaping at Gloucester Gateway Service Station, UK, below offers an example of what can be achieved when planning a biodiversity-friendly station.



Red-tailed bumblebee



Innovative ways to help provide habitats for bees include these green roof bus shelters in Utrecht, Netherlands, 2019





Luas Red Cow Park & Ride



Planting to Luas Red Cow Park & Ride:

Landscaping to park & ride facilities can screen cars, reinforce pedestrian routes and enhance the local setting. When choosing trees and planting for park and ride facilities, ensure they are pollinator friendly. Consider native hedgerows to the boundaries to reconnect local hedgerows that may have been impacted during site works. Consider wildflower swales to aid surface water drainage.



Planting at train stations can offer feeding pitstops for pollinators.



Tidy Towns planting at Thurles Train Station



Yorkgate Railway Station, Belfast.



A six-week meadow at Thurles Train Station. Thurles station was one of the first railway stations in Ireland to adopt its own individual Pollinator Plan. This model is being further developed at Westport and Sallins Stations. Iarnród Éireann is engaging with local community groups, including Tidy Towns, to implement Pollinator Plans at stations around the network.



Pollinator-friendly planting at Plunkett Station, Waterford.

D Provide wild pollinator nesting habitat: hedgerows, earth banks and bee hotels

Nesting habitat for wild bees (bumblebees and solitary bees) is unobtrusive and easy to create. Wild bees live in small colonies and are entirely focussed on finding enough pollen and nectar to feed themselves and their offspring. They are not aggressive, have no interest in interacting with humans, and do not present any risk to the public.

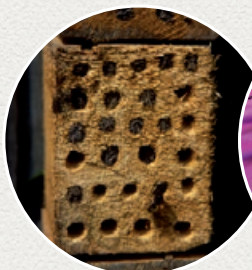


WHERE DO OUR WILD BEES LIVE?

Bumblebees nest in long grass, often at the base of a hedgerow.



We have 62 species (types) of solitary bees who are mining bees. They nest by burrowing into bare ground or south/east facing banks of bare earth (soil, sand, clay, peat).



The remaining 15 solitary bee species are cavity nesting bees who nest in south/east facing stone walls, masonry, wooden structures or commercially available bee nest boxes.

For more information, see our How to guide: Creating wild pollinator nesting habitat



Action 16

Managing native hedgerows as nesting habitat

Bumblebees often nest in long grass at the base of hedgerows, while mining solitary bees will use exposed banks that exist at the base of some hedgerows.

Managing hedgerows as nesting habitat:

- Make sure the base of hedgerows are not sprayed. This will ensure nesting bees are safe from chemicals, as well as allowing flowering plants like Clovers, Vetches and Knapweed to provide additional food throughout the season.
- If vegetation beside and under hedgerows needs to be cut, do so between September and March to allow bumblebees to nest safely during the summer. Bumblebee colonies die off in October/November (when mated queens go into hibernation to overwinter) so it is okay to cut or manage these areas in late autumn/winter.

For additional information on managing pollinator-friendly hedgerows, see page 8.



Mining bees making use of bare soil at base of a hedgerow along a transport corridor.

A mining solitary bee

Action 17

When designing earthworks for large infrastructure projects, consider how the orientation of embankments and cuttings could aid pollinators.

South or east-facing slopes with bare earth can offer nesting sites for solitary mining bees, while rock cuttings can offer holes for cavity-nesting solitary bees. North-facing slopes offer hibernation sites for bumblebees.



Embankments with exposed soil provide nesting opportunities for mining solitary bees. These should be protected and not planted. It is worth not covering new cuttings with topsoil – because even if these cuttings do not prove to be good for wildflowers, they will provide good nesting habitat.

Action 18

Include shelter for solitary bees at train stations and service stations

There is potential for bee habitats to be introduced to enhance the value of certain structures. Use green infrastructure techniques to provide opportunities for pollinators to move along and across transport corridors.

Where wooden fencing/screening exists, consider drilling small south or east facing holes for cavity-nesting solitary bees. These holes should be 10cm in depth and 4-8mm diameter. A range of different diameters is best. They are added once, ideally at a height of 1.5-2m (or as high as possible).

See www.pollinators.ie/resources: How-to-guide: creating wild pollinator nesting habitat.

It is very straightforward to create nesting habitat for our 62 species of mining solitary bees by removing vegetation on a south/east-facing slope.



Removing vegetation on a south/east-facing slope.



'Bee bricks' could be included in new builds to provide nesting sites for cavity-nesting solitary bees.



Ashy mining bee

E Reduce the use of pesticides

In some cases, the use of pesticides (insecticides, fungicides, herbicides) is necessary, e.g., for health and safety. In other cases, we have fallen into a pattern of using them as a way of tidying or sanitising our local areas. To minimise negative impacts on pollinators it is important that pesticides are used sustainably. This means they should only be used when necessary, and efforts should be made to minimise their impact on non-target species like bees.

Action 19

Reduce the use of Herbicides and Insecticides

Insecticides harm pollinators directly, but equally importantly, the use of herbicides can greatly reduce the wildflowers that pollinators depend on for food, making it hard for them to survive.

All pesticides should be avoided, unless in very specific circumstances, for instance, on hard surfaces for Health and Safety reasons or when dealing with invasive species.



Some pesticide use, as in these two examples above, can be excessive and unsustainable.



Cratloe Train Station,
Co. Clare

Iarnród Éireann's network includes 147 stations, most with old outbuildings and yards which also provide shelter for birds and mammals. Bare open ground around stations and yards with poor soil conditions are better at providing habitat for wildflowers and pollinator-friendly species than manicured and intensively managed sites.



Best Practice in use of pesticide

In addition to the honeybee who lives in hives, we also have 21 different types of bumblebees and 77 different types of solitary bees in Ireland. Bumblebees and solitary bees live entirely in the wild. We need healthy populations of all these bees to carry out pollination if we want to have wildflowers in the landscape, to be able to grow our own fruits and vegetables, or buy affordable, locally grown apples or strawberries in our shops. Bees and other pollinators can only survive in a landscape that provides them with food, shelter and safety throughout the year. Already, one third of our 99 bee species are threatened with extinction from Ireland.

Insecticides pose the greatest direct hazard to insect pollinators. However, herbicides are having a much greater negative impact on pollinators because they are so widely used.

Herbicides, Fungicides and Plant Growth Regulators typically have little or no toxicity to pollinators, but many of the plants we spray as weeds are vital sources of food for pollinators, especially in early spring. Pollinators need a range of flowers to feed on from spring through to autumn. The overuse of these chemicals is making it very difficult for them to find enough food to survive in our landscape.

Pesticides should be used sparingly and only when absolutely necessary, such as in the treatment of invasive species like Japanese Knotweed

Do's

- Check the label and select pesticides that are less harmful to pollinators
- Always read, understand and follow the product label instructions fully
- Treat only the target area
- Spot treat rather than use blanket sprays
- Follow the buffer zone instructions on the product label
- Leave areas of pollinator-friendly habitat free from all pesticides. These include areas of clover or wildflowers, the base of hedgerows, and any natural areas.
- Minimize spray drift to non-target areas by:
 - Using equipment that reduces drift
 - Checking the weather forecast before application and be mindful of changing conditions.
 - Ensure that you spray when the wind is blowing away from beehives and pollinator-friendly habitat.

Don'ts

- Do not apply pesticides to bees or other pollinating insects
- Do not spray flower-rich areas (including weeds) when flowers are in bloom and providing food for bees. Plants that we might consider weeds like dandelions, vetches, clovers, dead-nettles and knapweed are important food sources as they provide high quality pollen and nectar for bees.
- Do not apply pesticides to areas that have been identified as important nesting areas for wild pollinators
- Do not apply pesticides to standing water.

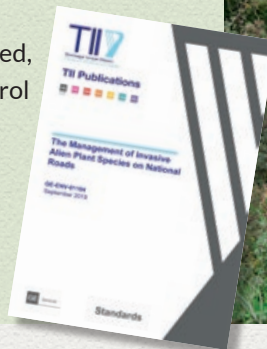


Food for pollinators

CONTROLLING INVASIVE SPECIES:

For some invasive species, such as Japanese Knotweed, pesticide use is recommended. Please note: the control of invasive species takes precedence over reducing pesticide use.

For more details on managing invasive plant species on road networks refer to TII documents:



NOXIOUS WEEDS:

While native plants such as ragwort and native thistles are highly attractive to pollinators they can dominate roadside verges and infest surrounding farmland and sensitive habitats if not controlled. Under Irish law, roadside managers are required to remove and control noxious weeds. When carrying out programmes of eradication for noxious weeds, roadside managers should ensure that they recognise the difference between noxious weeds and other native species that do not cause such problems.



CONTROLLING GORSE:

Gorse can pose a risk due to fire hazard and can also pose risk to adjoining sensitive habitat areas as it spreads. As such, Gorse on transport corridors is a management issue, and must be controlled.



A26 Northern Ireland



F Promote the aims of the All-Ireland Pollinator Plan in new infrastructure plans and make staff aware of management actions for pollinators

Action 20

Promote the aims of the All-Ireland Pollinator Plan when designing new linear transport schemes, and promote the appropriate training of transport managers.

Ensure the aims of the plan help inform the landscape strategy of any new schemes from the design and planning stage through to implementation on the ground and future management.

Ensure project and transport managers are aware of the aims and requirements of the plan when guiding new scheme development and overseeing landscape management and monitoring.



N18 Green Bridge Gort, Co Galway - as part of the project's environmental mitigation a green bridge was proposed as part of the planning permission to function as a safe biodiversity crossing.

Action 21

Log your actions

If managing transport networks for pollinators, please send details and area shape files to the National Biodiversity Data Centre so that these new pollinator-friendly habitats can be tracked in the landscape, and secure recognition for your work.

See www.biodiversityireland.ie

All 'Actions for Pollinators' can also be logged on our mapping system

A publicly available online mapping system (Actions for Pollinators) allows all those who take pollinator-friendly actions to log their location and the action(s) taken. This will track the build-up of food, shelter and safety for pollinators in the landscape.

See <https://pollinators.biodiversityireland.ie/>



CASE STUDY:

Luas Stop, Kilmacud:

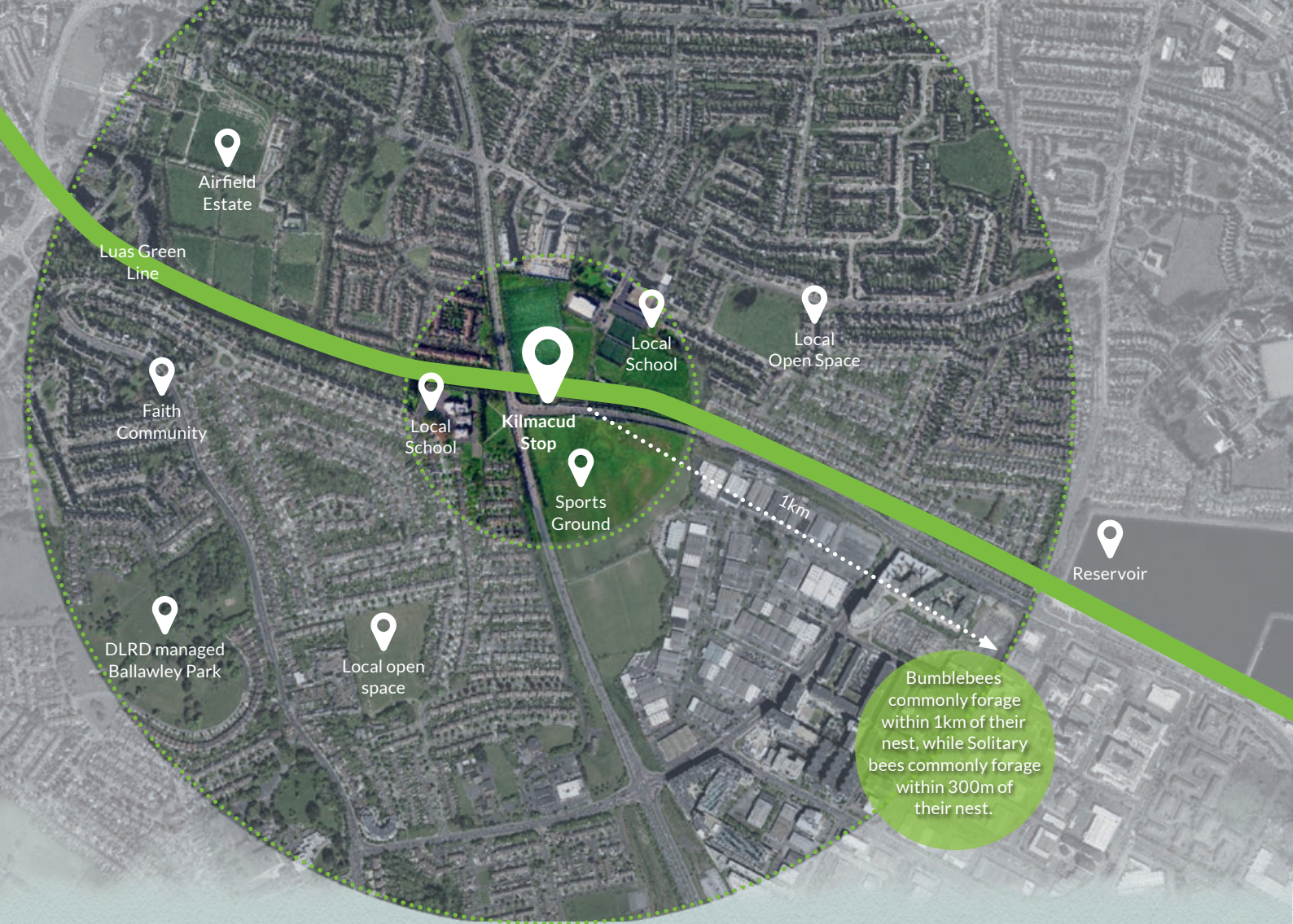
Kilmacud is a unique stop on the Luas Green line in terms of its habitat potential in that it is set in an enclosed stop environment surrounded by semi-natural grassland banks. In addition, there is potential for connectivity to other locally rich biodiversity sites along the Luas line, with Airfield estate and its dedicated bee garden and Ballawley Park, managed for pollinators, within the foraging range for bees. Due to the steep topography of the site landscape, management has been challenging and limited ornamental planting or formal landscape interventions have taken place.

As part of recent platform extension works, a landscape scheme was developed to enhance biodiversity, with a special emphasis on pollinators. The aims of the project were:

- To provide an evidence base to advise and support pollinator conservation initiatives
- To look at practical ways current LUAS landscape management actions and practices can be adapted or altered in order to enhance the transport corridor's habitat value and value for pollinators
- To support the aims and objectives of the All-Ireland Pollinator Plan (AIPP). This is appropriate given that TII are a member of the AIPP steering group.
- To advance the AIPP proposals by applying the strategy to TII Light Rail Networks.
- Raise awareness of the importance of transport corridors to our pollinators

Where slopes were disturbed to extend retaining walls, the reinstated banks were sown with a native wildflower mix. All trees and shrubs planted in the vicinity of the stop were chosen for their value for pollinators. A native hedgerow was planted to the boundary with the adjoining school grounds and along the access path to the stop. A landscape maintenance regime, was developed to maximise the site's potential for pollinators.





Dun Laoghaire Rathdown County Council has done great work in protecting pollinators, reducing pesticide use, and reducing grass-cutting to allow wildflowers to bloom.

The area around Kilmacud Luas stop includes parks and residential areas which have also become pollinator-friendly, showing how actions by different sectors combine, and benefit from linkages created along transport routes, which join schools, sports grounds and local parks.

Pollinator-friendly Mahonia and Ceanothus planted to ornamental beds beside the Luas platform to provide additional food sources. All new planting at Kilmacud were chosen for their value for pollinators.



CASE STUDY:

Waterford Greenway

Greenways offer huge potential as biodiversity habitats and corridors.



Avoid the use of chemicals if possible

Cavity nesting bees will use old walls/bridges

Willow is an important food in Spring

Allow wild flower to grow naturally

Create natural mini-meadows

Add bee boxes in South-facing locations

Banks of bare soil for solitary bee nests

Have as much flowering hedgerow as possible

This booklet is one of a series of Guidelines produced to help different sectors take actions under the All-Ireland Pollinator Plan. For more information and other useful resources, please see www.pollinators.ie



The All-Ireland Pollinator Plan is co-ordinated by the National Biodiversity Data Centre. Some funding to assist implementation has been provided by Bord Bia & The Heritage Council. Funding for design of this guide has been provided by the Department of Agriculture, Food and the Marine.

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About the National Biodiversity Data Centre

The National Biodiversity Data Centre is a national organisation that collects and manages data to document Ireland's wildlife resource, and to track how it is changing. Find out what biodiversity has already been recorded in your local area: maps.biodiversityireland.ie

Help us to build up the knowledge of biodiversity in your local area by submitting sightings to records.biodiversityireland.ie

Text: Eimear Fox, Transport Infrastructure Ireland; Juanita Browne, and Úna FitzPatrick, National Biodiversity Data Centre.

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