



# Pollinator-friendly management of **WIND FARMS**



**All-Ireland  
Pollinator Plan**  
[www.pollinators.ie](http://www.pollinators.ie)



**National  
Biodiversity  
Data Centre**



A Heritage Council Programme

[pollinators.ie](http://pollinators.ie)

Guidelines 12

# WHO are our pollinators?

In Ireland, some plants are pollinated by the wind, but the vast majority are pollinated by insects. Most insect pollination is carried out by bees, while the rest is done by a variety of insect pollinators, including hoverflies, moths, and butterflies. We have one type (species) of managed honeybee and 98 different species of wild bees. Our wild bees include 21 bumblebee and 77 solitary bee species. If we want to protect pollination services to both our wild plants and fruit and vegetable crops, we need to have an abundance and diversity of wild bees, as well as other insects.

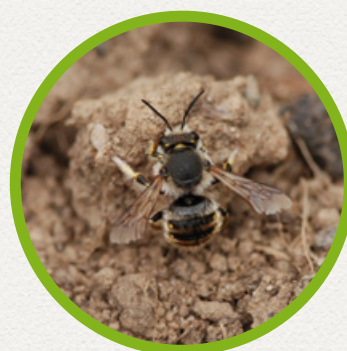
There are 99 different types of bee in Ireland: Honeybee (1) Bumblebees (21) Solitary Bees (77)



Honeybee (1)



Bumblebees (21)



Solitary bees (77)

## What do our pollinators need to survive?

Like us, pollinators need food and safe places to live. Bees rely solely on pollen and nectar from flowers for food. Wild bees don't make honey like honeybees do, so they have no way to store food. This means that they are never more than a few days away from starvation – so it is very important that there is a continual supply of flowers on which they can feed.

To have a healthy, balanced diet, pollinators need to be able to forage on 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) in small colonies. 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.

Pesticides (including insecticides and herbicides) are commonly used all across the country, but can be very harmful to pollinators. Insecticides harm them directly, but equally importantly, the use of herbicides greatly reduces the quantity of wildflowers pollinators depend on for food, making it difficult for them to survive.

Cutting, mowing and spraying vegetation so that the countryside looks tidy - to us - means that we are squeezing nature out and putting ecosystems at risk.



Sheep's Bit Scabious growing on substation bank on Ballyhoura wind farm, Co. Cork. © Claire Deasy

## Why do we need to help our pollinators?

*“A world without pollinators is a world without food diversity or food security.”*

Pollinators are important to ensuring the success of pollinator-dependent crops, such as many of our fruits and vegetables (e.g. apples, berries, tomatoes, cucumbers), and to maintaining a healthy and diverse ecosystem. For example, the larvae of hoverflies are predators of aphids and other pests, and so hoverflies contribute to both pollination and pest control in the ecosystem. Three-quarters of our wildflowers and flowering trees and shrubs also benefit from insect pollination. These plants in turn provide important food, including fruits and seeds, for our wild mammals and birds, while also providing them with shelter.

By helping pollinators, you are also helping many other Irish species, including birds, mammals, plants and other insects, further protecting and enhancing the biodiversity of your community.

Supporting pollinators is not just about the health of our native plants and animals, but about your health too. There is a growing number of studies showing the health benefits of spending time in nature. Walking in biodiversity-rich areas, such as woodlands or meadows, where people can see butterflies, bees and birds, has been shown to lower blood pressure, reduce stress, and help with concentration, depression and anxiety. Without pollinators, we would lose the colourful and distinct natural beauty of our landscape.

*Actions you take to help pollinators will also benefit all types of biodiversity, including birds, bats and bugs in Ireland.*



## The All-Ireland Pollinator Plan

Unfortunately, our pollinators are in decline. The problem is serious and requires immediate attention. One-third of our 98 wild bee species are threatened with extinction from the island of Ireland. While some species are doing better than others, the Irish Bumblebee Monitoring Scheme has shown the overall trend from 2012-2019 was a decline in numbers of 4.8% per year. Lack of food is the main reason pollinator populations are falling so rapidly. If we want pollinators to be here to pollinate crops and wild plants for future generations, we need to act now to manage the landscape in a more pollinator-friendly way.

The All-Ireland Pollinator Plan (AIPP) identifies actions to help pollinators so that collectively we can take steps to reverse pollinator losses and help restore populations to healthy levels. The AIPP is supported by over 100 governmental and non-governmental organisations which have pledged to deliver these actions to achieve the goal of making the island of Ireland a place where pollinators can survive and thrive.

It is a shared plan of action. Everyone, from local communities to businesses, farmers, transport authorities, County Councils, schools and gardeners, has a role to play in the Pollinator Plan. See [www.pollinators.ie](http://www.pollinators.ie) for how each sector can help through evidence-based actions.



# Wind Energy in Ireland

Wind energy is Ireland's largest source of renewable energy and is playing a key role in the decarbonisation of Ireland's economy. With around 400 wind farms across the island – a number which is expected to grow rapidly over the coming years – the wind industry can play a vital role in conserving our biodiversity and natural habitats if sites are managed in a pollinator-friendly way.

Wind farms in Ireland are found in many different types of habitat, such as farmland, blanket bog, lowland raised bog, moors and afforested sites, away from urban areas. Introducing pollinator-friendly management across wind farms would create a network of safe places for bees and other insects across the landscape, intersecting many different habitat types and ecosystems.

These actions could have a considerable positive impact, not only on wild plants and pollinators, but also on the species that depend on them e.g. birds, mammals and the species that prey on those, resulting in potential positive impacts right up along the food chain.

This guide is aimed at those who have responsibility for managing wind farms and their surroundings. It identifies seven ways a wind farm operator can help pollinators. All these actions are evidence-based, i.e. scientific studies show that they have a positive impact on pollinators.

Pollinators need food, shelter, and safety; fortunately many of the actions we can take to help provide this are simple. They often involve 'doing less', with minor changes to existing management strategies, and with nature itself doing most of the hard work.

*“Wind Energy Ireland is delighted to support the All-Ireland Pollinator Plan and to encourage our members to do what they can to manage their sites in a biodiversity-friendly way.”*



# 7 ways to make wind farms pollinator-friendly

## ① Protect what you have

Many wind farms already contain areas of pollinator-friendly habitat. Identify and protect existing areas that are already providing food and shelter for pollinators, e.g. native hedgerows, flowers, earth banks.



## ② Manage native flowering hedgerows for biodiversity

Flowering native hedgerows are a valuable source of food for pollinators and also act as wildlife corridors for movement across the countryside. Cutting annually stops the hedgerow flowering and fruiting. Consider cutting on a 3-5 year cycle or staggering the sections that are cut so that there is a continual supply of food for pollinators every year. Ensure that any necessary maintenance is only carried out between November and February.

## ③ Eliminate or reduce use of pesticides

Pesticides, including herbicides, have negative effects on insect populations. Reducing or eliminating the use of herbicides will mean more wildflowers for pollinators to feed on. Adopt the pollinator-friendly pesticide code. (Download from [pollinators.ie/resources/](http://pollinators.ie/resources/))



## ④ Reduce mowing

Mowing removes vital food sources for pollinators, particularly between March and October. Consider whether mowing is actually necessary and try to time any necessary work outside of this key period. Native plants are best for our pollinators and reducing mowing is an excellent way to encourage common wildflowers such as Clovers, Knapweed and Bird's-foot-trefoil to naturally grow among long grass. When mowing is carried out, always remove cuttings to help native plants to thrive.

## ⑤ Provide nesting places for wild bees

Wild pollinators need safe places where they can breed, and where queens and larvae can overwinter, such as the base of hedgerows, bare earth banks, crevices in stone, drilled wood and bee hotels. Providing a variety of safe nesting sites, which are kept free of pesticides, will help their populations to thrive.

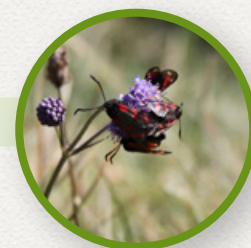


## ⑥ Raise awareness

Raise awareness in your local community, workplace and supply chain about biodiversity loss, the decline of pollinators, and the work you are doing to protect biodiversity. Share information and erect signage, highlighting areas being managed for pollinators. Support and sponsor local biodiversity initiatives.

## ⑦ Plan in advance

Seek opportunities during the design and/or detailed landscaping planning of a new wind farm to identify existing pollinator-friendly habitats, minimise disturbance, and incorporate new habitats that can provide food and shelter.



The following pages provide more details on these seven actions and you can find more information at [www.pollinators.ie](http://www.pollinators.ie)

You can register what actions you have taken at your site on our online mapping system: [pollinators.biodiversityireland.ie](http://pollinators.biodiversityireland.ie)

## Protect what you have

*“Minimum disturbance – maximum retention”*

A big part of conservation is recognising the importance of what is already present and then protecting it. In many cases this means simply to leave things alone as much as possible.

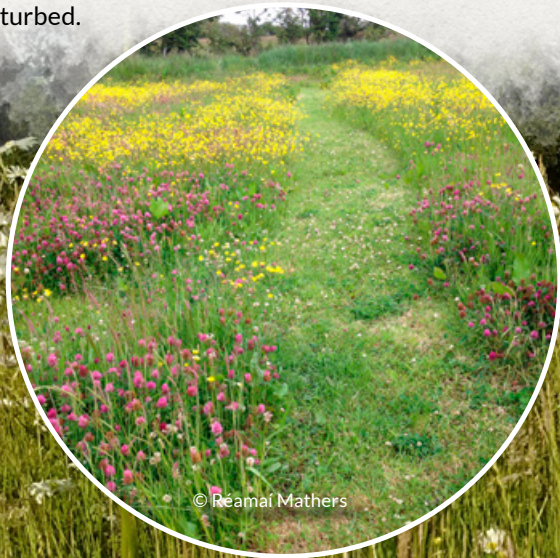
The first step is to identify the existing areas of habitat that are already useful for pollinators, and to think about what changes can be made in the current management regime to further protect them.

You can survey the area and designate/map existing pollinator-friendly areas on your wind farm to be preserved for pollinators. Avoid trying to ‘tidy’ nature. Clearing of vegetation should only be done for a necessary purpose, and should be timed to avoid March to October, the flowering season.

Acknowledge these areas and your work to protect them by putting up signage, with information on biodiversity and the importance of pollinators. Be sure to communicate to anyone undertaking work or maintenance on the site that these areas are not to be disturbed.



Wildflowers growing next to access track, Knocknatallig wind farm, Co. Cork  
© Claire Deasy



© Réamál Mathers



## How do you recognise an important area for pollinators?

Important areas for pollinators are areas of habitat that provide them with **food, shelter or safety**. These include areas of wildflowers, hedgerows, hedgerow margins, grass verges, scrub and earth banks.

The land around some wind farms is owned by the developer and large areas of habitat can be managed. Other wind farms are leased and the leaseholder is more restricted in the areas they can manage. However, even where the land is being leased, there are areas along site access tracks, the margins/embankments of turbine hardstands and around the substations which can be very suitable for wildflowers and can provide a variety of pollinator-friendly habitats. Even small actions along edges of roads and turbine footprints can have a significant positive impact on local biodiversity.

- When managing an area for pollinators, a key aim is ensuring year-round flowering habitat.
- Wildflowers, hedgerows, and shrubs should be allowed to grow and flower from March to October.
- The base of hedgerows should be allowed to grow wild with longer grass for bumblebee nests.
- South-facing earth banks, suitable as mining bee nesting habitat, should be cleared of vegetation at the start of the year.
- Work with the existing seed bank in the soil. During any activity where earth has been moved, the local topsoil can be distributed and spread out in such a way as to maximise the regeneration of the seeds in the soil.
- Familiarise yourself with important plants for pollinators, e.g. Clover, Dandelion, Knapweed, Heather, Vetch, Yellow Rattle, Willow, Hawthorn, in order to help you manage the site more effectively.
- Identify and protect butterfly nurseries. The caterpillars of many moths and butterflies need specific plants on which to feed. The common nettle, for example, is the food plant for the larvae of several butterfly species including the Peacock, Red Admiral and Comma, while the Brimstone butterfly will only breed in areas with Buckthorn. Other useful food plants include Knapweed, Bird's-foot-trefoil, Scabious, Thistle, Ivy and Holly.

### Larval foodplants used by some of our well-known butterflies

Butterfly Species	Caterpillar Food-plant
Common Blue, Wood White	Common Bird's-foot-trefoil
Orange Tip	Lady's Smock/Cuckoo Flower
Holly Blue	Holly, Ivy
Red Admiral, Peacock, Small Tortoiseshell, Comma	Common Nettle
Painted lady	Common Nettle and Thistle
Marsh Fritillary	Devil's-bit Scabious
Small Copper	Wood Sorrel, Sheep's Sorrel
Ringlet	Wild grasses - Cocksfoot, False brome, Meadow grasses (Poa spp.), Common couch, Tufted Hair grass
Brimstone	Buckthorn, Alder Buckthorn
Meadow Brown	Wild grasses- Cocksfoot, False brome, Downy Oat Grass, Bent grass species, Fescues, Meadow Grasses (Poa spp.)
Large Heath	Hare's-tail Cottongrass
Large White, Small White, Green veined White	Cabbage family
Speckled Wood	Wild grasses - Cocksfoot, False brome, Yorkshire fog, Common couch



## Maintain native flowering hedgerows for biodiversity

Good quality hedgerows provide the four essential needs of pollinators:

- Sources of pollen and nectar for food
- Places to breed
- Places to overwinter
- Ecological Corridors across the landscape



Hedgerow in fruit on Lisheen wind farm, Co. Tipperary © Claire Deasy

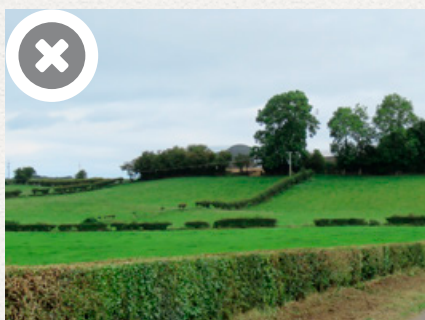
### Maintain existing hedgerows to allow them to flower every year

Hedgerows should be allowed to flower throughout the year to provide food for pollinators, and hedge cutting should be kept to a minimum. Allow hedges to grow a little further upwards and outwards each year and maintain a wide base. Cutting annually stops the hedgerow flowering and fruiting, and cutting too often/ too tightly reduces stem density and the number of flowers a hedge can produce.

If not on a roadside, consider cutting on a 3-5 year cycle, with cutting only taking place between November and February, thus allowing flowers and fruit to develop. If it is necessary to cut more frequently, alternate which side of the hedge you cut each year to allow parts of the hedge to grow and flower.

A strip of vegetation along the base of the hedgerow should be left as a buffer zone between the hedgerow and the adjacent land/roads. This provides even more food and habitat, and increases insect diversity. Bumblebees will also use this as nesting habitat. Avoid mowing, strimming or spraying herbicides along the base of hedges.

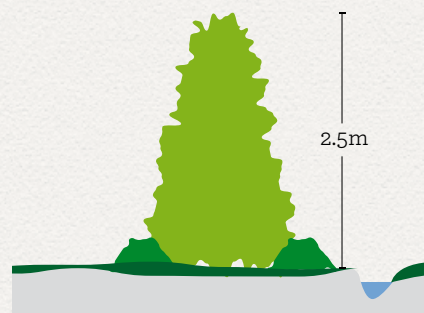
*If the existing hedgerow is monoculture or non-native, fill gaps with native hedgerow species such as Whitethorn, Blackthorn, Spindle, Guelder Rose, Holly or Dog Rose.*



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.



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



## Create new hedgerows

Consider connecting isolated patches of high-quality pollinator habitat, or replacing fencing, by planting hedgerows.

Creating new hedgerows provides new habitats and food sources and allows pollinators to travel protected from wind and rain to access new foraging territory. When planting new hedgerows, only a mix of native pollinator-friendly species should be used.

Native shrubs are the most suitable. By providing a diverse range of species e.g. Willows, Blackthorn (spring flowering), Whitethorn, Wild Rose, Bramble, (summer flowering), Ivy (autumn flowering), there will be food available throughout the year. Whitethorn (also called Hawthorn) is a particularly good hedgerow species and usually makes up about 75% of saplings planted in a new native hedgerow, and ideally there should be at least four other native species alongside it. Small trees such as Holly, Rowan and Crab apple will also provide flowers in the summer.



Hedgerows provide excellent foraging opportunities later in the year in the form of fruit and berries. By law, hedge-cutting should not take place between 1 March and 31 August, unless essential for safety reasons. To maximise biodiversity, hedge-cutting is best done in late winter as berries are an important food source for many birds over the winter.

For a detailed 'How-to guide' on hedgerow management for pollinators, visit [pollinators.ie/resources/](http://pollinators.ie/resources/)

## Native hedgerow trees & shrubs



## Eliminate or reduce pesticide use

Pesticides (insecticides, fungicides, and herbicides) are harmful to pollinators. Insecticides directly harm the pollinators themselves, while herbicides remove the plants and flowers on which pollinators depend for food. Increasing evidence is also showing that pesticides can affect factors such as bee navigation, learning and larval development. Even widely used herbicides, such as glyphosate, have been shown to be harmful to pollinators.

### Do less

Consider whether vegetation removal is necessary or if plants can be left alone to grow undisturbed. Herbicides should not be used to 'tidy' vegetation; they should only be used sparingly to keep areas clear for necessary safety for work and maintenance.

It costs nothing to reduce the use of herbicides – in fact, it saves money, which can be used to support other activities. Look strategically at where vegetation can be left alone or where expectations can be adjusted for those both maintaining and using these spaces. Signage can help people feel more comfortable with 'untidy' areas and highlight your conservation efforts.

When looking to adopt a herbicide-free approach, undertake an audit of which areas are currently being treated, why and how often. Questions to ask:

#### Is there actually a need to spray in this area?

Turbine hardstands may have plant and flower species growing on them, but often these are just herbaceous plants which die back each winter. The wind farm owner could adopt a policy of leaving the herbaceous species to grow and bloom on the hardstands. If woody plant species start to grow, these can be hand-pulled at an early stage before they become established.

#### Could this area be controlled in a different way?

Land/Asset managers should ask themselves if the frequency of spraying could be reduced, stopped, or if another less harmful approach, e.g. mowing/stripping, could be used.



Bird's-foot-trefoil and Red Clover flowering on turbine hardstand on Lisheen wind farm, Co. Tipperary © Claire Deasy

### Reduce herbicide use

Eliminate use where possible, but in cases where herbicides must be used, e.g. to treat invasive species, adopt the pollinator-friendly pesticide code to cause the least harm. Review the frequency of treatment schedule to see if it can be significantly reduced and to avoid critical times for pollinators. Have a discussion with site staff and the spraying contractor to determine the minimum amount of spraying required to facilitate maintenance.

- Where possible, avoid use during the flowering season (March-October).
- Choose a pesticide which will cause minimal harm to pollinators.
- Follow the manufacturer's directions exactly.
- Treat only the target area.
- Avoid spraying on wet or windy days - wind and rain spread pesticides to non-target areas.
- Avoid spraying close to the base of trees or hedgerows.
- Avoid spraying non-mowed areas where wildflowers are growing/could grow.
- Avoid spraying pollinator nesting sites such as soil banks or stone walls.
- Avoid spraying during the plants' dormant phase.
- Avoid pesticides which persist in the soil.
- Where weed control is necessary, strim, pull or use selective spot treatment where possible.

*For information on the sustainable use of pesticides refer to Irish National Action Plan for Sustainable Use of Pesticides.*

## Alternatives to Herbicides

A growing body of evidence has pointed to the hazardous properties of glyphosate and other herbicides - the risk their use poses to operators and to the public as well as wider concerns about the negative effects on biodiversity. Demands for alternatives are increasingly being made due to these potential negative impacts, as well as the possibility of prohibited use in the near future. Some examples which have been trialled include foam or hot water spray, vinegar spray, self-drive powered brush weeder, gas flame, strimmer and hand weeding.

**Hot Water Treatment:** The hot water system supplied by Oeliatec ([www.oeliatec.co.uk](http://www.oeliatec.co.uk)) works simply with hot water. The water is heated to around 120°C and is applied with a low-pressure system, via a long hose.

**Hot Foam Treatment:** Foamstream ([www.weedingtech.com](http://www.weedingtech.com)) is a hot foam treatment made from vegetable oils which kills vegetation by penetrating and rupturing the plant's cells.

Both hot water and hot foam are very effective in killing weeds and can be used for other purposes, such as killing moss and algae. Both of these systems use non-toxic materials to achieve their results, which means that neither has to be licensed under any of the existing pesticide regulations - including requirements for operator training and certification. In Ireland, Dún Laoghaire-Rathdown County Council has trialled a hot foam/hot water weed treatment method which is wildlife-friendly and non-toxic, though it requires

specialised equipment. However, since the system can be used at any time, there is scope for machinery to be shared or hired out across sites.



Hot foam trials by Dún Laoghaire-Rathdown County Council.

In addition, because the materials are inert, they can be used in situations where herbicides cannot, such as close to water courses or in wind and rain (subject to guidelines on product use). So these systems are as effective as herbicides, but far more versatile in terms of when and where they can be used because they pose no identifiable risk to health or environment.

Running in parallel with any review of herbicide usage, a mindset change needs to be encouraged, where a tolerance or even an appreciation of 'weeds' or wildflowers becomes more acceptable, particularly in situations where herbicide use is purely for aesthetic reasons.



© Cathal Noonan

## Reduce mowing

Following a pollinator-friendly grass management plan can create natural meadow areas with minimal effort. Reducing the frequency of mowing allows common wildflowers such as Clover, Knapweed and Bird's-foot-trefoil to naturally grow among longer grass. This is the most cost-effective way to provide food for pollinators and other insects.

### Reassess the timing, frequency and extent of your mowing regime

Some mowing is unnecessary or excessive and can easily be reduced to maximise the flowering potential of the area. While mowing can be necessary to keep some areas clear for access and maintenance, the timing and scale of such work must be considered.

A year-round supply of food (flowers) is crucial for the survival of pollinators. Some plants are especially important food sources in early spring (e.g. Dandelions and Clover), so mowing during their flowering months should be carefully considered.

- Avoid mowing from mid-March until Mid-April if possible. This will allow Dandelions to flower.
- Avoid mowing from the end of May until after Clover peaks in mid-July.

**Simply altering the timing and frequency of mowing can make a big difference.**

Creating a long-flowering meadow, by restricting mowing activity to between the months of September and February, will have the biggest impact in protecting pollinators.

### Stagger mowing of large areas

If it is necessary to mow large areas, you can ensure there are no gaps in food availability during the year for pollinators by staggering the mowing of different sections. Heather cutting and meadow management in upland areas can be coordinated with the landowner.

### Remove cuttings

Always remove cuttings after mowing. Cuttings which are left behind will fertilise the soil and encourage grass growth. Grass outcompetes the native wildflowers and reduces the food supply for pollinators.



Ecopower's Rahora wind farm, Co. Kilkenny © Phil Kenealy

Each autumn, prior to mowing or clearing of land for construction, you could collect seed heads from flowering plants – these can be sown in suitable areas in spring or autumn to further boost native plant growth.

### Reduced mowing provides free superfoods for pollinators:



Dandelion  
Mar-April\*

\*Peak flowering season



Clovers  
May-July



Bird's-foot-trefoil  
Jul-Aug

4-6-week meadow



## Provide nesting habitats for wild bees

Safe places for bees to nest are crucial to the survival of each species. Adult solitary bees die in autumn, leaving the next generation behind as pupae in nests to emerge as adults the following spring. Adult bumblebees also die in autumn, except for the new queens. These queen bumblebees need to find a safe place to hibernate over winter and emerge the following spring to begin building a colony of their own.

Bumblebees and solitary bees are non-aggressive and encouraging their nesting activity in an area poses no threat to the public. Creating new nesting habitat is easy and inexpensive.

### How to provide nesting habitat for bumblebees:

Bumblebees nest in long or tussocky grass. Leave long grass uncut along the base of hedgerows from March until October. Bumblebee colonies die off in October/November (while the mated queens go into hibernation for the winter), so it is okay to cut or manage these areas in late autumn/winter.



Red-tailed Bumblebee, *Bombus lapidarius*  
© Steven Falk

Wetland and wildflowers at Athea wind farm, Co. Limerick. The wetland was enhanced by SSE to provide an additional biodiversity area. © Carmel Brennan

Solitary bees commonly forage within 300m of their nest.

Studies have shown that an increase in 150m between nesting site and food plants can reduce the number of viable offspring by more than 70%

Bumblebees commonly forage within 1km of their nest.

## How to provide nesting habitat for mining solitary bees:

Our 62 species of mining solitary bees nest by making tiny burrows in bare earth (soil, sand, clay and peat). They will nest in flat, well-drained areas, but generally prefer south/east-facing sheltered banks. Where there is south or east-facing exposed bare earth on the site, allow these areas to remain.

A mining bee's nest can look like a small ant hole if it is on flat ground, or like a tiny tunnel dug into an earth bank. On warm and sunny spring days, look for bees returning to these nests with pollen.

In winter, you can create new earth banks elsewhere by scraping away vegetation. The banks should be stable and free draining. The edges of access tracks provide an ideal location for nests. Never use pesticides on nesting sites – removal of vegetation along nesting banks should be done manually.

Avoid creating these areas anywhere that is vulnerable to soil erosion, and avoid heavily compacting the soil with machinery. Banks surrounding turbine hard stands, substations and trackways are already widespread on wind farms and are ideal to maintain as nesting sites.



Mining bees at SSE's Knockastanna wind farm, Co. Limerick  
© Carmel Brennan

## How to provide nesting sites for cavity-nesting solitary bees:

Our 15 species of cavity-nesting solitary bees make their nests in existing cavities in south-facing wood, stone walls, masonry or commercially available bee nest boxes.

You can drill small holes in south or east-facing wooden fence posts or concrete structures on the site. Alternatively, you can create your own bee box by drilling holes in untreated wooden blocks and attaching them to outdoor structures. Installing several small boxes at various points around the site is better than a single large nest box because this minimises the risk of disease and predation. Holes should be 10cm in depth and 4-8mm in diameter and should be placed at a height of at least 1.5-2 metres. They should be drilled at a slight upward angle to prevent them filling with rainwater. It is important to have holes of different sizes to accommodate different bee species.

For a detailed 'How-to guide' on creating nesting habitat for bees, visit [pollinators.ie/resources/](https://pollinators.ie/resources/)



## Raise awareness

By raising awareness about the severe decline of pollinators and the many simple actions everyone can take to protect them, you can encourage more pollinator-friendly actions across the community. Each individual action, no matter how small, creates more food, shelter and safety for pollinators and allows them to spread out and connect to new areas via patches of suitable habitat.

### Raise awareness in the local community

- Use signage to show the work that you are doing on your wind farm and explain the importance of supporting pollinator-friendly initiatives.
- Signage also highlights the value of your protected biodiversity areas and showcases what good quality pollinator habitats look like.
- Sponsor bee hotels and pollinator-friendly planters in the local community.
- Support and hold events which raise awareness of the importance of biodiversity, e.g. host a BioBlitz to engage the community with their local ecosystems, hold education programmes in schools.
- Celebrate Global Wind Day on June 15th by inviting local schools and communities to wind farm open days and provide talks and information on the All-Ireland Pollinator Plan. Give demos on what is being done on wind farms to encourage biodiversity and how this can be transferred to people's homes, gardens, workplaces and schools.
- Spread awareness about the potential use of community benefit funds for environmental initiatives, e.g. funding for local community or environmental groups, or implementing pollinator-friendly measures at local sports clubs.
- Establish partnerships with local community groups already involved with or who could support the All-Ireland Pollinator Plan.
- Provide information to neighbouring farmers on the importance of pollinators to crops and on how they can get involved.

Signage templates are available from [pollinators.ie/resources/](http://pollinators.ie/resources/)



### Raise awareness within your workplace and supply chain

- Sign up to the All-Ireland Pollinator Plan and commit to some actions for your workplace.
- Choose someone to be your company's 'Pollinator Ambassador' and coordinate pollinator awareness activities.
- Incorporate All-Ireland Pollinator Plan events into Global Wind Day. Events and awareness campaigns can also be timed with annual national events such as Biodiversity Week in May, Pollinator week in June, or Heritage Week in August.
- Raise awareness within your company about what people can do on an individual level in their workplaces and home gardens to provide safe habitats and food resources for pollinators.
- Hold a training session/workshop on pollinators for your staff and encourage biodiversity gardening, e.g. altering your lawn mowing regime, allowing native flowers to grow, avoiding pesticides.
- Promote our pollinator-friendly business guidelines to your Irish suppliers and contractors and encourage them to sign up as supporters of the All-Ireland Pollinator Plan.



Dromore West Community Centre exhibiting pictures from the pollinator art competition supported by SSE's Community Funds.  
© SSE Airtricity

Common Furrow Bee, *Lasioglossum calceatum* © Steven Falk



### Pre-construction and development phases - identify and protect

The project planning and design phase is an ideal time to identify, optimise and protect existing pollinator-friendly habitat. This is the stage when pre-planning ecological surveys are being conducted, habitats are being mapped, and areas of ecological value are being identified. The site Ecologist's scope of work should be updated to ensure areas and habitats of importance to pollinators are identified and mapped, and where possible, avoided by the development footprint. Where this is not possible, mitigation could include the establishment of new areas where pollinator-friendly habitat can be created to replace pollinator habitat loss.

A Biodiversity Management Plan for semi-natural habitats, which incorporates the All-Ireland Pollinator Plan guidelines, could be developed for the wind farm site at the design stage to promote maximum gain for biodiversity over the full life cycle of the development - from pre-construction, to construction, to the operational stage. Where a Habitat Management Plan already exists for a wind farm site, the All-Ireland Pollinator Plan guidelines can be incorporated where appropriate. The management plan should be monitored during the operational phase to ensure appropriate actions were implemented to maximise biodiversity.



A Biodiversity Management Plan could include the following actions and recommendations:

- Identify and map existing habitats of importance to pollinators to ensure these areas are protected in the first instance. Work with the wind farm design team to ensure these areas are highlighted and avoided where possible.
- Identify appropriate areas where new pollinator-friendly habitats could be created (e.g. new native hedgerows, wildflower areas or new native woodland). The Biodiversity Management Plan would include measures to ensure these new areas of habitat become established and continue to be managed.
- Retain existing hedgerow where possible, and restore gaps with native hedgerow mix. Some hedgerows may need to be removed as part of bat mitigation measures, but can be replaced in more suitable areas using native trees and flowering shrubs.
- Areas on wind farms could be proposed for planting new native woodland (only on areas which are not already valuable natural habitats, e.g. avoid planting on wetlands, existing semi-natural grasslands/meadows).
- Identify and protect areas with existing wildflowers, and erect signage to highlight their presence. Work with the existing seed bank where possible, as this is recommended as best practice and is more sustainable. (NB: If buying wildflower seed, use native Irish and local provenance seeds or Irish Wildflower Conservation Grade Mix seeds.)

Natural recolonisation of berm  
around hardstand at SSE's  
Athea wind farm, Co. Limerick.  
© Carmel Brennan



## Construction phase

Taking pollinator measures into account during the construction phase can allow you to maximise the retention of important habitat and achieve better quality and more rapid site restoration, with less work needed than if this process is delayed until the operational phase.

- Incorporate pollinator protection measures into the Ecological Clerk of Works' scope.
- Communicate with contractors about which areas should be protected during construction.
- Avoid the removal of habitats or movement of construction machinery outside of the development works area/footprint during the construction phase, where the works area/footprint will be clearly marked for associated site staff.
- Plan in advance how to create the least disturbance, particularly with regard to heavy machinery use.
- Restricted working areas should be imposed to ensure minimal disturbance to sensitive habitats.
- During initial site clearance, ensure surface topsoil/turves are saved for later reinstatement and restoration works.
- Where possible, use machinery to clear larger areas of vegetation instead of herbicides.
- Clear only the minimal amount of vegetation needed for access tracks and other areas of infrastructure.
- If putting in new drains/channels, put in small dams to slow drainage of water.
- Take pollinator measures into account when considering general site maintenance.
- Ensure there are invasive species site hygiene controls in place during the construction phase, as works can potentially disturb stands of invasive plants and/or soils contaminated with invasive plant material onsite.
- Manage your topsoil effectively. When redistributing soil, spread it out rather than leave it in large piles, to maximise recolonisation of the native wildflowers. Avoid over-compacting redistributed soil (loosen the soil up with machinery if compacted).
- Create sloped south-facing earth banks for nesting bees while machinery is already on site.
- Redistribute vegetation and soil stripped from the construction areas to provide a seed bank and do not reseed with perennial ryegrass.
- Land within the working area should be reinstated as near as practical to its former condition.

## Make the most out of wind farm infrastructure

**Substation** – incorporate pollinator-friendly planting around the substation area, with native species such as Hawthorn, Blackthorn, and Willow. Soil berms or banks are often created around substations and these are ideal areas to allow the native seed bank to flourish into a natural wildflower area. Where a landscaping plan exists for the substation, incorporate the All-Ireland Pollinator Plan guidelines and planting schemes into the plan.

**Access tracks** – extensive areas of bare ground are found along the internal wind farm infrastructure. Identify and protect specific areas that are beneficial and likely to be used by nesting bees.

**Hardstands and Embankments** – The embankments surrounding turbine hardstands and verges/cleared areas have significant potential to be recolonised by native flowers in the seed bank if allowed to do so. This is a low cost, low effort way to create a wildflower area which contains plant species specifically adapted to local site conditions which in turn supports local pollinators and the local food chain in general.



Substation bank which has been allowed to recolonise naturally at Knocknatallig, Co. Cork © Claire Deasy



Track infrastructure providing nesting habitat for mining bees at SSE's Knockastanna wind farm, Co. Limerick © Carmel Brennan



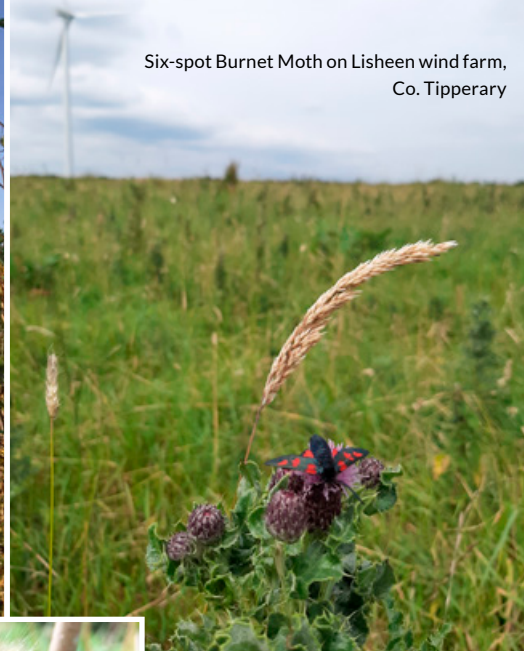
Wildflowers recolonising hardstand margins © Claire Deasy

Allowing wildflowers to grow along verges provides food for pollinators such as this Large Carder Bee © Eabhín Byrne





Wildflowers and plants along Knocknatallig wind farm road margins



Six-spot Burnet Moth on Lisheen wind farm, Co. Tipperary



Wildflowers and plants along Lisheen wind farm hardstand margins allowed to proliferate.



Brookfield All-Ireland Pollinator Plan team, 2019



Brimstone Butterfly



Fox moth caterpillar on Knocknatallig wind farm, Co. Cork



**Brookfield**  
Renewable

## Case study

Brookfield Renewable Ireland Ltd (Brookfield Renewable) signed up as business supporters of the All-Ireland Pollinator Plan in 2019. Since then, they have incorporated the All-Ireland Pollinator Plan recommendations into the management regime of the wind farms operated and managed by the business. Their ethos is to 'work with nature', and the natural seed bank is left to grow and thrive on the wind farms, resulting in a profusion of native wildflowers along the margins of the site access roads, hardstands and substations.

### Some sample measures Brookfield have implemented include:

- ✓ Identification of areas of value to pollinators and prevention of disturbance to these sites, e.g. margins of turbine hardstand, site access road margins, stands of Willow trees.
- ✓ Reduced mowing.
- ✓ Cutting of hedgerows every 2-3 years and/or only where necessary.
- ✓ Installation of All-Ireland Pollinator Plan signage to increase awareness.
- ✓ Incorporating the All-Ireland Pollinator Plan into environmental talks for local schools and communities on wind farm open days.
- ✓ Staff communications on the All-Ireland Pollinator Plan - to increase awareness across the business on how individuals can support pollinators in their own gardens.
- ✓ 'Plant a tree per employee' programme - a native Irish tree was planted for each member of staff, with over 100 trees planted.

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](http://www.pollinators.ie)



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Butterfly table Source: *Life Cycles of British and Irish Butterflies* (Eeles, 2019).

## 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. See [maps.biodiversityireland.ie](http://maps.biodiversityireland.ie)

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