



# How-to-guide

## Creating wild pollinator nesting habitat



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

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Bumblebees returning to underground nest. Joe Curtis



# Creating wild pollinator nesting habitat

In order to survive and thrive, wild pollinators need safe nesting habitats. Nesting sites provide pollinators with shelter, protect them from predators and allow next year's pollinators to grow and develop. Natural habitats suitable for wild bee nesting are not as common in the landscape as they once were. Fortunately, creating new nesting habitats is incredibly simple, inexpensive and safe. Providing wild bees with nests on your farm, in your garden or throughout your local community is a great way to help pollinators flourish.

Wild bees (bumblebees and solitary bees) nest in small colonies and are completely focused on collecting food for themselves and their young. They have no interest in interacting with humans, are not aggressive and pose no threat to the public, even while nesting. This guideline will tell you all you need to know to create ideal nesting habitats for the wild bee species found across Ireland.



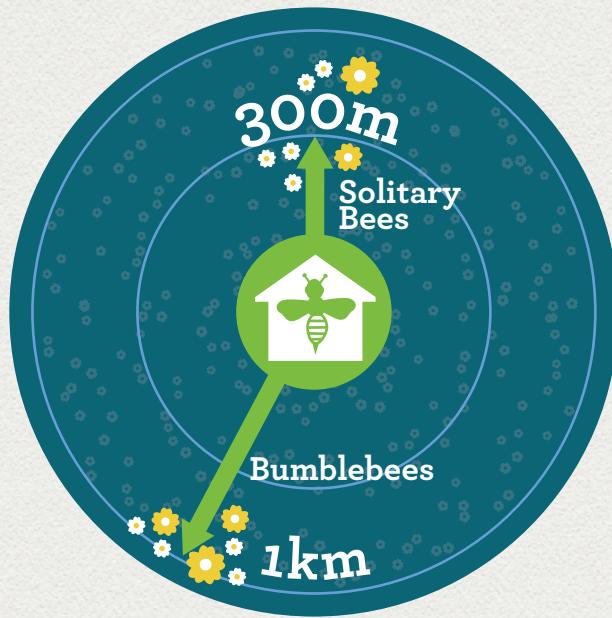
Solitary bee. David Daly



# Key points for creating wild bee nesting habitats

## 1 Ensure nesting sites are located close to good food sources (flowers)

Nesting habitats are useless for bees if flowers are too far away. You may be surprised to learn that bumblebees need flowers within about 1km of their nests, and solitary bees will only travel a few hundred meters to find food!



How far will bees fly from their nests to find food?

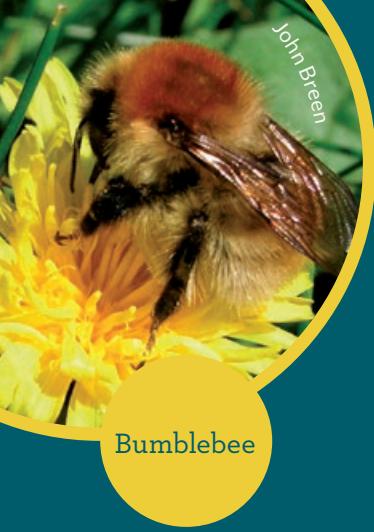
## 2 Don't forget mining solitary bees

Bee hotels only provide the right type of nesting habitat for a really small number of our wild solitary bees. Only 15% of them are cavity-nesting bees, and will use a bee hotel/nest box. Creating ground-nesting habitat for the much more common mining bees (see page 7) is really important; it's easier too!

## 3 Protect nest sites, even when you don't see bees

You will only see solitary bees for a short time each year, maybe 6-8 weeks. The rest of the time the bees are developing or hibernating in the nest, so it's really important not to disturb nest sites all year. Avoid using pesticides in these areas to ensure next year's bees stay safe





Bumblebee

# Bumblebee nesting

There are more than 20 bumblebee species in Ireland. Bumblebees have fat furry bodies and are excellent pollinators of crops like strawberries and tomatoes, as well as many of our wild plants. They nest on the surface of the ground or just underneath, and need safe nest sites from early spring to autumn.



## Winter

New queen goes into hibernation until the following spring

Mated new queen forages to build up reserves before hibernation. Workers, males and old queen die

Queen emerges from hibernation



Forages on flowers and finds a nest site

Prepares a pollen loaf and a nectar pot and starts laying eggs fertilised with sperm stored from previous year



New queens and males leave the nest to find mates

The queen lays eggs that become males and new queens



## Autumn



## Summer



# How to create nesting habitat for bumblebees

## A. Leave some areas wild

Leaving a small area to grow wild during the spring/summer will create habitats for bumblebee nests (e.g. burrows, underground cavities and tussocky grass). There are no size requirements for bumblebee nests, and these habitats will form naturally where the property is allowed to grow wild.

1. Avoid the use of pesticides, including herbicides, insecticides and fungicides
2. Don't cut these areas until late September to avoid disturbing nesting bumblebee colonies.
3. If the area is public land, consider using signage to protect it and indicate why it is being left unmown. Templates can be downloaded from the website.



## B. Create or maintain hedgerows

Hedgerows are an invaluable nesting resource for bumblebees on farmland, and are even important in gardens.

1. Cut hedges on a three year rotation if possible (outside of the bird breeding season), and try not to cut all hedges in the same year so some are always in bloom (e.g. cut one third of the hedge annually).
2. If hedges or surrounding vegetation must be cut, do so as late in the year as possible (November or later if possible).
3. Don't spray or cut the vegetation at the base of the hedgerow.

For more information, see our how-to-guide on managing hedgerows for pollinators, available on the website.

### Can I provide hibernation sites for queen bumblebees?

Bumblebees probably don't hibernate in the same places where their colonies nested. Instead they use north facing slopes or areas underneath trees. Avoid the use of pesticides in these areas.

You may come across instructions for making bumblebee nest boxes. Research has shown these boxes are not often used by wild bumblebees, so they are not recommended by the All-Ireland Pollinator Plan.

**Info Box:**  
Creating nesting habitat for bumblebees will help other kinds of pollinators, like butterflies and moths





# Solitary bee nesting

Of the 100+ wild bee species in Ireland, 80% are solitary bees. Solitary bees prefer to live alone (hence their name) instead of in the big colonies associated with honey and bumblebees. Solitary bees are harmless and not aggressive, and are excellent pollinators. They nest in two main ways; **mining bees** burrow into the ground, while **cavity nesting bees** use existing holes in hollow stems, wood or stone walls.



## Winter

The larvae then overwinter in a cocoon



Females and males emerge from hibernation



## Spring

After mating the female prepares a nest



The eggs hatch and the larvae eat the food left by the parent



Males and females die

## Summer

Female lays eggs and leaves a food supply of pollen.



## Autumn

# How to create nesting habitat for mining solitary bees



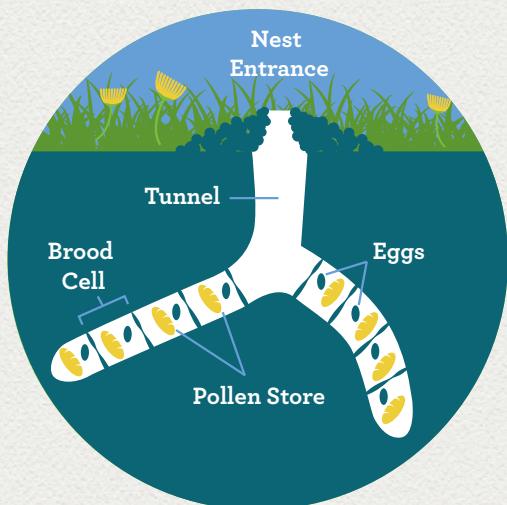
About 65% of Ireland's bee species are mining bees. These bees need access to bare soil in order to dig their nests. Females carve tunnels in the earth and build small walls to make a line of 'brood cells,' each with an egg and pollen. A mining bee's nest can look like an ant hole if it is on flat ground, or like a tiny tunnel dug into an earth bank. On sunny, warm spring days, look for bees returning to these nests with bright yellow pollen. If you see an active nest, try to protect it; avoid disturbing the area or spraying year round.

## A. Create earth banks/expose bare ground

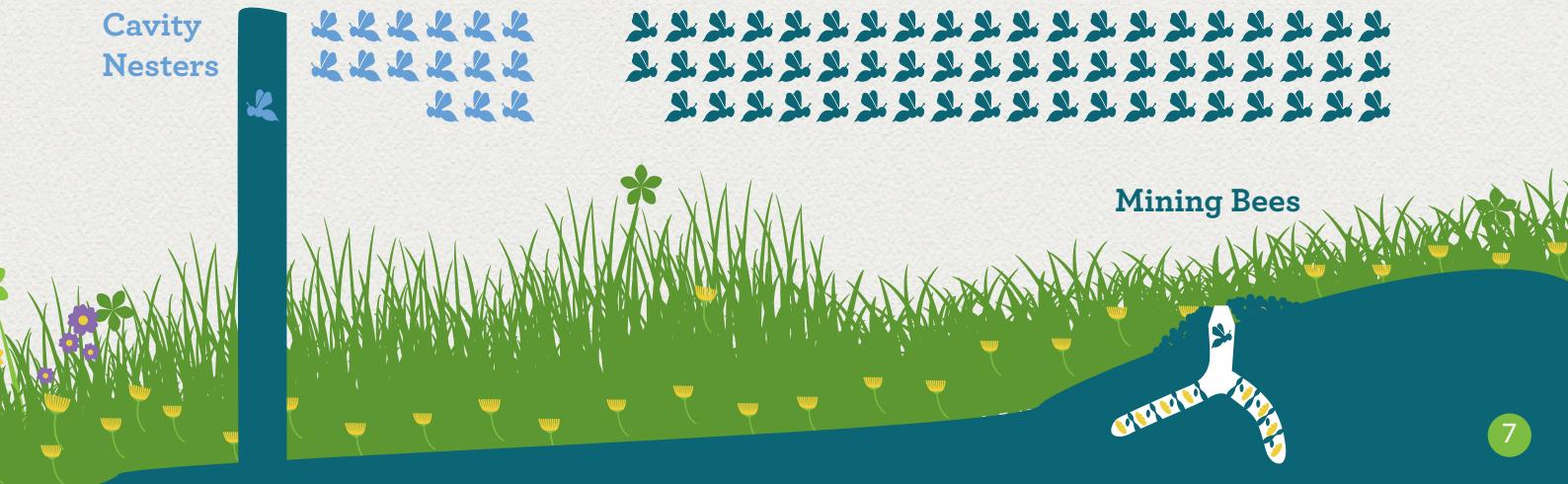
This is both the best and easiest action you can take to help solitary bees nest! Often ideal earth banks exist on verges, driveways, around the edges of sports pitches, at the base of hedgerows or even in gardens.

**1. Find a spot:** Choose an open, well drained, sheltered, sunny location. The soil should be gently packed, and south facing slopes are preferred. It's best to choose a variety of ground conditions from vertical banks, to flat ground- in order to attract different types of solitary bees.

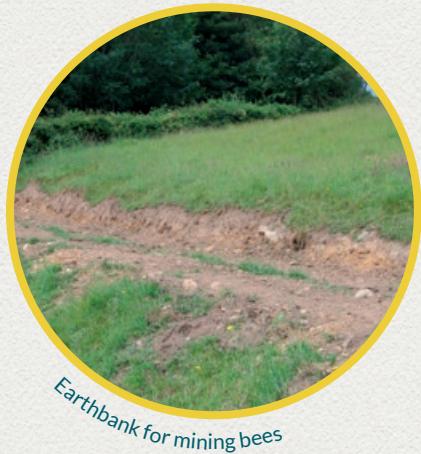
**Note:** solitary bees sometimes build



their nests near one another in aggregations. These bees are very gentle, but avoid creating solitary mining bee habitats right next to playgrounds to avoid aggregations in these areas.



**2. Creating the habitat:** using a spade, gently clear off any vegetation on the area. Remove bits of moss, grass, and anything that blocks the bee from getting to the soil. The area can be just about any size, but aim for a minimum of 10 by 10 cm. and up to 1 m<sup>2</sup>. The larger the area scraped back the better. It will save time clearing any overgrown grass.



Earthbank for mining bees

**3. Maintaining the habitat:** once a year clear any vegetation that has grown by manually scraping back the area to bare soil. Do this in late autumn, to avoid disturbing any nesting bees. Never use pesticides of any kind (including herbicides) on an area meant for solitary bee nesting.



Mining bee nest



Bare ground for mining bees



Smaller earthbank for mining bees



Mining bee nest

## Info Box:

It can take mining bees a while to find new nesting areas, so don't worry if your habitats aren't used right away. The bees are more likely to nest if there are flowers nearby.

# How to create nesting habitat for cavity nesting solitary bees

15% of Ireland's bee species are cavity nesters. These bees nest in dead stems, beetle-riddled tree trunks, cavities in stone walls and more.

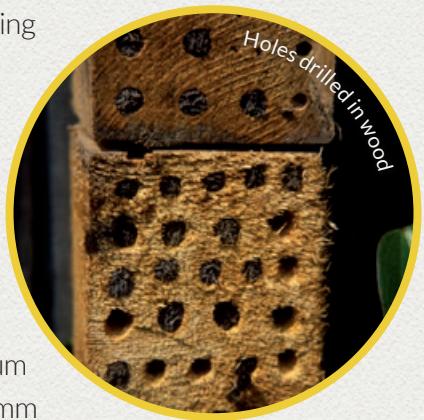
## A. Provide plants with stems bees nest in, like reeds or Bramble

Bramble is often cleared but this plant can be useful for some cavity nesting bees that use the stems as nest sites.

## D. Drill holes for cavity nesting solitary bees

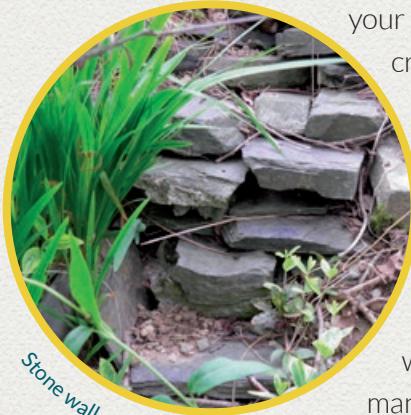
Solitary bees that like to nest in wooden structures aren't strong enough to carve their own nests. You can help them by drilling holes in untreated wooden blocks and attaching them to existing structures.

1. Ensure wood is free from treatment or preservatives (no varnish, stain, paint).
2. Using a drill, create holes in the wooden block; they should be at minimum 10cm in depth and 4-10mm in diameter. Create holes of different diameters to attract different types of bees. Make sure not to drill through the structure. Try to drill with the grain to avoid cracks.
3. Holes should be as smooth inside as possible to attract nesting solitary bees. Use a countersinking drill bit or sandpaper to ensure the holes are splinter-free.
4. Position the blocks at a height of 1-2.5m above the ground. Avoid north facing aspects.



**B. Provide and protect dry stone walls**

If you have stone walls on your property, the crevices may provide nesting habitat for some solitary bees. Avoid spraying these structures with pesticides; manually remove any unwanted vegetation instead.



## C. Leave logs and tree trunks in your property

Provide logs or tree trunks for solitary bees that nest in the tunnels created in these structures by beetles. Placing them upright will keep any nest sites dry, just be sure to put them in sunny, well-drained areas.

## E. Create or buy bee hotels





## Tips on bee hotels

- 1 Ensure there are flowers close to your hotel.
- 2 Position 1-2.5m above ground and avoid north facing aspects.
- 3 Bee hotels should be small (the size of an average bird box). Large bee hotels can encourage the spread of disease and attract predators.
- 4 Buy or make hotels with a sloping roof on top to ensure it stays dry during rainy weather.
- 5 Do not hang your bee hotel near bird feeders so the nesting bees will not be easy targets for hungry birds.
- 6 If your nest is not occupied within two years, move it to a different location.
- 7 If you have an active nest, after four years put a second nest next to the active one. This way the bees will have somewhere to go when the original nest is no longer suitable.



*Homemade bee hotel\_Dara Stanley*

### Info Box:

You will know your nest is occupied if the entrance holes are plugged with pieces of leaf or with mud





# Creating nest sites for other pollinators

Bees are our most important insect pollinators, but other species also make an important contribution. Of these, hoverflies, other flies, and moths are most important.

## Hoverflies

There are around 180 hoverfly species in Ireland. Hoverfly larvae are very varied, and they have different feeding habits. Many eat aphids and other pests, others have an aquatic life in water (including stagnant), and others feed on decaying plant materials.

Top tips to help Hoverfly larvae:

- Create a new pond, non-draining ditch or a wetland feature.
- Provide shallow water, wet mud, wet mosses, and semi-submerged woody debris.
- Leave some dead trees and wood, as they are valuable to the larvae of pollinators such as Drone flies.

## Moths

Many moths are important nocturnal pollinators. They complement the work of daytime pollinators and help keep plant populations diverse and abundant.

Butterflies and moths lay their eggs on plants, trees, and shrubs known as host plants. These plants provide food and shelter once the caterpillars emerge. Grasses and plants like nettles and docks can be very important host plants for caterpillars. Having areas that you allow to grow wild can provide important nesting habitat.





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

Help us to build up the knowledge of biodiversity in your local area by submitting sightings to [records.biodiversityireland.ie](http://records.biodiversityireland.ie)

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