



How-to-guide

Creating wild pollinator nesting habitat

National
Biodiversity
Data Centre



Documenting Ireland's Wildlife



All-Ireland
Pollinator Plan
2015-2020

Implementation coordinated by the



National Biodiversity Data Centre

www.biodiversityireland.ie/pollinator-plan

How-to-guide 1



Bumblebees returning to underground nest



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

You can provide homes for some of the island's most special, gentle and beautiful bees



Key points for creating wild bee nesting habitats

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

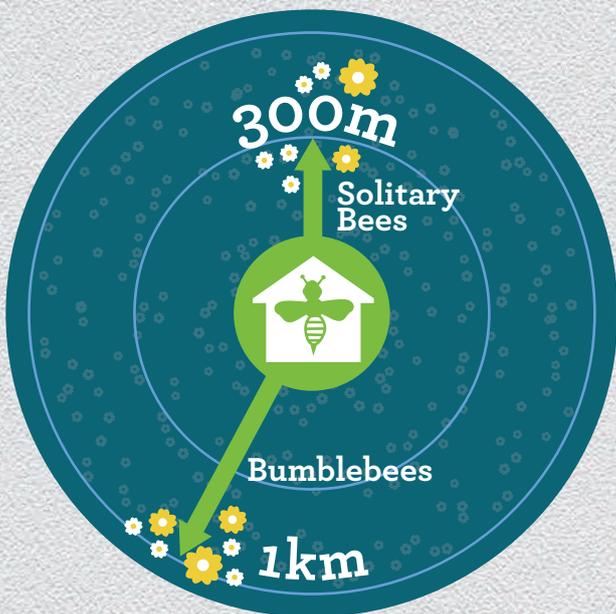
Nesting habitats are useless for bees if flowers are too far away. You may be surprised to learn that bumblebees need flowers within about 1km of their nests, and solitary bees will only travel a few hundred meters to find food!

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 bees. Of the 77 solitary bee species in Ireland, 10 at the most are likely to 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!

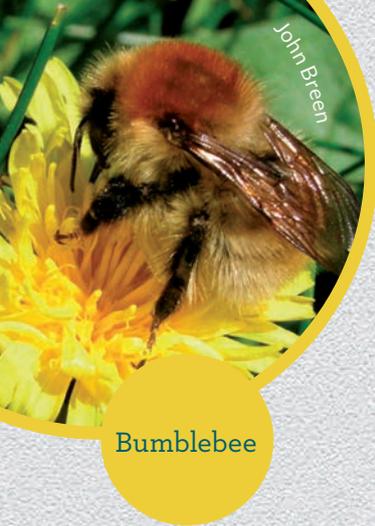
3 Protect nest sites, even when you don't see bees

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



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





Bumblebee

Bumblebee nesting

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

Queen emerges from hibernation

Spring



Forages on flowers and finds a nest site

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

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



Female workers emerge and take over nest duties, and the queen remains in the nest laying eggs

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

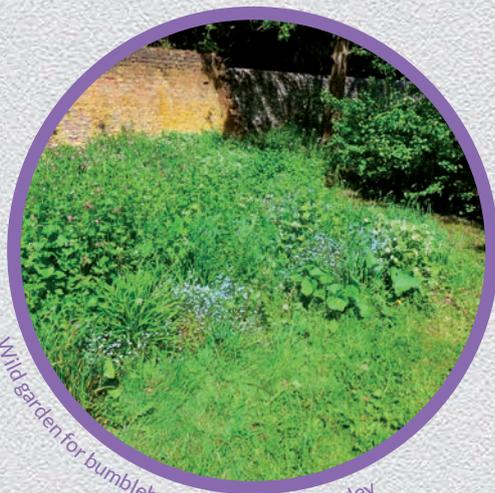


Hedgerow

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.



Wild garden for bumblebee nesting_Dara Stanley

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

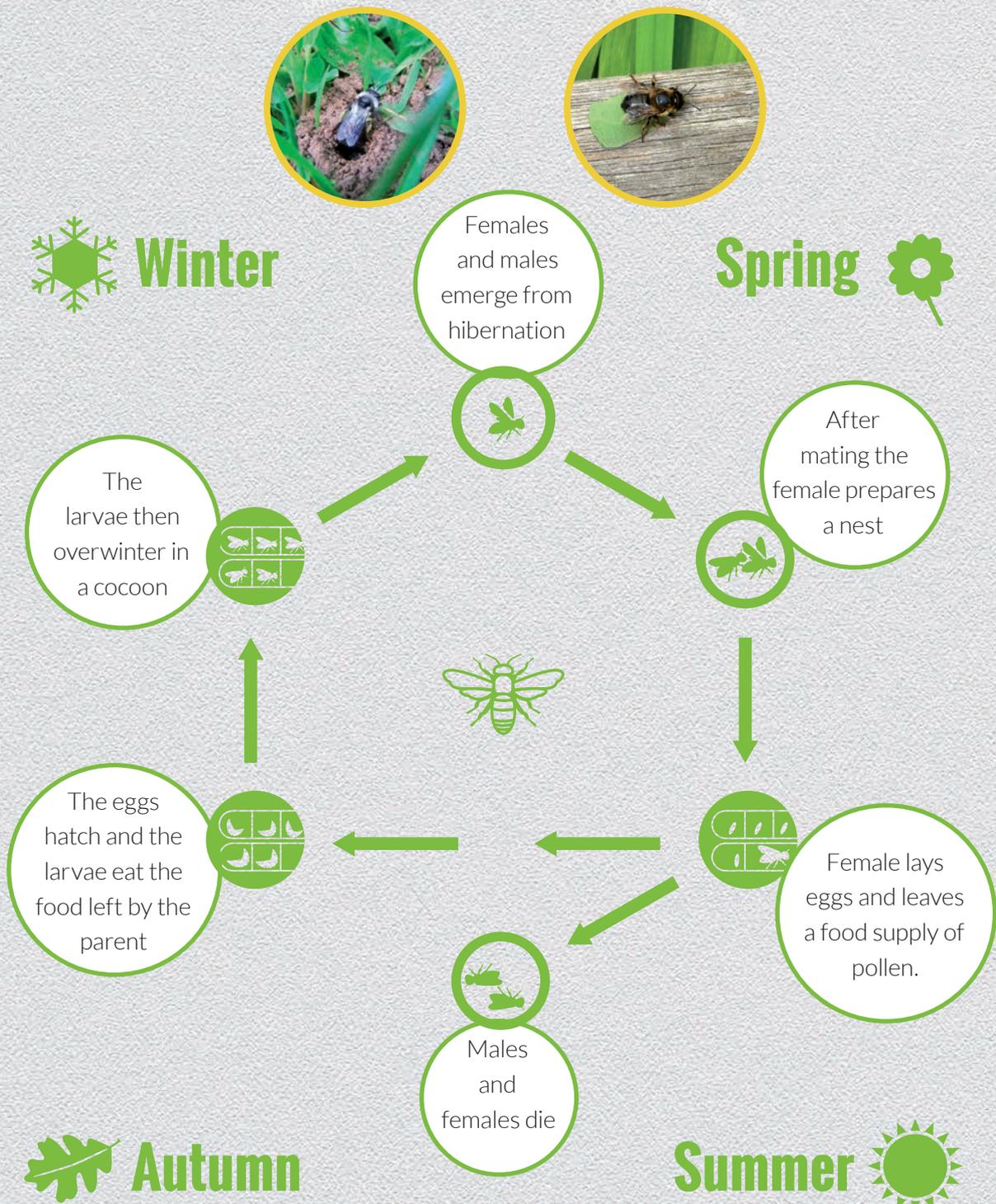




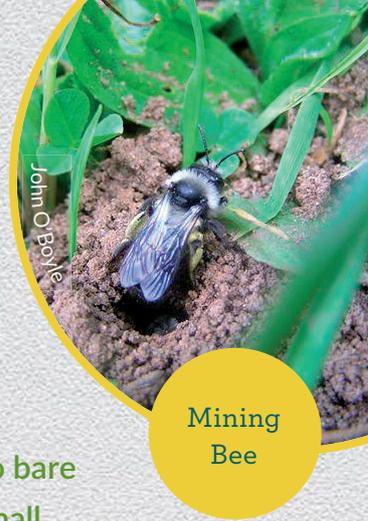
Solitary Bee

Solitary bee nesting

Of the 97 wild bee species in Ireland, 77 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.



How to create nesting habitat for mining solitary bees

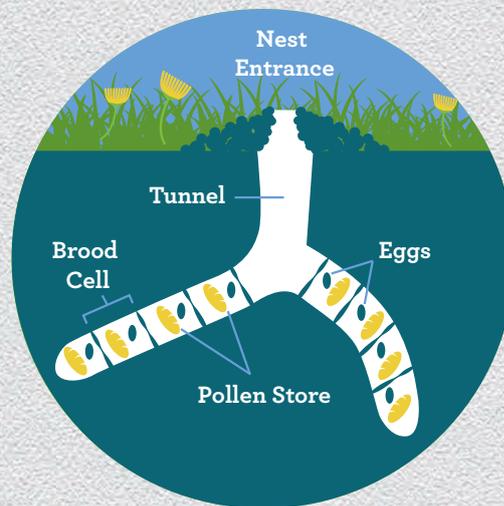


Over 60% of Ireland's bee species are mining bees. These bees need access to bare soil in order to dig their nests. Females carve tunnels in the earth and build small walls to make a line of 'brood cells,' each with an egg and pollen. A mining bee's nest can look like an ant hole if it is on flat ground, 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, 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 aggregates. These bees are very gentle, but avoid creating solitary mining bee habitats right next to playgrounds to avoid aggregates in these areas.

15 + 62 = 77 Solitary Bees

Cavity Nesters



Mining Bees

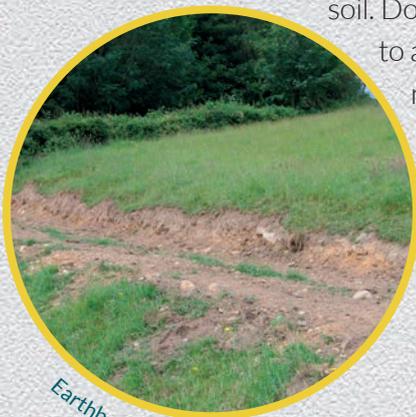


2. Creating the habitat: using a spade, gently clear off any vegetation on the area. Remove bits of moss, grass, and anything that blocks the bee from getting to the soil. The area can be just about any size, but aim for a minimum of 10 by 10 cm.

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.

B. Create sand pits/piles

You can create a sand pit 3 cm deep in a dry, well drained location and fill it with a mixture of sand and loam, or 35% sand and 65% soil. If the area doesn't drain well, consider creating a raised pit or pile of sand. While we know some mining bees prefer to nest in sandier soil, less is known about the effectiveness of artificial sand banks.



Earthbank for mining bees



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

Fifteen of Ireland's solitary 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.

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.



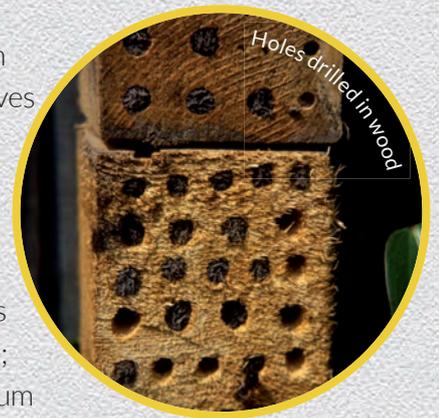
C. Leave logs and tree trunks in your property

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.

D. Drill holes for cavity nesting solitary bees

Solitary bees that like to nest in wooden structures often aren't strong enough to carve their own nests. You can help them by drilling holes in fence posts or other wooden structures.

1. Ensure wood is free from treatment or preservatives (no varnish, stain, paint); alternatively, attach untreated wood blocks to existing structures.
2. Using a drill, create holes in the wooden structure; they should be at minimum 10cm in depth and 4-8mm 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. The entrance holes should ideally face east or southeast, so they get the morning sun.
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. The holes should be as high up as possible, ideally 1.5-2m high.





E. Create or buy bee hotels

Bee hotels/nest boxes consist of tubes or cavities where bees can nest bundled together. These structures can be bought from many garden centres or online, but they are easy to make yourself (see the instructions on page 11 to learn how).

1. The tubes of a bee hotel can be made of many materials, but reeds, wood and bamboo are best.
2. Creating a few small hotels is better than one large one because it minimises the risk of disease and predators killing the bees.
3. Once you've made or purchased your bee hotel, you should place it in a sunny spot facing south or south east. The drier the hotel stays the better, so putting it in a sheltered spot, like under the overhang of a shed roof, is also a good idea. Bee hotels should be placed so that tubes are horizontal and well secured; they need to be hung at least 1.5-2m above the ground and should not be blocked by vegetation.

4. Remember, if your bee hotels are used by solitary bees, the offspring will not emerge as adult bees until the following spring. Don't disturb the bee hotel over winter so the bees can finish growing.
5. If you have bees in your hotel you may have to replace some of the materials in the following spring when all the bees from the previous year have emerged.
6. You can tell if your bee hotel is being used if there is activity around the entrance. It's also possible to see when a tube has been sealed off by a bee; leafcutter bees seal their tubes with a piece of leaf, while other species may use mud.



Homemade bee hotel_Dara Stanley

of the 77 solitary
bee species, only

10

are likely to use a
garden nest box





Making your own bee hotel

You will need:

- Reeds/bamboo stems: Use stems or tubes 4-8mm in diameter, minimum 10cm in length. Don't use plastic straws, as they are not the best nesting materials for many solitary bees. Try collecting reeds growing in marshy areas, or get them from a local thatcher. Bamboo is available at most garden centres, and you can hollow it out using a drill bit.
 - String or wire
 - A small piece of PVC piping or equivalent plastic or untreated wood container
 - Scissors or wire cutters
- Take a piece of string or wire and bundle the tubes together. Make sure the tubes are tightly secured, using a second piece of string or wire if necessary. You can stop here, and hang up your bundle of nest tubes.
 - **Optional:** If you want to better protect the nest tubes from rain and wind, enclose them in a container. A small piece of PVC piping or any other small plastic container will do.
 - Cut the front of the tubes so that they are approximately the same length as the container (minimum 10cm in length).
 - Now insert the tubes into the container with the open end facing out. Make sure tubes are packed tightly so they will be secure when the nest is placed outside.

How to make your hotel:

- First, make sure that make sure that one side of all of your tubing is closed; if working with reeds or bamboo, each tube should be cut on the "internode" in the centre of the section to create a natural end.
- Next make sure the open sides of the tubes are all facing the same way. Scatter tubes with different diameters and slightly different lengths throughout the bundle.

Top Tip:

Try putting a sloping roof on top of your bee hotel to ensure it stays dry during rainy weather



Top Tip:

Don't hang your bee hotel near bird feeders so the nesting bees won't be easy targets for hungry birds





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: Erin Jo Tiedeken & Úna FitzPatrick (National Biodiversity Data Centre)

Design: Vitamin Studio, Waterford

Thanks to Dara Stanley (National University of Ireland Galway) and Jane Stout (Trinity College Dublin) for input

Published: May 2016

Suggested citation: Creating wild pollinator nesting habitat. All-Ireland Pollinator Plan, How-to-guide 1. National Biodiversity Data Centre Series No. 5. Waterford, May, 2016.

An Chomhairle Oidhreachta
The Heritage Council



Bord Bia
Irish Food Board

Department of
**Agriculture,
Food and the Marine**
An Roinn
**Talmhaíochta,
Bia agus Mara**

Funding for implementation of the All-Ireland Pollinator Plan 2015-2020 has been provided by The Heritage Council & Bord Bia. Funding for the design of this guide was provided by the Department of Agriculture, Food and the Marine.

