

# All-Ireland Pollinator Plan

Junior Version 2015-2020

## Help save our bees





# Junior Pollinator Plan

This is a junior version of the All-Ireland Pollinator Plan 2015-2020. It is a collaboration between the Steering Group of the original Plan, WillFredd Theatre and The Ark. It is supported by Green-Schools and Eco-Schools.



This Plan was commissioned as part of the education programme accompanying the production BEES! A Musical, co-produced by WillFredd Theatre and The Ark in 2016.





# Foreword



In 2015 bee experts in Ireland came together to produce the All-Ireland Pollinator Plan 2015-2020. We decided to do this because we know that lots of our bees are in big trouble and could disappear from Ireland if we don't do something to help. Without bees we won't be able to grow our own fruits and vegetables, and our wild flowers will begin to disappear making Ireland a very dull place. We don't want this to happen. We want to hear the buzz of hard working bees carrying out their important pollination work. We want them to be there so that we can grow healthy food to feed you, and so that you can grow healthy food to feed your children someday. To stop bees disappearing from Ireland we need your help. We need you to tell everyone how important bees are. We also need you to make your school and garden a safe place for bees to live.

**Dr Úna FitzPatrick** (National Biodiversity Data Centre)  
Chair of the All-Ireland Pollinator Plan Steering Group

## **Acknowledgements:**

**Text:** Selina O'Reilly & Úna FitzPatrick

**Funders:** WillFredd Theatre, The Ark,  
Science Foundation Ireland & Wellcome Trust

**Design:** Vitamin Studio, Waterford

**Thanks to** Kate Ferris, Maria Fleming, Jane Stout,  
Meabh Boylan & Carmel Fyfe for input and to  
Shevaun Doherty for the front cover painting



# What is Pollination?

Pollination happens when pollen is moved from one flower to another

## And Pollen?

Pollen is the powder that flowers have inside. They use it to make new seeds which are tiny little baby plants waiting to grow. To make a seed, plants need to move pollen from one flower to another flower of the same type nearby. It's hard for flowers to do this because they can't move like you or me.

Instead, they have worked out lots of clever ways to get help. Some flowers have pollen that is so light the wind blows it from flower to flower. These are the plants that cause hay fever in summer as the pollen gets blown up your nose or into your eyes! Other flowers have bright colours and sweet smells so that they will attract a **pollinator** to help

### Fun Fact:

Most pollen is yellow but did you know it can be lots of different colours?



Bumblebee with pollen on its leg © Anneke Vrieling



### Joke:

What do you call an insect that's hard to understand?

A mumblebee!



# But What is a Pollinator?

In Europe most pollination is carried out by insects, especially bees. When you see bees and other insects buzzing around the garden they are adults looking for food. Bees have special hairs on their body that pollen gets stuck to. When bees get covered in pollen, they spit on their front legs and then brush the pollen into a sticky ball that they store on their back legs. They do this because the baby bees (larvae) back in the nest need to eat pollen to grow strong. Adults need lots of energy to collect all this pollen for their babies. They get this energy from nectar.

Nectar is the sweet, sugary liquid inside flowers and bees are crazy about nectar!

As the bee goes from flower to flower throughout the day collecting nectar and pollen, they are like a delivery guy, bringing the pollen from one flower to the next. And once a flower gets pollen from another flower of the same kind it can start to make seeds which will eventually grow into new plants. In return for their help, plants make lots of pollen so that the bees can bring the extra pollen home to feed their babies.

## Info Box:

Baby bees eat only pollen. It is very important that there are lots of different flowers in the countryside so that the adult bees can bring them back different types of pollen to eat.



## Fun Fact:

Other areas of the world have different pollinators. Did you know that many bananas are pollinated by bats? Chocolate comes from Cacao trees. They are pollinated by tiny flies called midges that are only 1mm long! In Ireland our main pollinators are bees and hoverflies.





# What's So Important About Pollination?

We know that pollination occurs when pollen is moved from flower to flower, and that it means the plant can make seeds. These little seeds will grow up into new

plants. We eat a lot of plants so it's very important that there are always enough to feed the people in the world. The plants we eat are called crops.



**DO**  
need bees for  
pollination

Strawberry



Apples



Pears



Pumpkins



Beans



Blackberries



**DON'T**  
need bees for  
pollination

Potato



Corn



Wheat



Bees are really important to make sure we keep on growing healthy and delicious food; so that when we go to the supermarket we can choose

from lots of fruit and vegetables – things would get pretty boring if it was just bread, rice and corn on the shelves day after day!





Lots of bees carrying pollen



*Osmia aurulenta* nesting in a snail shell © Micheal O'Donnell



### Did you know?

*Osmia aurulenta* (try saying that with a toffee in your mouth!) better known as the Gold-Fringed Mason Bee, likes hanging out at the beach and will only nest in empty snail shells!





# What is all the fuss about fruit and vegetables anyway? Why are they so important?

You need vitamins, minerals and lots of other super important stuff in fruit and vegetables to feed your body and brain as they grow. Food is like fuel for your body, and fruit and vegetables are jam-packed with all the good stuff (ice-cream, not so much 😊). If you eat lots of healthy, nutritious food, then you'll be better able to run, jump, do your homework and save the world (or whatever it is you get up to at the weekend).

can get? That's why it's important for us to help bees and other pollinators to do their jobs, because it means we get to eat the juiciest pears, the sweetest strawberries and the tastiest apples there are.

The number of pollinators buzzing around each year is getting less and less. We need to make sure none of these bees and insects disappear forever. It wouldn't be just our healthy lunchboxes that would suffer, others need bees too:



## **Joke:**

What bee is good for your health?

Vitamin bee!

Fruit and veg that are pollinated by bees and other insects have been discovered to be the best for you. So if you are going to eat a piece of fruit, then shouldn't it be the best fruit you





## Farmers

Lots of crops are pollinated by bees, and this helps the farmer with all the work that has to be done on the farm. If farmers had to pollinate the plants by themselves this would take too much time and cost too much money.



**Fun Fact:**  
Each year we are planting more and more crops that need to be pollinated by bees.

The next generation of GIY (Grow it Yourself) at work [www.giyinternational.org](http://www.giyinternational.org)



## Gardeners:

Lots and lots of people around the country grow their own fruit and vegetables on small plots in their back gardens, on allotments or in community gardens. They need bees to be able to do this. Growing your own food is a fun and cheaper way to get all your fruit and veg. Do you know anyone that grows their own food?

### Info Box:

For a strawberry flower to turn into a strawberry it needs to be visited five times by a bumblebee or 15 times by a honey bee. That's just for one strawberry! Apples need to be visited even more times.







## Joke:

Where do you  
take a sick bumblebee?

To the waspital!



## Animals and birds:

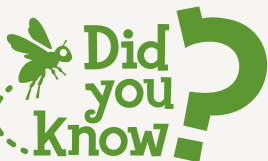
Lots of our animals and birds feed on fruits and seeds from wild plants that grow in the countryside. Without bees and other insects pollinating these wild plants, they wouldn't produce the fruits and seeds that animals and birds need to eat. Fruits are the part of the plant that surrounds and protects the seed.

## Other plants:

In Europe there are 264 crop plants that we eat. In Ireland alone we have another 2,300 flowers and trees that grow in the wild. They need to be pollinated too! We know that some of these wild flowers and trees provide important food for our animals and birds. They also provide them with shelter.

Wild plants like buttercups and daisies provide us with a beautiful, colourful place to live. Without bees pollinating our plants, our countryside would be a very dull and boring place.

We all understand how important it is to look after the environment and know all the things we can do to take care of our planet. Pollinators do lots to protect the environment too



We know that a bee will only sting you if you really upset it. But did you know that boy bees can't sting. Only the girls can.





# Are Pollinators In Danger?

## Yes!

A lot of our hard-working pollinators are in danger of disappearing forever (becoming extinct). Changes to their homes, the use of chemicals on our crops and nasty diseases spell trouble for bees and insects. We need to work to protect them or they may not be around for much longer.



### Large carder bumblebee

This gorgeous blonde haired bumblebee is fairly common in Ireland but there are less and less of them in Europe.



### Great Yellow bumblebee

Unfortunately this bumblebee is in danger of disappearing forever in Ireland. It's a very fussy eater and now only has 4 places in Ireland where it can make its home.



### Shrill carder bumblebee

This bumblebee is also in danger of disappearing from Ireland. It has a higher pitched buzz than any of our other types of bumblebee.







# A Bit About Bees

There are 97 different species (types) of bees in Ireland. We have one honeybee, 20 different bumblebees and 77 different solitary bees.



Honeybee collecting pollen © Jan-Robert Baars

The most important thing to know is that you shouldn't be scared of bees. To them we're just big boring giants that walk around their world. Unless you threaten them, bees will not attack humans.

They won't chase after you if you leave them alone. If a bee comes close to you, attracted by your bright colourful t-shirt, or the nice smell from your shampoo, just sit still and it will fly off when it realises you're not a flower!

The Honeybee and Bumblebee are probably the ones you know the best: Honeybees make honey from nectar and are happy to live in hives that have been

built by people. They store the honey and use it as food for themselves when it's too wet or cold to go outside. We love honey too and lucky for us Honeybees generally make much more honey than they can eat themselves – leaving the rest for us!

The Bumblebee is probably the most famous of bees (and cutest) with its fat, furry, stripy body. They are very important pollinators of crops like strawberries and tomatoes. So the next time you dig into a bowl of strawberries and ice cream, stop for a moment and think of the big bumbler that made it possible!



Shrill carder bumblebee © John Breen



**Joke:**

Where do bees go  
on holiday?

Stingapore!



Luke Beekeeping © Pauline Walsh

**20 + 77 = 97**

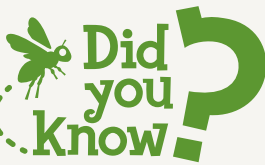
Wild bee species

Only **1**

Honeybee species

Bumblebee species

Solitary bee species



Honeybees talk to each other by dancing!  
When a bee wants to let its friends know  
where the best food is, it does a figure-of-  
eight dance called the waggle dance!







Inside a bumblebee nest © Leif Barry

# Life Cycle: Bumblebees

Most bumblebee queens come out of hibernation in early spring. Some types of bumblebees are fussy eaters and like to feed on flowers that grow in grassland meadows. These bumblebees have to wait until early summer to come out of hibernation so that the grassland flowers will be there when they wake up.

**Fact:**  
Just like birds, queen bumblebees sit on their eggs to keep them warm before the eggs hatch and the babies (larvae) emerge.

## Winter



## Spring



**1**  
The queen bee wakes up from hibernation. She has to sleep in winter because it's too cold and because plants don't flower so there isn't any food to eat.

**2**  
She has a big feed on the flowers close by and finds a good place for a nest.

**3**  
She makes a pollen loaf (food for the babies) and a nectar pot (snack for herself) and then starts laying eggs.

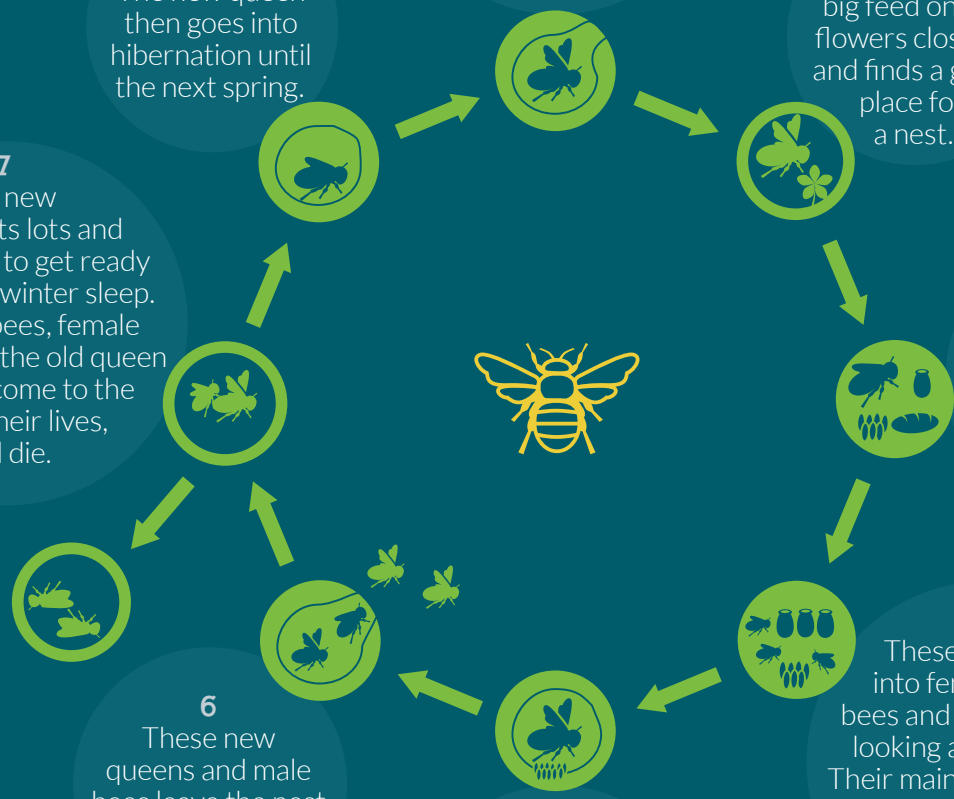
**4**  
These eggs grow into female worker bees and they take over looking after the nest. Their main job is to collect the pollen and bring it back to feed all the growing larvae (babies).

**5**  
In mid-late summer the queen lays more eggs, some will grow into male bees and some into new queen bees.

**6**  
These new queens and male bees leave the nest to go out and find new mates.

**7**  
The new queen eats lots and lots of food to get ready for her long winter sleep. The male bees, female workers and the old queen have come to the end of their lives, and die.

**8**  
The new queen then goes into hibernation until the next spring.



## Autumn



## Summer





# Life Cycle: Solitary Bees

Solitary bees are bees that live alone and not in a hive or nest like honeybees or bumblebees. They take a whole year to grow into an adult bee. This means they don't have time to look after their babies when they are born. Mum leaves a supply of food and the young bees need to look after themselves.

Solitary bees come out of hibernation when they know their favourite types of flowers will be there for them. Solitary bees that like to collect Willow pollen come out in early spring. Solitary bees that like Heather pollen wait until later in the summer.



Solitary leaf cutter bee © Steven Falk

**Winter** ❄️

**Spring** 🌸



Most solitary bees collect pollen from lots of different plant species - whatever they can find! A small number of solitary bees are very fussy eaters and will only collect pollen from one type of plant.

**Autumn** 🍂

**Summer** ☀️





## Other Pollinators Doing Their Bit

It's easy to think that bees and hoverflies are doing all the pollinating work, but did you know that butterflies, moths, beetles, wasps and ants like to feed on flowers and do their bit for pollination too? In fact, an Irish flower called the Butterfly Orchid is only pollinated by moths that fly around at night. Wonder why it's not called the Moth Orchid then, hum?

### Info Box:

The places where animals or plants live are called habitats.

## What Do Pollinators Need To Live?

Honeybees live in hives and are looked after by beekeepers. Beekeepers do an important job by keeping an eye on their hive and making sure the honeybees are happy and have enough to eat, especially over the winter months.

Bumblebees and solitary bees prefer to look after themselves. They don't live in hives but in nests that they make themselves. Bumblebees make their nests on the ground, hidden in long grass. Solitary bees nest in tiny burrows that they make in soil or wood.







It's very important that we help bees by providing habitats where they can live. These are areas where they can make a safe home and will have enough food (flowers) to feed their families.

Gardens, grasslands, sand dunes (keep an eye out next time you are at the beach), bogs, woodlands, parks and hedgerows are all very important. All these different kinds of spaces give the bees good places to nest and a choice of yummy things to eat – bees get bored eating the same thing for dinner every night too!



**Joke:**  
What kind of bees  
never die?

**Zombees!**





# Our Changing Environment

Bees and insects don't like change. They love routine and it is really important for them that the seasons (autumn, winter, spring and summer) come and go when they are meant to and that the climate (weather) stays the same. If the environment starts to change, then this can cause big problems for our insect friends. If the warm weather comes too soon, bees will wake up early from hibernation and because the flowers have not yet come out the bees will go hungry with no food to eat. Bees and insects find it hard to live in extreme weather like storms and floods, or snow and frost when it should be warm.



# What Kind Of Things Will The All-Ireland Pollinator Plan Do To Help?

The All-Ireland Pollinator Plan 2015-2020 is a plan of action. As grown-ups, we decided that bees need our help so we sat down and came up with a big list of 81 things we could do. Lots of different people have agreed to help. We're doing this because we know how important bees are and we don't want them to disappear from Ireland. Bees need flowers and safe places to live right across Ireland, not just in the countryside.

Here are some of the things we will try to do:

- Councils won't cut the grass along our roadsides as often so that flowers can grow amongst the long grass. Short grass looks neat and tidy but it doesn't provide anything for bees to eat – we know they need flowers
- Parks will plant flowers that bees love. This will provide them with healthy and nutritious pollen and nectar
- Parks will have areas where bumblebees and solitary bees can make their nests







Grown ups learning to identify different types of bees

Micheál holding a boy bumblebee. Don't try this without a grown-up who can tell boy bees from girls. Remember only girls can sting



 **Bees favourite colour is purple.**

- Farmers will try to make sure their farms have lots of flowers for bees to eat
- We will try to use fewer and less harmful weed and pest killing chemicals that can make bees sick
- We will help beekeepers to have lots of healthy hives of honeybees
- Scientists in Ireland will try to understand bees better so we know exactly what they need to stay healthy
- We will teach as many people as possible to identify the different types of bees we have in Ireland so they can help us count and check they are all doing OK
- We will produce a bee friendly map of Ireland showing areas where people are doing something to help bees
- We will try to tell as many people as possible how important bees are and what they can do to help



**Joke:**  
How do bees get to school?  
**In the school buzz!**

Roadside verges can look beautiful and provide important food for pollinators if we don't cut the grass so often © Donna Rainey





# What Can You Do To Help In Your School?

We need everyone's help. We need you to make sure your school becomes bee friendly. Some things you could do are:

Lavender



- 1 Plant lots of different flowers in pots or flowerbeds around your school. Your teacher will be able to get a list of what flowers bees like best. Try to make sure there are flowers to provide food for bees every month from spring through to the autumn. We need food every day – bees do too!

Willow



- 2 Plant a shrub that flowers in early spring – this provides very hungry queen bumblebees with lots to eat. Queen bumblebees have to visit about 6000 flowers every day when they come out of hibernation! Good shrubs are Willow, Hazel, Broom, Berberis, Pyracantha, Mahonia.

Courgette



- 3 Grow some fruits and vegetables like strawberries, raspberries, peas, courgettes or apples. Their flowers will provide food for bees in spring and early summer. In return you'll get healthy nutritious food. We know that you might be on your summer holidays when the fruit and vegetables are ready, but birds will be happy to eat them if you don't!

Dandelion



- 4 Let it grow! Bees love weeds like dandelions, so let them grow instead of cutting them. If you have areas of grass around the school, ask if you can leave strips or small patches uncut until late summer. The grass will grow long but flowers like Dandelion and Clover will also grow and provide food for bees.

- 5 Provide some safe places for bumblebees or solitary bees to make their nests:
  - a. If your school is in the countryside you might have some hedgerows. Bumblebees love to make their nests in long grass at the bottom of hedgerows.

Bare soil bank



- b. Most solitary bees will burrow into banks of bare soil to make a little cosy nest. They like these banks to be south facing so the sun warms them up in the morning. You might have some areas around the school where you can scrape back some grass to create a bare bank of soil.



Solitary bee nest box



Drill holes in wood



Bumblebee



- c. Other solitary bees like to nest in holes in wood. Bee's teeth are strong enough to burrow into soil but not into wood so we have to make these holes for them! If there are wooden fence posts around the school drill small south/east facing holes for solitary bees to make their nests in. These holes should be 10cm in depth and 4-8mm diameter. A range of different diameters is best. Ideally the holes should be drilled at a height of 1.5-2m (or as high as possible).

- d. Make some solitary bee nest boxes and put them up around the school. Your teacher will be able to get instructions on how to do this.

- 6 If you find a nesting or hibernating bee in areas like long grass, bare soil or wood around the school, don't disturb it. Just leave it alone so that it can carry out its important pollination work. If your classmates are scared of bees, try to reassure them that they aren't frightening and don't want to harm us.

- 7 Don't use chemicals (pesticides) to kill weeds or pests around the school. These can be harmful to bees and make them sick.

- 8 Tell all your friends and family how important pollinators are. Talk to your teacher and see what projects you can come up to help our bees and insects.

- 9 If your school is working on the Green-Schools' Biodiversity programme, you can use your Habitat Map activity to identify what plants on your school grounds are good for bees. From these findings you can include some or all of the actions above in your "Action Plan" step. You could also do a Bumblebee Survey in Year 1 (between April and June) and again 12 months later as part of your "Monitoring and Evaluation" step to see how your actions are making a difference to the number of visitors buzzing and bumbling around your school!

- 10 Eco-Schools in Northern Ireland can help you look after bees as part of the Biodiversity topic. Develop a special bee friendly area in your school with flowers for food and homes for bees. Keeping a count of bees you see as you develop your biodiversity area can help with your Eco-Schools monitoring step. There are lots of great ideas on the Eco-Schools website [www.eco-schoolsni.org](http://www.eco-schoolsni.org) - See what other schools have been doing in our Case Study section and look in the Partners page for useful environmental organisations and Council contacts in your area who will be happy to share the buzz about bees! Looking after bees could help you work towards your Green Flag award.

Learning



[www.greenbeeducation.com](http://www.greenbeeducation.com)



# What Can You Do To Help In Your Garden At Home?

## Joke:

What do you call an insect that complains all the time?

A grumblebee!

At home you can do the exact same things to make sure your garden is bee friendly. It doesn't matter if you have a large garden or a small garden – it can become a place where bees want to live or just to visit for a snack. Even if you only have a window box you could make sure to plant it with flowers that bees like.

Tell your parents about how important pollinators are and how we can help them. If your parents are really interested maybe they can go onto the website where they'll find out more information and can learn how to recognise all the different types of bees that we have in Ireland. Lots of grown-ups help us by bringing their children on a 1-2km walk once a month from March

to October and writing down how many bumblebees they see. This helps us to keep track of what is happening. If the numbers of bumblebees goes down we know they are in trouble. We hope that if lots of you make your schools and gardens bee friendly then we'll see their numbers going up instead!

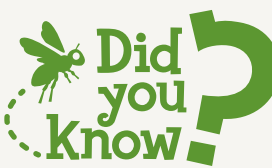


## Check Out These Links For More Information:

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

[www.greenschoolsireland.org](http://www.greenschoolsireland.org)

[www.eco-schoolsni.org](http://www.eco-schoolsni.org)



Attention Harry Potter fans; did you know that Dumbledore is an old English term for bumblebee.





## Joke:

Why couldn't the butterfly go to the dance?

Because it was a mothball!

# Some Important Words:

**Crops:** Plants that are grown in large amounts by farmers for food, for example potatoes, apples or wheat.

**Extinct:** A plant or animal that is no longer in existence – they have disappeared completely from the world. Extinct in Ireland means it has disappeared completely from the island of Ireland.

**Habitat:** The home of an animal, insect or plant.

**Hibernate:** The long sleep taken by many animals and insects during the winter. Hedgehogs and bees hibernate.

**Hive:** The home that honeybees live in.

**Honey:** A sweet, sticky food made by honeybees. Great on toast!

**Larvae:** Baby insects – they look a bit like a caterpillar without any legs.

**Nectar:** A sweet liquid made by flowers to attract bees and other insects.

**Pesticide:** Chemicals sprayed on plants crops to stop insects from eating them and harming them.

**Pollen:** The yellow powder that flowers have inside. They use it to reproduce (have babies!) and make new seeds.

**Pollination:** Pollination happens when pollen is moved from one flower to another.

**Species:** The scientific name for a type of living thing. Examples of species are humans, badgers or frogs. There are lot of different types of bees in Ireland, so lots of different species.







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

