



Protecting rare pollinators: Helping the Large Carder Bee in your local community



National Biodiversity Data Centre
A Heritage Council Programme



Comhairle Contae
Fhine Gall
Fingal County
Council



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How-to-guide 9

This is the third guide produced by the All-Ireland Pollinator Plan on protecting rare species. These guides identify the threats to some of our declining pollinators and the actions that can be taken to protect them. This guide is specifically aimed at local communities who are willing to help the rare Large Carder Bee, where it occurs within their local area.

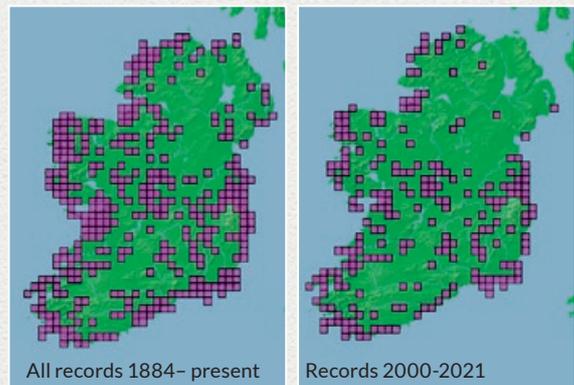
About the Large Carder Bee

The Large Carder Bee (*Bombus muscorum*) is a species of bumblebee, also commonly known as the Moss Carder Bee.

Where does it occur?

The Large Carder Bee is widely distributed throughout Eurasia, but has undergone significant decline across its range in recent decades. Populations occur from Ireland in the West, to Mongolia in the East. It is generally uncommon in all its continental locations but can be quite common in its maritime locations, especially along the Atlantic coasts.

In Ireland, the Large Carder Bee remains widespread but is generally rare in most locations. It is currently found in greatest density in coastal areas where flower-rich dunes, machair or grasslands remain. It also occurs on flower-rich bogs and heaths. Uniquely in Ireland, it can be found in urban environments, particularly in areas where there are large meadows in urban parks.



Source: <https://maps.biodiversityireland.ie/Map/Terrestrial/Species/56019>

Is Ireland an important location?

The Large Carder Bee has significantly declined across Europe. Globally, Irish populations are important, as Ireland is currently a stronghold for the species.

Tramore, Co Waterford

What is its life cycle?

Nests of bumblebees are started each year by an overwintered queen. She will choose a nest site and then construct and provision a nest from which the first generation of workers will emerge. From then on, the queen stays in the nest and is cared for by the workers who take on all the duties of nest maintenance and the rearing of the young. Workers are reared first, but then in summer males and new queens are produced. Once these leave the nest, the workers and old queen die, leaving only mated queens to survive the winter. The life cycle of *Bombus muscorum* follows this pattern, but it is a **late emerging bumblebee**. Nests are started in May or June and the new generation of queens and males appear in late July and August. Most other bumblebee species emerge from hibernation in February-March.

The Large Carder Bee is associated with flower-rich grassland habitats and emerges from hibernation slightly later to coincide with when this food source will be available. Late emergence means the bees have a shorter timeframe in which to complete their lifecycle and are exposed to a greater risk of failing to produce sufficient offspring if floral resources are taken away.

Where does it nest?

Nests occur above ground in tall open grassland. Carder bumblebees gather moss and dry grass to make the covering of the nest.

For a bumblebee, the Large Carder Bee has a **small nest size**, with between 20 and 100 workers. The life of the nest is short, about 3 months.



What are its favourite plants?

Based on bumblebee foraging data collated by the National Biodiversity Data Centre, we know that the Large Carder Bee will feed on a wide range of plant species, but the ten most important food plants are: Knapweed, Red Clover, Dandelion, Kidney Vetch, Bird's-foot-trefoil, Devil's-bit Scabious, Vetches, White Clover, Bramble and Thistles.

These are all native plants, and except for Bramble, will naturally occur in grassland meadows. They are the plants that return when we 'Don't mow, let it grow'. In bogs and heaths, heathers are an important food source.

The Large Carder Bee is unique in that it is a **doorstep forager**. This means that the workers visit flowers near to their nest more frequently than the workers of other bumblebee species. Studies suggest that it rarely travels further than 500m from the nest to feed, and most foraging takes place within 100m. This tendency means that the bee needs large areas of suitable habitat to survive. Or alternatively, smaller areas of habitat that are connected to each other through ecological corridors that allow the bee to move around.



Knapweed



Red Clover



Dandelion



Kidney Vetch



Bird's-foot-trefoil



Devil's-bit Scabious



Vetches



White Clover



Bramble



Thistles

Unique Irish variety

A unique form of the species occurs on the Aran Islands called *Bombus muscorum* var. *allenenllus*. It is very distinctive, having black hairs on the sides of the thorax. There are also a number of distinct forms associated with some of the larger offshore islands in Britain.

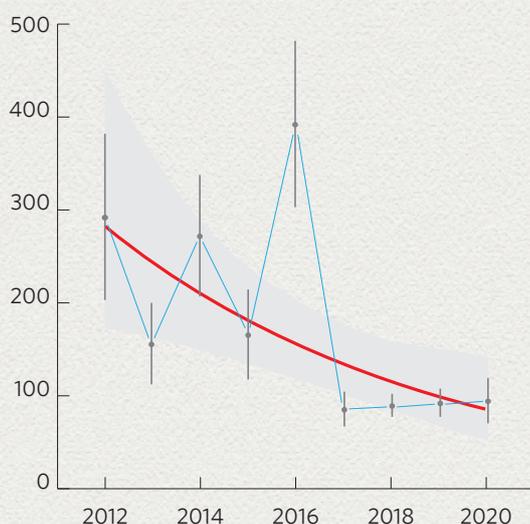


Bombus muscorum var. *allenenllus*.

Threats to the Large Carder Bee

Is it in trouble?

Bombus muscorum is listed as Near Threatened in the Irish Red List of Bees (2006) and as Vulnerable in the European Red List of Bees (2014). Unfortunately, the most recent data from the All-Ireland Bumblebee Monitoring Scheme shows an ongoing decline in the species.



Data from the Bumblebee Monitoring Scheme, run by the National Biodiversity Data Centre, shows an ongoing decline in the Large Carder Bee.

Why is the Large Carder Bee in decline?

The Large Carder Bee emerges late from hibernation and is dependent on native grassland plants. It has a naturally small nest size and does not travel far from its nest to feed. These factors make it more vulnerable to decline. It is in trouble because our landscape no longer contains enough of the habitats it requires for food, close to safe areas where it can nest.

Can the Large Carder Bee be safeguarded in Ireland?

Yes! We understand what this bumblebee needs, and why it is in difficulty. Any local community lucky enough to have the Large Carder Bee within their area can take simple and low-cost actions to ensure its survival. Unfortunately, data over the last decade shows that the bee is currently on a downward trajectory, so the need to act is urgent.

Will actions to protect it also benefit other rare species?

In coming together to help the Large Carder Bee, we will protect all pollinators as well as wider biodiversity. Specifically maintaining and creating species-rich grassland habitats will potentially benefit various other threatened species such as: Skylark, Red-shanked Carder Bee, Red-tailed Cuckoo Bee, Shrill Carder Bee, Northern Colletes Bee, Dull-headed Blood Bee, Dark Green Fritillary, Narrow-Bordered Five-spot Burnet.



Red-shanked Carder Bee



Dark Green Fritillary

A vibrant meadow filled with various flowers, including daisies and purple flowers, with a dense forest of green trees in the background. The scene is bright and sunny, with a clear blue sky. A large, semi-transparent white circle is overlaid on the image, containing the text.

Ten steps to protect the Large Carder Bee in your local community

The Large Carder Bee needs suitable nest sites and a supply of pollen and nectar throughout its lifecycle.

1 Learn to identify *Bombus muscorum*

The Large Carder Bee (*Bombus muscorum*) has a ginger thorax and an abdomen entirely covered with distinctive blonde hairs. Queens, workers and males all have this banding pattern.



The most likely confusion species is the Common Carder Bee (*Bombus pascuorum*). This very common bumblebee also has an all-ginger thorax, but it has a small ginger tail and some black hairs on the abdomen (i.e., the abdomen hairs are not entirely blonde). The Common Carder Bee can become faded with age, so check carefully.

2 Submit records when you spot it

When you spot *Bombus muscorum* please submit a record to the National Biodiversity Data Centre, either online at <https://records.biodiversityireland.ie/record/bumblebees> or via the smartphone recording app (Biodiversity Data Capture). It is also useful to record what flower the bee was feeding on so that we can continue to build up a national picture of the most important forage sources.



Common Carder Bee - small ginger tail and some black hairs on the abdomen



3 Identify any existing areas of suitable habitat

The most important habitats are tall and open flower-rich native grasslands. This might be flower-rich dunes, machair or grasslands.



4 Put up signs and plan to maintain and protect these areas



Where you have habitats, however small, that you know to be important to this species, put up signage and plan to maintain and protect these areas. For some areas, this might be in collaboration with others such as the Local Authority, the National Parks and Wildlife Service or the Office of Public Works.



5 Make sure you have safe sites for the bee to nest

Ensure that you leave some areas of undisturbed grass for nesting. These should be close to natural meadows and other flower-rich areas where the bees can feed.

6 Identify locations where you could create new habitats to better link existing areas

This is very important – if you were a Large Carder Bee, could you survive in your local area? Remember suitable habitats should ideally be within 100m of each other as the bee cannot travel far to feed. Habitats should be as large as possible. Where they are in separate areas, you should ensure that there are linking food corridors to allow the bees to move around. Over time, gradually create a linked network of suitable habitat.

7 Focus on creating new natural meadows through reduced mowing

The most important new habitat you can create are grassland meadows. Identify areas or verges that are currently regularly mown, but that could gradually be returned to a meadow, by one cut and lift each year in September. Be patient - remember it can take 7-15 years to move from areas of shortly mown grass back into a species-rich meadow if the soil is very fertile to start. There is lots of advice at www.pollinators.ie for creating and maintaining these meadows. Don't be tempted to sow a commercial wildflower seed mix. The bees need us to permanently return their natural habitats. The flowers that it needs are common species, and in allowing them to naturally return you get plants that are genetically adapted to your area and that are meant to be there. Doing this also retains our native grasses and supports the vast above and below ground biodiversity of meadows, in addition to just helping pollinators.



Don't mow, let it grow

8 Collect seed locally and use to boost naturally regenerated meadows where necessary

Once you have established meadows through reduced mowing, give them time to naturally develop. Check if they contain the top native food plants for the Large Carder Bee. If not, consider collecting some of this seed locally and adding it to boost the diversity of your existing meadow. You should only collect small amounts of local seed from your immediate area. In many cases this will not be necessary – nature will do it on its own.



<https://pollinators.ie/wordpress/wp-content/uploads/2018/04/How-to-guide-Seeds-2018-WEB.pdf>

9 Encourage local people to make their gardens pollinator friendly

Gardens can help create pit stops between the bees' main habitats. They are unlikely to nest in your garden, but they may use it to feed as they move around the landscape. Any pollinator-friendly garden plant will be beneficial, but based on Irish foraging data, the top gardens plants used by the Larger Carder Bee are:

- Lavender
- Phacelia
- Catmint
- Borage
- Comfrey
- Echium

Even one pollinator-friendly garden will be valuable, but where nearby gardens can come together to create food corridors, the positive impact will be magnified.

You can also positively promote the bee to others in the community and encourage them to get involved e.g., schools, sports clubs, faith communities.

10 Set up a bumblebee monitoring scheme walk in the area to monitor progress

Where you can, please consider getting involved with the All-Ireland Bumblebee Monitoring Scheme. This is a citizen science scheme run by the National Biodiversity Data Centre. It involves setting up a fixed route through areas where you know *Bombus muscorum* occurs. Once a month from March to October you walk the route and count the number of different bumblebees that you observe. This can be done together as a group. This will not only help us to understand how the Large Carder Bee is doing nationally, but it will also allow you to assess the impact of your actions locally.

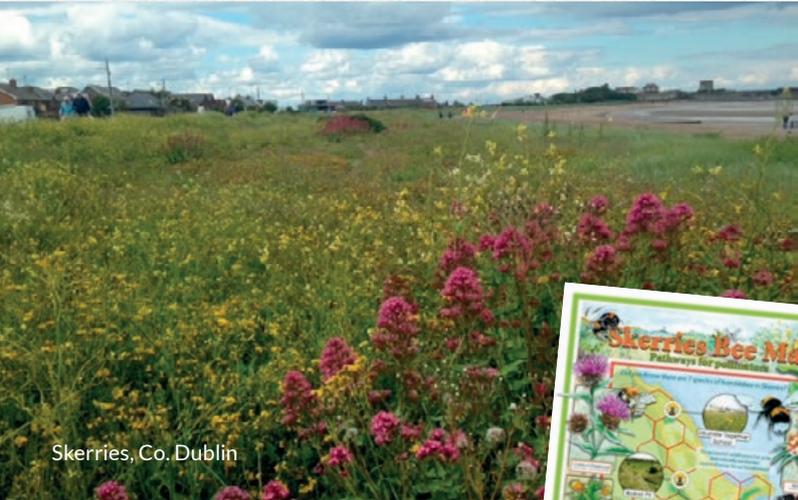
More information: <https://biodiversityireland.ie/surveys/bumblebee-monitoring-scheme/>



Large Carder Bee feeding on Lavender

Local Communities already taking positive action

Some communities are already coming together to help protect the Large Carder Bee in their local area



Skerries, Co. Dublin

Skerries

The local community in Skerries have been leading the way across the island.

Since 2019, Sustainable Skerries have been carrying out inspirational work, supported by Fingal County Council. They liaised with the Council to revise and reduce mowing regimes to establish biodiversity corridors in the town. They have propagated Kidney Vetch and Knapweed plugs from local seed and planted these in suitable locations. They flag the importance of public buy-in and education; and have carried out bee walks with school children, biodiversity walks for the public, talks and webinars. Sustainable Skerries have also been encouraging people to mow less and leave space in their gardens for biodiversity.

What they are doing is working! The Large Carder Bee has now spread to new areas and has already established itself in the area around Skerries Mills in the centre of town. Sustainable Skerries say this is only the beginning and they intend to continue protecting this rare bumblebee into the future.

<https://sustainableskerries.com/2022/06/17/skerries-bee-map/>

Tramore

Bombus muscorum occurs in the sand dunes at Tramore. Thanks to the work of the Tramore Eco Group and Waterford City and County Council, the town is becoming more biodiversity friendly. In 2022, the Large Carder Bee was discovered for the first time outside the dunes using natural long-flowering meadows created on roadside verges in the town. These meadows are managed through an annual cut and lift in September. The local community in Tramore have plans to further extend areas of suitable habitat across the town in coming years.



New long-flowering meadows for the Large Carder Bee in Tramore, Co. Waterford

Key references

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Large Carder Bee illustration by Shevaun Doherty

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



About the National Biodiversity Data Centre

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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

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