

# Winter active *Bombus terrestris* colonies in Ireland

## Winter active bumblebees

The normal lifecycle of most Irish bumblebees ends when workers and queen die off and the newly mated queens hibernate through the cold Winter months. However, in recent years, bumblebees have been seen foraging during Winter months in both Ireland and in the South of the UK. As of now, it is still not known for certain what exactly is causing this behaviour in wild bumblebees in Ireland and if it is an issue of concern.

To understand this behaviour, we plan to analyse the DNA of winter-active, buff-tailed bumblebee (*Bombus terrestris*) workers. To carry out this research, we are seeking volunteers to help collect some individual, winter-active *B. lucorum agg.* workers (as *B. terrestris* and *B. lucorum* workers are identical in appearance) between the months of November 2019 and February 2020. As most *B. terrestris* and *B. lucorum* (conservation status: “Least Concern”) colonies have a few hundred workers and each worker only lives for a few weeks, sampling a few individual worker bees should have a negligible effect on colony health and fitness.

Individual bumblebee worker samples will have their DNA extracted and this DNA will be amplified and sequenced. DNA will then be analysed for regions of their DNA or genetic determinants that are linked with bumblebee activity in Winter. This may indicate whether or not the behaviour is a result of the bumblebee’s genetic code.

Sightings of winter-active bumblebee workers would also be extremely useful to understand what species are forming winter-active colonies and if this behaviour is on the rise among Irish bumblebee populations. Sightings should be reported in the usual manner to the Biodiversity Data Centre.

### If reporting a sighting to the Biodiversity Data Centre, please include

- The date and location (co-ordinates) of sighting;
- The number of workers seen;
- Whether they had pollen baskets or not (in the comments section).

## Collecting bumblebee samples

### What to look out for:

Worker bumblebees indicate the existence of a functioning bumblebee colony. We are interested in sightings during November 2019 – February 2020 of small *B. lucorum agg.* workers, approximately 1 cm in size, with:

- One yellow/orange band on thorax;
- One yellow/orange band on abdomen;
- White to buff tail colour;
- Pointed abdomens. Workers may also have pollen baskets.

### Do not confuse with:

- New *B. terrestris / lucorum* queens coming out of diapause (these will be noticeably large i.e. ~2cm). These are the new queens of the coming season which will establish new colonies.
- *Bombus hortorum* workers which will have a second band on their thorax.
- Small newly emerged *B. pratorum* queens, which can be distinguished by **their red tail**.

Any container with a lid/cover that can be easily put in a freezer can be used to catch bumblebees e.g. empty butter carton, lunchbox, jam jar, or a clear glass. Bumblebees can easily be caught while they are foraging by placing the collection container, upside-down, right over the bee and slipping the lid on under the bee.

If you collect a bee using a container that can't be frozen, place the collected bee in fridge to cool it down and allow for easy transfer to a suitable, freezeable container (such as a lunchbox or a zip-lock freezer bag) and then freeze.

If you would like insect collection tubes to be sent to you, please contact [sarah.larryg.2019@mumail.ie](mailto:sarah.larryg.2019@mumail.ie).

#### Once collected:

- Label collection container or bag with date & location (co-ordinates);
- Freeze bee and insert some tissue paper in its container to keep bee dry. Keep bee frozen until samples can be collected or posted.
- Post samples to the following address:

*Sarah Larryg (Applied Proteomics),  
Dept. of Biology,  
Callan Building,  
Maynooth University,  
Maynooth,  
Co. Kildare  
Ireland*

	Worker	Queen
<i>Bombus pratorum</i>	~1cm long  X	~1.5 cm long  X
<i>Bombus terrestris</i>	1.1 - 1.7cm long  ✓	~2cm long  X
<i>Bombus hortorum</i>	1.1 - 1.6cm long  X	~2cm long  X