

Many wild and cultivated plants depend on insects to pollinate their flowers, with successful pollination leading to successful seed or fruit production. There are concerns that numbers of pollinating insects such as bees and flies may be declining, but we need more data to be able to track changes in abundance across the country. The Flower-Insect Timed Count (FIT Count) is designed to collect new data on numbers of flower-visiting insects, as part of a wider set of surveys under the [UK Pollinator Monitoring Scheme](#) (PoMS).



*Bumblebee on Bramble flower
(photo by Nadine Mitschunas)*

This document contains all the information you need to carry out a FIT Count. The Count is not difficult to do, but we need to collect data as carefully as possible so that it can be analysed to provide information on potential changes in insect numbers. Please do follow this guidance as closely as you can.

Planning your FIT Count

What will I need to carry out a survey?

- You need about 15 minutes of time – the count itself lasts for 10 minutes.
- Counts need to take place between the beginning of April and the end of September, in dry and reasonably warm weather, see weather conditions below.
- You will need to find a location containing a target flower species to watch during the FIT Count. This can be in a garden or park, in the countryside or on a nature reserve – anywhere that has suitable flowers can be used. See below for the target flower list.
- You need to watch insects in a 50cm by 50cm square patch – the easiest way to define this is to use a quadrat (see below).
- You are asked to take a digital photo of your target flower species, and on at least some of your counts to take photos of *examples of* the different types of insect you have seen.
- You can complete the survey and submit the results using the [FIT Count app](#), or you can use paper forms and then add your results to the PoMS website.
- Print out the recording form if needed, and make sure you have a pencil or pen to record your counts.
- If needed, print out the identification guides to plants and insects.
- If not using the app, please add your results to the [recording form on the PoMS website](#).

What weather conditions are suitable?

A FIT Count can be carried out at any time of day between the beginning of April and the end of September, as long as the weather is dry and warm:

- If sky is clear (less than half cloud) the minimum temperature for a count is 13°C
- If sky is cloudy (half cloud or more) the minimum temperature for a count is 15°C

Please do not carry out counts when the temperature is below the above limits. You are asked to provide simple information about the amount of sun and shade during your count, and the wind conditions.

What location can I use?

Your location can be anywhere where there are flowers to attract pollinating insects. An urban garden or park is suitable, or in more rural areas it could be on farmland, on a nature reserve – anywhere where suitable flowers are growing, where you have permission to be, and where it is safe to go (see the [Stay safe](#) section below). Your count results will be visible to others via the PoMS website, so when entering your results it is best to give a town or village name, not your full address.

You can carry out a FIT Count as a one-off exercise at any suitable site, but we are keen to have counts repeated on different dates and times at the same site, so places that you can easily gain access to (such as gardens or nearby parks) are ideal for this.

The target flowers

Which target flowers do I need to find?

Whenever possible we would like you to find one of the 14 flower species listed in the table below (see also the separate identification guide for the target flower species). You don't have to find a particularly large patch of the target flower, and the target flower can either be growing in a patch all of the same flower, or among different flower species. We ask you to record how many of your target flowers are in your quadrat to help us understand how many insects have been attracted to the flowers.

Main flowering time	Target flower name	Flower type
Apr to Sep	Buttercup – <i>Ranunculus</i> species	individual flowers
Apr to Sep	Dandelion - <i>Taraxacum officinale</i>	flower head
Apr to Jun	Hawthorn – <i>Crataegus</i>	individual flowers
Apr to Sep	White Dead-nettle - <i>Lamium album</i>	flower spike
May or Jun to Sep	Bramble (Blackberry) - <i>Rubus fruticosus</i>	individual flowers
Jun to Aug	Lavender (English) - <i>Lavandula angustifolia</i>	flower spike
Jun to Sep	Hogweed - <i>Heracleum sphondylium</i>	umbel
Jun to Sep	Knapweed (Common or Greater) - <i>Centarea nigra</i> or <i>scabiosa</i>	flower head
Jun to Sep	Ragwort - <i>Senecio jacobaea</i> and relatives	flower head
Jun to Sep	White Clover - <i>Trifolium repens</i>	flower head
Jul to Sep	Buddleja	flower spike
Jul to Sep	Heather - <i>Calluna vulgaris</i> or <i>Erica</i> species	flower spike
Jul to Sep	Thistle - <i>Cirsium</i> or <i>Carduus</i>	flower head
Sep	Ivy - <i>Hedera helix</i>	flower head

Please choose one of the flowers from the above list if you possibly can, but if none of these is available at your location you can choose another flower that is attracting insects. Ideally this will be a flower of a species that you recognise so that you can tell us which species you used, but if your only option is to use a flower that you don't recognise you can tell us that and provide a photo. (There is a list of flowers that attract good numbers of pollinators in an Appendix to the target flower guide document.)

Some of the plant names on our list of target species apply to groups of species, for example “knapweed” or “thistle”. These are groups of similar-looking plants that are attractive to pollinators, so you can choose any one of the group without having to worry exactly which species it is. However, if you do know the species please add that information to the recording form. See the target flower guide for more information.

For each FIT Count that you do, please add one or two photos of your target flower. This will allow us to double-check the flower species used for the counts. For distinctive species one photo of a flower will be sufficient, but for less distinctive species, or species that you are not sure of, please provide a photo of the flower and a second photo of the stem and leaves.

How do I use a quadrat?

You are asked to count the insects visiting your target flowers within a 50cm by 50cm square patch. The easiest way to do this is to set up a 'quadrat' to define the square. A quadrat can be made using stiff cardboard or wire, or



Using a quadrat with White Dead-nettle as the target flower

lengths of cane etc., cut to be 50cm on each side. Or you can make one using a 2-metre length of string, with knots tied in at each 50cm interval to allow you to arrange it in a square, or with folded gaffer tape (see below). It is also possible to buy 50cm quadrats (e.g. <http://www.nhbs.com/title/159625/q1-quadrat>).



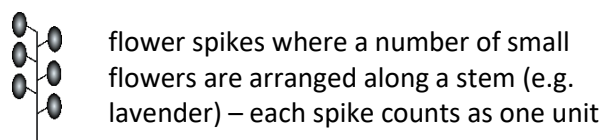
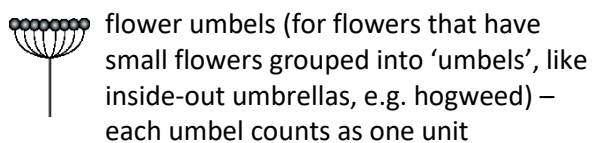
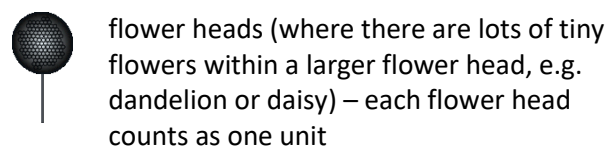
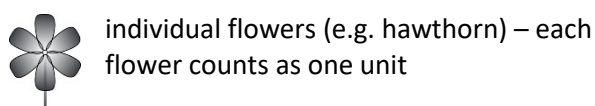
For plants growing at or near ground level the quadrat can be positioned over the area being counted, as shown in the photo above. For tall plants/shrubs, such as Hawthorn or Ivy, the quadrat can be positioned vertically or at a convenient angle in the shrub, as long as it clearly marks out the area of flowers that you are going to use for your count.

How many flowers?

We need to know two things about your target flowers:

- How much of your 50x50cm patch is occupied by the target flowers? – less than half the patch, half, or more than half
- How many of the target flowers are there within the 50x50cm patch?

To answer the second of those questions you will need to count the flowers, but different flowers need to be counted in different ways. Depending on the flower structure, you may need to count:



In some cases you may have very many flowers to count (e.g. in a dense patch of lavender). If so it is fine to make an estimate, e.g. by counting flower 'units' in a quarter of the quadrat and multiplying by four to get a total for the whole quadrat. Only count flowers that are reasonably fresh and that are likely to attract insects – 'dead-head' flowers and seedheads should not be counted.

See the separate target flower guide for more information.

Counting insects

How do I count and identify the insects?

The actual count should last for ten minutes – if you have a mobile phone with a timer or alarm that is an easy way to ensure you count for exactly the right length of time. You should stand close enough to the flowers so that you can see visiting insects easily, but try not to lean right over the top of the flower patch as this can prevent insects from visiting.

During the ten minutes, use a tally count (e.g. |||| ||) on your recording form to count every insect that lands on one of the flowers of your target flower species within the 50×50cm square patch:

- Only count insects that **land on** flowers of your target plant species, **within** the patch
- Tiny insects (up to 3mm long, including pollen beetles) should be counted as “Small insects under 3mm long” – there is no need to distinguish which insect group these tiny insects belong to
- If an insect is over 3mm long but you’re not sure which group it belongs to, it should still be counted, in the “Other insects” category
- Ignore insects that do not land, or that land on flowers of non-target plant species, or that land on leaves
- Ignore any spiders, snails or other non-insects that may occasionally be seen on flowers
- Occasionally you may find insects ‘hiding’ at the bases of flowers, but these should not be counted unless you saw them actively land on or move over the flower during your 10 minutes

You are asked to identify insects into different groups (e.g. bumblebees, hoverflies), and you do not need to say which actual species you have seen. Identifying insects into groups is not always straightforward: some are fairly obvious (for instance many people are familiar with what a bumblebee looks like), but others can be tricky (such as the smaller hoverflies and solitary bees). Refer to our insect identification guide for tips on what to look out for.

We do want you to count **all** the insects you see on the target flowers, but it is very likely that you will see some that you cannot confidently put into one group or another. That is absolutely fine, and there are two categories for “other insects”, where you can count insects that you can’t identify. There is one category for “Small insects under 3mm long”, where you can add estimates for some of the tiny creatures that visit your target flowers. These might include pollen beetles for instance, which are small, shiny black beetles, but any really small insects can be counted in this category. And there is an “Other insects” category, which is for any insect over 3mm long that doesn’t fit in to one of the main groups, or that you can’t identify or are unsure of.

In order to get consistent totals it is important that you count EVERY insect that visits the target flowers, even if that means putting a lot into the “Other” category!

Try to count each individual insect just once. For instance, if a bumblebee flies into your quadrat area and lands on a target flower, that counts as one bumblebee. If it then moves to another flower within the quadrat that does **not** count as a second bumblebee. But if another bumblebee flies in from outside the quadrat that **is** counted as a second bumblebee.

If you have a lot of insects flying in and out of your quadrat it can be very difficult to keep track of whether or not you are seeing the same insect over and over again, and we know that the counts won’t always be perfect. All we ask is that you do your best to count every insect that visits your target flowers, and to count each individual insect only once, during the ten minutes.



*For this Hogweed flower, your tally would be eight hoverflies and two other flies. If one or more of these subsequently visited another flower within your target patch, it should not be counted a second time, but if a 'new' insect landed on the flower it would be counted.
(Photo by Martin Harvey.)*

How are the identifications checked?

Everyone makes occasional mistakes when identifying insects, and this will be taken into account when analysing the data. To help us allow for possible misidentifications we ask you to provide some photos if you can:

- After you have finished your count, if possible spend a few minutes taking photographs of examples of the different insect groups that you have seen. There is no need to take a photo of every different species you see, but if you can provide one or two photos to show examples for each insect group that you record that will be very helpful. There is no need to take photos every time you do a FIT count, but if you are doing lots of counts it would be good to have some photos for at least some of the counts.

Sending in your count data

If you are using the FIT Count app the app will save all the information you need for you count, and you can choose to upload it immediately or save it on the phone and upload later.

If you are not using the app you should go to the PoMS website to enter your results. You do not have to register on the PoMS website, but if you do you will be able to go back to your previous counts and see the results, and edit them if needed.

On the PoMS website, you need to go to the FIT Count recording page, under the “Add your results” menu: ukpoms.org.uk/enter-fit-count

The website form matches the field recording form, so all you need to do is to transfer the information you wrote down in the field onto the online form.

Can I record any individual species that I recognise?

We do not need you to record particular species for the FIT Count itself, the focus here is on the species groups. But if you have identified any insects to species level, either during the count or at any time while you have been at your location, then we would encourage you to send in records to the recording schemes. We are liaising with recording schemes such as the Bees, Wasps and Ants Recording Society (BWARS), the Hoverfly Recording Scheme (HRS), and Butterfly Conservation (who are a project partner). Species records passed on to these schemes become available for analysis elsewhere in the Pollinator Monitoring Scheme.

In order to use records for conservation and research the recording schemes need to check that species records have been identified correctly, and a good starting point is to get a photo of the species you are recording, where this is possible. Not all species can be identified from photos, but they can often help to confirm your identification.

Records and photos of identified species can be added to the iRecord website (www.brc.ac.uk/irecord/). If you have photos of unidentified insects then you can often get help via Facebook, Twitter or the iSpot website. For further information on species identification and how to join in with recording scheme activities see the "Taking things further" on the PoMS website (ukpoms.org.uk/species-recording).

How many counts should I do?

All counts, even just a single one, are useful to the project and can be included in our analysis, so please don't forget to add your results via the website or app!

If you are able to carry out multiple counts during the year that would be fantastic, and will add value to your data when we come to analyse it. Ideally we would like counts that are repeated over time at the same location (or very nearby). You can use different flowers at different times of year (and it is fine to move the quadrat around a small area to target different flowers).

If you are able to carry out counts at several locations that is also very useful, but where possible we would prefer more counts at fewer locations, rather than single counts at lots of locations. If you are able to do one count a month, or one a week, throughout the April to September season that would provide a really good set of data to add to the project.

Stay safe

As a volunteer, you are under no obligation to participate or continue with this survey. Volunteers are responsible for their own health and safety, and should not put themselves in a position that could place them, or others, in danger. You should never undertake any activity if you have concerns about your own or others' health and safety. If you have any such concerns, you should stop the count. Please follow any current government advice for your area in relation to covid.

When selecting a location for a FIT Count we would ask that you keep to areas that are publicly accessible, or along public footpaths, or in locations where you have access arrangements with the landowner.

You can carry out the count at any location with suitable flowers, and there is no need to seek out remote sites. But if you are travelling away from home for your count, always leave a note of your whereabouts with a responsible person. This should include: a date and time of survey visit, expected time of leaving the site and return to home, and vehicle identification details. The person to whom these details are given should be told who to contact if you do not return and at what time to raise the alarm. If possible, do not work alone. It is advisable to carry a fully charged mobile phone in case of an emergency. Before undertaking any survey activity, every surveyor should consider the particular health and safety risks associated with their individual survey sites and whether their individual circumstances and medical conditions expose them to particular risks. Think about what precautions are needed to minimise risks, including wearing appropriate footwear and protection from the sun.

Who is organising this project?

The FIT Count is part of the Pollinator Monitoring Scheme (PoMS) within the UK Pollinator Monitoring and Research Partnership, co-ordinated by the UK Centre for Ecology & Hydrology (UKCEH). It is jointly funded by Defra, the Welsh and Scottish Governments, Daera, JNCC and project partners, including UKCEH, the Bumblebee Conservation Trust, Butterfly Conservation, British Trust for Ornithology, Hymettus, Natural History Museum, University of Reading and University of Leeds. PoMS aims to provide much-needed data on the state of the UK's insect pollinators, especially wild bees and hoverflies, and the role they fulfil in supporting farming and wildlife.

For further information about PoMS go to: ukpoms.org.uk

What happens to my data?

By adding your count results to the PoMS website or FIT Count app, you agree that:

- You accept the terms of use and Privacy Notices associated with the PoMS website and FIT Count app
- Note that data contributed to PoMS will be made available to the research partnership for use, modification and redistribution to further scientific research, as described in the terms of use and Privacy Notices.

Therefore, if you contribute to the Pollinator Monitoring Scheme, you grant the UK Pollinator Monitoring and Research Partnership permission to use your contributions in whatever way is needed to further this goal, trusting us to do the right thing with your data. However, you give us this permission non-exclusively, meaning that you yourself still own your contribution.



Defra project: UK Pollinator Monitoring and Research Partnership

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