



Bees & Heatwaves

Heatwaves pose significant challenges to many animals, causing them to adapt their activity patterns to avoid thermal stress. For instance, some animals shift their activities from daytime to dawn or dusk. However, it remains unclear if bees can adopt similar strategies during hot days. This project aims to uncover how bees, including bumblebees, honey bees, and solitary bees, respond to high temperatures and identify the plant species that support them during such extreme conditions.

With your help we will be able to answer the following questions:

- a) Do bees change their activity patterns in response to high temperatures?**
- b) Which plants do they visit during hot days?**

Your observations will provide valuable insights into how these essential insects cope with rising temperatures and inform conservation strategies to ensure their survival.

The data collected through this project will enhance our understanding of the real-time impacts of heatwaves on bee populations and help create practical guides to support pollinators in a warming world, benefiting both current and future research.

Equipment

- Something to write with (e.g. pen, pencil).
- Data collection sheet.
- Something to take photos with.
- Outdoor thermometer/Thermometer App.



PROJECT KEY



Once a week during the summer months (Jun-Aug)



If you can ID bees and plants - 'Great!' - if not send photos to us!



You can do this in any green space that is accessible to you



Not labour intensive

Data collection

1) Choose your patch!

This can be in your garden, a park, an allotment etc. It just needs to be an area in which you have seen bees foraging on flowering plants and be around 2mx2m in size. Before data collection, visit your patch, mark it out so you can find it again and fill out the study site data sheet below. This way you will already know your plant species!

1) Observations

Below are the instructions on how to collect your data.

When?

- **Once a week from June to August**

Notes: If a heatwave is forecasted, please prioritise conducting your observations on one of the heatwave days, if possible. For example, if you typically collect data on Thursdays but a heatwave is expected on Friday, please adjust your schedule to record data on Friday instead. This will help us gather important data during heatwave conditions!

If you signed up after June, don't worry. You can record your data in July and August. As previously mentioned, all observations are valuable.

For each observation day, you will need to observe your patch 3 times a day for 5 minutes each time as follows:

- **Between 7am-9am (5-minute observation)**
- **Between 1pm-3pm (5-minute observation)**
- **Between 6pm-8pm (5-minute observation)**

During each observation, please fill out your data collection sheet found on the website. If you are unsure of the bee species, take a photo of it and send back to us with your results (labelled by the date and time). Remember: a count of 0 is also important!

3) Email us your data sheets!



Any questions? Contact us!

Email: buzzclub@sussex.ac.uk
Website: www.thebuzzclub.uk



FAQ

1. What if I don't know what the bee or plant is?

- Take a photo and send it to us to identify!

2. What if I miss one or more observations?

- No worries! Just continue observing as much as you can.

3. Do I have to identify the species for bumblebees, honey bees, and solitary bees?

- No. For honey bees and solitary bees, just write down 'honey bee' or 'solitary bee'. For bumblebees, please try to identify the species. You will be sent an ID guide to help you identify them.

4. What if there are too many bumblebees at once and I can't ID the species?

- Take photos of each if you can to identify later. If you can't do this write them down as 'bumblebee'. It is important to give an accurate count of how many bumblebees you see, over identifying the exact species. You can send us the photo for us to help with ID.

5. Where do we send our data?

- Send it to us via email.

6. What if multiple people in the household want to do this experiment?

- Send in two different sign ups.
- Choose different patches (can be in the same garden, park, etc.).

7. When should I start sampling?

- From the first week of June until the end of August, if possible!

8. Any top tips on how to sample and ensure accuracy?

- If there are too many bees at once, take photos so you have enough time to write down what plants they visit.
- Try not to record the same bee twice. For example, let's say during an observation session, you see two bees on borage and one bee on daisies. If one of the bees from borage moves to daisies, do not count it again. However, if a new bee arrives and perches on daisies, please record it as a new observation for daisies. If you're unsure whether you've already recorded that bee, don't worry! Duplicates can happen; just try to minimise them as much as possible.
- Prioritise 'number of bees' over 'bee species'.

9. What if I don't see any bees in my patch during the heatwave?

- Fill out all the other variables (time, temperature, etc.) and write "N/A" if there aren't any bees in your patch. This is very valuable data!



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Data sheet example

Name:				
Date	Time of recording	Temperature (°C)	Type of bee: Bumblebee (please write species - if unsure record as bumblebee and send us labelled photo); Honey bee; Solitary bee	Bumblebee activity: Feeding (nectar) or Collecting (pollen - identified by pollen on hind legs)
e.g. 15/06/2024	e.g. 08:30 am	e.g. 22 °C	e.g. Buff tailed bumblebee	e.g. Feeding on nectar
			e.g. Solitary bee	e.g. Collecting pollen
e.g. 15/06/2024	e.g. 02:00 pm	e.g. 32 °C	e.g. Honey bee	e.g. Feeding on nectar
			e.g. Garden bumblebee	e.g. Feeding on nectar
			e.g. Garden bumblebee	e.g. Feeding on nectar
			e.g. Solitary bee	e.g. Feeding on nectar
			e.g. Buff tailed bumblebee	e.g. Collecting pollen

Post code:	
Plant visited	Name of labelled photo (if taken)
e.g. Dandelion	e.g. IMG_01
e.g. Borage	e.g. IMG_02
e.g. Borage	
e.g. Borage	
e.g. Thyme	



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