

City-dwelling bumblebees enjoy a cooling breeze with their summer sun

September 9 2014, by Louise Ogden

Approximately 30,000 people participated in the project this summer, resulting in just over 4,000 bumblebee data entries from all across the UK. They were asked to record bumblebee sightings on lavender plants as part of EDF Energy's Big Bumblebee Discovery, a nationwide citizen science experiment in partnership with the British Science Association (BSA). The initial results were today announced (9 September) by experts from the Centre for Ecology & Hydrology (CEH).

Around 27,000 individual [bumblebees](#) were reported and the data has been converted to a standard rate, based on counts of five minutes in an average-sized lavender plant.

The findings are surprising, and challenge the expectation that suburban locations are best because of the diversity of garden flowers. The results suggest that areas of greater density of flowers were better for bumblebee sightings – a factor which is especially important in landscapes which generally have low densities of flowers, such as urban localities. In otherwise hostile city habitats, flowers such as lavender represent 'flower-rich oases' and so can support large numbers of bumblebees.

The analysis of the experiment has been led by Dr Helen Roy and Dr Michael Pocock from CEH, who also found that more bumblebees had been spotted in urban localities compared to suburban and rural localities.

The rate of observations of bumblebees was also higher when the weather was sunny and windy compared to other conditions. Although insects are heat-loving (thermophilic) they risk overheating at particularly high temperatures (especially large ones such as bumblebees), and can become inactive. Therefore, the findings suggest that the cooling effect of the wind means that bumblebees remain active in summer.

Dr Michael Pocock said: "We had some lovely warm days this summer, and the fact that when it was sunny more sightings were reported on breezy days suggests that a breeze has a positive effect on the activity of bumblebees and aided sightings on those days. We were surprised to see more observations in urban localities, as suburban gardens are often thought to be better. Planting lavender (and other flowers) in city areas could help to support populations of pollinators in those habitats."

The preliminary results, presented at the British Science Festival in Birmingham, focus on counts of, rather than diversity of bumblebees, which will be explored later by the researchers. As a result of the initial data analysis, the team at CEH found that there are challenges in identifying bumblebees in accordance with the standard colour group identification method; bumblebees are traditionally categorised into six colour groups by the colour patterns on their thorax and abdomen.

Dr Helen Roy said: "The number of people who have taken part in the Big Bumblebee Discovery is inspiring and their observations are extremely insightful. To contribute effectively to the scientific process, people need to be given the best tools and guidance. Our project has revealed that the traditional categorisation of bumblebees by their colour groups may not be as straightforward as previously thought, which is particularly valuable given the importance of pollinating insects and the Government's consultation on a national strategy for monitoring and protecting them. Understanding the experiences of citizen scientists is

extremely useful for the development of future projects where mass participation can aid the scientific process, and we are keen to explore the issue of bumblebee classification further."

Both Dr Helen Roy and Dr Michael Pocock, will continue to capture citizen science-derived data at the British Science Festival, by holding an event where they will work with families to test how accurately they are able to identify bumblebees in line with the traditional colour groupings.

The experiment is the first year of The Great EDF Energy Experiment, a five year commitment to engaging 100,000 young people into science.

Darren Towers, Head of Sustainability and Environmental Leadership at EDF Energy, said: "Getting young people engaged and interested in science is really important for ensuring the future of the UK's STEM talent. By getting young people excited about science now, and helping them to understand that the traditional stereotypes of a scientist don't exist, we can encourage more young people to not only engage with STEM subjects, but open their eyes to the possibility of working in science in the future."

Citizen science is a great way of engaging young people, and was the perfect model to help the EDF Energy Big Bumblebee Discovery not only try to answer a scientific question, but open [young people](#)'s eyes to how much fun science can be.

Katherine Mathieson, Director of Programmes at the British Science Association, said: "We want to position science as an accessible, fascinating and fun activity for everyone to get involved with, and have long supported citizen science as a fantastic way to do this. The success of projects like the Big Bumblebee Discovery shows that participating in scientific investigations can be hugely enjoyable, as well giving younger participants a unique insight in to the world of working in science."

Data from the experiment will continue to be analysed over the coming weeks by the scientists at CEH to help draw conclusions that could answer questions over the impact the changing bumblebee population could have on crop pollination. The full findings of the EDF Energy Big Bumblebee Discovery will be published in due course.

Provided by British Science Association

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