CASE STUDY

CUSTOMER

British Science Association and EDF

DELIVERABLE

About 4,000 reports of nearly 27,000 individual insects

OUTCOMES

13,000 children engaging with citizen science and bumblebee pollination

> *"The Centre for Ecology & Hydrology was instrumental to the success of the citizen science experiment. From the initial experiment design and development, participation in events and festivals... to data and results analysis... the scientific team ensured that the participating children were performing inspiring and engaging real science."*
>
> Amy MacLaren
> Director of Development and Communications,
> British Science Association

Building a buzz about citizen science

Partnering with the private and charitable sector to engage children with science and investigate bumblebee ecology

The challenge

Pollinators are central to our environment and economy – it is estimated that 80% of British plant species rely on insect pollination, and pollinators are estimated to contribute up to £650 million per year to UK crops. Pollinators are declining, however, with some of the most important species seeing a significant decline in populations over the last 20 years.

At the same time there is concern over the relative lack of interest that children have in science – one report suggests that by the age of 14 only about 15% of English schoolchildren are interested in a career as a scientist.

The Centre for Ecology & Hydrology (CEH) was commissioned to work as the academic partner on an experiment designed to address both these issues, both engaging students with science and investigating the ecology of pollinating insects: the Big Bumblebee Discovery, part of the Great EDF Energy Experiment.

The research

The Big Bumblebee Discovery had three main purposes: to explore how different landscapes affect bumblebee populations, to engage children with scientific research through a citizen science project, and to teach children about pollinators and their importance.

Centre for Ecology & Hydrology
NATURAL ENVIRONMENT RESEARCH COUNCIL

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> *"The initiative helped to inspire the next generation of budding scientists, engaging a truly impressive number of schoolchildren."*
>
> **Rob Cope**
> Director, Remember a Charity and member of the judging panel at the Business Clarity Awards 2015

CEH designed a method based on timed-counts of bumblebees visiting a focal plant, a lavender, and created six colour groups to assist identification. Log books, lavender plants and information on how to carry out the Big Bumblebee Discovery were then sent to 4,000 schools, and a rich range of material to support children's participation and learning was available from "The Pod" (the EDF Energy website dedicated to supporting environmental education in schools).

School children (and other people) were encouraged to follow a standardised protocol and to record the number of bumblebees visiting lavender flowers, as well as the time spent observing, the weather conditions and the proximity of the lavender to other flowers. They were asked to submit all the records through The Pod, and at the end of the season CEH integrated all the observations, assessed the accuracy of a sample of the submitted records, and analysed the impact of landscape context on overall bumblebee abundance.

The outcomes

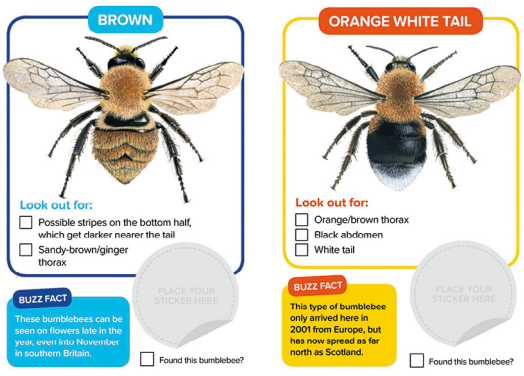
CEH engaged with about 13,000 school children in the Big Bumblebee Discovery, gathering 3,948 reports for a total of 26,868 individual insect sightings.

The project garnered a great deal of media interest, with CEH staff featuring in print media across the UK, as well as Channel 4 News and CBBC Newsround. The Big Bumblebee Discovery also won the Third Sector Business Charity Award for Charity Partnership (short-term) at the 2015 annual Business Charity Awards, being praised for the project's partnership and engagement.

The high participation rate indicates that this approach, of timed-counts of insects visiting a standardised lure plant, is potentially effective for engaging a large number of contributors, and demonstrated how future citizen science projects can increase the accuracy of reports. The high rate of misidentifications, however, in contrast to previous, optimistic studies of pollinator citizen science, highlights the importance of investing resources in training volunteers, and of verifying records through supporting evidence such as photographs. This would ensure the high quality data necessary for citizen science to be regarded as a scientifically valid method for enquiry.

In our capacity as scientific partner for the Big Bumblebee Discovery, CEH engaged with 4,000 schools, exposing thousands of schoolchildren to the world of scientific research and educating them about the crucial importance of pollinators.

Photo – Elizabeth Baxter



The CEH projects described here have multiple partners across the UK, Europe and worldwide that are too numerous to mention individually. Please visit our website for partner details.