

## **Plans for Scotland to participate in the COLOSS CSI Pollen diversity project**

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### **Introduction**

An international project for the assessment of the diversity of pollen available to honey bees began in 2013 in several countries in Europe and is now expanding to run for a further two years and to involve many more countries. This is the COLOSS CSI (Citizen Scientist Investigation) Pollen project, co-ordinated from the Netherlands and Austria. An initial two-day workshop was held at the Karl-Franzens-University of Graz in Austria, as reported by Norman Carreck in the March issue of "The Scottish Beekeeper". Representatives from 18 countries, including both authors as representatives for Scotland, attended this workshop, at which the running of the investigation was explained and the final details were agreed.

We have been able, with the support of the SBA and SASA, to get the CSI Pollen project underway in Scotland this year. It will run at least at Level 1 (described below). It involves recruiting volunteers to participate as Citizen Scientists, ideally from a variety of different geographical and climatic conditions throughout Scotland, so that the results will provide a good picture of how pollen diversity varies across the country. This article explains what will be required of volunteers and what the benefits of participating will be. We hope that many beekeepers will wish to take part.

### **What a volunteer must be able to provide and do**

Volunteers will provide information on pollen samples collected from their bees at each of up to 9 sampling times from April (if possible) to September.

Anyone participating as a Citizen Scientist in this investigation must be managing at least three colonies of bees which are kept in a single apiary and not migrated elsewhere. The volunteer will be asked to state where that apiary is located, so that the pollen samples obtained can be linked to the area where the bees are kept, and also to provide an email address for regular communication with the Scottish Project Co-ordinator, and with the International Co-ordinators.

The volunteers require three pollen traps which will be fitted to three selected strong colonies, but left open most of the time.

During each of nine 3-day long collection windows during the foraging season, the volunteer will be prompted by email to select a suitable 24-hour period, hopefully of fine foraging weather. During this period the pollen trap will be closed, and at the end of it a pollen sample will be taken for analysis and the trap then opened again. Analysis by the volunteer will involve counting the number of different colours of pollen present, and should take no more than an hour or so on each occasion. Details of the analysis will then be entered into an online questionnaire, which will automatically add the data to the central database managed from Austria.

This is Level 1 of the project. More detailed instructions will be provided for volunteers taking part in the project so that they know exactly how to proceed.

Level 2 of the project involves detailed laboratory analysis of the collected pollen samples. If we can obtain access to suitable laboratory facilities to run the project at Level 2 also, then the volunteer Citizen Scientists will deep-freeze their pollen samples, in packaging to be provided, after the visual inspection, and at the end of the season these will be posted to the lab for analysis. We are currently investigating the possibilities for participation at Level 2 and hope that this will be possible.

### **What a volunteer will gain from this work**

The volunteer Citizen Scientists will be part of a large network of participants in this project across Europe. The most obvious benefit which the volunteer will gain is a much more detailed knowledge than most beekeepers have of how pollen abundance and diversity changes throughout the foraging season in the place where their bees are being kept. We shall have access to the data for Scotland. Full reports of the results for the whole of Scotland will be made available for all beekeepers in Scotland, including the volunteers. In addition, reports for much of Europe will be prepared by the International Co-ordinators, and will also be publicly available. Each country participating in the project will also have a CSI Pollen web-page for information on the project and other information thought to be of interest to the participants. Alison Gray will develop and maintain such a web-page for the Scottish CSI Pollen project.

If we are able to run the project at Level 2 also, the knowledge gained of pollen sources will be at a much more detailed level. The pollen samples will be analysed microscopically by an expert in the appearance of the different pollens deriving from the large variety of flowers on which bees forage. If this can be achieved, the beekeeper will really know whether his or her bees are foraging on willow, or dandelions, or heather or Himalayan Balsam etc at different times of year. This could lead to much improved management practice, and once these results have been collated and reported on, the really excellent areas of Scotland for the different honeys to be found will be identified much more reliably than they are at present.

Finally, the volunteer will have the satisfaction of knowing that a real contribution is being made to the welfare of bees in Scotland, by discovering those areas where bee forage may have been degraded by modern urbanisation and intensive agriculture, and measures to remedy these problems can be targeted better where they are really needed.

We already have contact details for beekeepers who have provided email information through participating in our series of regular surveys to collect information on colony losses in Scotland. We hope that some of these beekeepers may be interested in taking part in the CSI Pollen project. However we would be very pleased to hear from any beekeeper who would like to volunteer to participate in this project. Please email Magnus Peterson, National Co-ordinator for Scotland, at [magnus.peterson@strath.ac.uk](mailto:magnus.peterson@strath.ac.uk) to indicate your interest or to request further information.