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Conference Abstract

Let's talk about the (lady)birds and the bees: how insects can whisper a multitude of stories

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Abstract

If you have watched *A Bug's Life*, you would have seen that insects come in an assortment of colours, shapes, and sizes. They are the perfect organism that could be used to describe the myriad diversity of all life on earth. These six-legged creatures are one of the most diverse groups of species, accounting for more than 80% of all documented living animals Ødegaard 2008. This huge diversity also makes it extremely time- and labour-intensive to carry out large-scale monitoring of insects. High-throughput sequencing technologies and the use of DNA barcodes for species identification have paved the way for the rapid biomonitoring of insects Hebert et al. 2003. However, millions of insect species are not well-represented in DNA reference databases, making species-level identification challenging for molecular research. Projects such as the Darwin Tree of Life (DToL) aim to cover this gap and generate DNA barcodes for all eukaryotic species found in the UK Blaxter et al. 2022. At the Wellcome Sanger Institute, the *BIOSCAN UK for Flying Insects* project has two main aims;

1. Documenting the diversity of UK flying insects
2. Discovering insect-cobiont interactions

To meet these aims, we will be documenting the diversity of one million malaise-caught insects from 100 sites across the UK in the next five years. We will be using a non-destructive DNA extraction technique to preserve insect specimen integrity for museum

collections or educational purposes Korlević et al. 2021. COI barcoding will be carried out using ONT and/or PacBio long-read technology to identify each insect specimen. To tease apart insect conbiont interactions, we will carry out mini barcoding using primers targeting microbes, parasites, vertebrates, invertebrates, and plants Fig. 1. Together, this molecular dataset consisting of one million specimens collected over space and time in the next five years will allow us to discover how insects interact with the ecosystem and advance insect biomonitoring research in the UK.

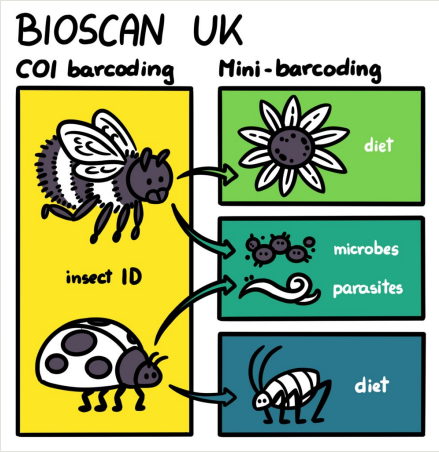

Figure 1. doi

Aims of the *BIOSCAN UK Flying Insects* project

1. documenting the diversity of UK flying insects through COI barcoding and
2. discovering insect interactions using mini-barcoding.

Keywords

BIOSCAN UK for Flying Insects, Darwin Tree of Life, mini barcode, symbiomes, species interactions

Presenting author

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Conflicts of interest

The authors have declared that there are no conflicts of interest.

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