

OCTAVIA BRAYLEY

MRes, BSc, AFHEA, MRSB

PhD Researcher, University of Birmingham & British Antarctic Survey

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EDUCATION AND RESEARCH EXPERIENCE

PhD in Biosciences, University of Birmingham & British Antarctic Survey

2022 - 2026

Thesis title: *Ecological Entomology in Antarctica*

Thesis submitted May 2026; viva passed September 2026 with minor corrections. Degree award expected December 2026.

- **Antarctic Diptera microbiomes:** Amplicon sequencing (DADA2) and multivariate analyses to (i) link microbiomes to soil biogeochemical change, (ii) characterise developmental shifts in *Belgica antarctica* and (iii) compare Antarctic and southern Chilean taxa to examine biogeography and evolution (competitive bursary funded).
- **Ecophysiology & evolution of the *Belgica* lineage:** Designed and conducted thermal, desiccation and salinity tolerance experiments in southern Chile to investigate evolutionary divergence and climate resilience.
- **Professional development:** Advanced statistics (mixed-effects models, PERMANOVA, multivariate community ecology), grant writing, science policy engagement, research integrity, open research and data collaboration.
- **Scientific publications:** Extensive experience in preparing, submitting and revising manuscripts for peer-reviewed journals, including coordinating multi-author contributions, addressing reviewer and editor comments, adhering to journal guidelines and managing publication timelines from submission through to acceptance.

British Antarctic Survey Advanced Training Course, Ny-Ålesund, Svalbard

2026

- Selected for an intensive interdisciplinary field course preparing early-career researchers for scientific fieldwork in polar environments.
- Undertook research vessel operations, marine and oceanographic sampling and glacier surveys using GPS and radar, alongside training in polar field safety, survival and logistics.

Master's by Research in Biological Sciences, University of Bristol

2019 - 2021

Thesis title: *The Effects of Light Pollution on the Circadian Rhythms of Intertidal Organisms*

Degree result: Pass (highest available classification)

- Designed and conducted field experiments on shore crabs to monitor circadian rhythms under different artificial lighting regimes.
- Data analysis expertise in MATLAB and coded Raspberry Pi cameras for time-lapse studies.
- Used photometers and optical spectrometers for precise light measurements.

Bachelor's in Zoology, University of Bristol

2016 - 2019

Degree result: Upper Second-Class Honours (2:1)

Final-year research project: *Mimicking the vertebrate eye; how the Lepidoptera use the 'sparkle' in their eyespots as an anti-predator mechanism* - **First-class mark**

Research Assistant in Molecular Palaeontology and Palaeocolour, University of Bristol

2017 - 2019

- Worked during my undergraduate studies with the palaeontology team that uncovered the true colours of dinosaurs by analysing fossil melanosomes. This work, which revealed vivid red, orange, and iridescent plumage in dinosaurs, was highlighted by *National Geographic* as one of the "Top 20 Scientific Discoveries of the Decade" in 2019.
- Isolated melanosomes from bird feathers using complex enzyme extraction protocols.
- Trained in scanning electron microscopy for independent sample preparation and melanosome identification, used to infer colouration of dinosaur feathers.

Research Assistant in Evolutionary Rescue and the Limits of Phenotypic Plasticity, University of Bristol

2018

- Contributed to a collaborative research project between the University of Bristol, University of Oxford and University of Catania investigating phenotypic plasticity in *Senecio* plants.

- Conducted controlled cultivation experiments and field research in Sicily to investigate phenotypic responses under different environmental conditions.

PUBLICATIONS

* Indicates multi-authored publications that are mainly my own work (first authorship).

1. *Brayley et al. (2026). Life stage changes in the microbiome of Antarctica's only endemic insect, *Belgica antarctica* (Diptera: Chironomidae). Revised manuscript under review, *Frontiers in Microbiology*.
2. *Brayley et al. (2026). Impacts of non-native invertebrates and plants on polar soil systems. *npj Biodiversity*, 5(18). DOI: 10.1038/s44185-026-00127-8.
3. *Brayley et al. (2026). The microbiome of an invasive Antarctic insect, *Eretmoptera murphyi* (Diptera: Chironomidae), and its potential role in nutrient cycling. *Microbial Ecology*, 89(66). DOI: 10.1007/s00248-026-02706-5.
4. *Brayley et al. (2025). Absence of *Wolbachia* in the sub-Antarctic midge, *Eretmoptera murphyi* (Diptera: Chironomidae). *Antarctic Science*, 1-6. DOI: 10.1017/S0954102025000197.
5. Brayley et al. (2024). Book chapter contribution in *Insects*, Royal Entomological Society, DK Publishing.
6. *Brayley et al. (2022). The biological effects of light pollution on terrestrial and marine organisms. *International Journal of Sustainable Lighting*, 24(1), pp. 13-18. DOI: 10.26607/ijsl.v24i1.121

AWARDS AND FUNDING

2026 - Exceptional Research Contribution Award for Doctoral Researchers (**Winner**), College of Life and Environmental Sciences, University of Birmingham.

2026 - Michael K. O'Rourke Best Publication Award for Life and Environmental Sciences (**Winner**), University of Birmingham.

2026 - University of Birmingham Biosciences Conference Fund: **£1,200**.

2022 - 2026 - NERC CENTA-DTP PhD Studentship: **£74,000**.

2025 - Antarctic Science International Bursary: **£4,100**.

2025 - University of Birmingham Research Festival, Poster Competition (**Third Place**).

2023 - CENTA Speed PhD, Best PhD Thesis & Viva (**Group Winner**).

2021 - Speaking of Science Conference, Committee's Choice Award for Best "Fire" Talk, Cardiff University.

2021 - Marine Biological Association Postgraduate Conference, Best Traditional Poster Award, University of Exeter.

2020 - Research Without Borders Festival, Outstanding Interdisciplinary Presentation (**Exhibition Winner**), University of Bristol.

CONFERENCES

Oral presentations

"Assessment of the archaeal and bacterial microbiome of an invasive insect, *Eretmoptera murphyi*, and its potential role in nutrient cycling on Signy Island, Antarctica."

- UK Antarctic Science Conference, 2024
- CENTA Conference, 2024 and 2025

Poster presentations

"The effects of a non-native chironomid, *Eretmoptera murphyi*, on nutrient availability in soils of Signy Island, Antarctica."

- European Geosciences Union, 2025
- British Antarctic Survey Student Symposium, 2024
- CENTA Conference, 2024
- Royal Entomological Society Ento23, 2023

REVIEWING EXPERIENCE

Conducted critical evaluation of submitted manuscripts, assessing scientific quality, methodological rigour, clarity of presentation and suitability for publication.

- **Journals reviewed:** *Antarctic Science*, *PLOS Computational Biology*, *Polar Biology*, *Proceedings of the Royal Society B: Biological Sciences*.

TEACHING EXPERIENCE

- Associate Fellow, Advance Higher Education Academy** 2025
- Awarded at the University of Birmingham in recognition of my reflective teaching practice, commitment to inclusive, student-centred learning and my effective use of evidence-based pedagogy.
- Guest Undergraduate Lecturer, University of Birmingham: Ecological Systems** 2024 - 2025
- Delivered undergraduate lectures aligned with module learning outcomes, incorporating current research and facilitating student discussion.
- Research Mentoring and Laboratory Training, University of Birmingham** 2022 - 2026
- Mentored undergraduate research projects in soil biochemistry and carbon cycling, providing guidance on experimental design, laboratory techniques, data interpretation and scientific writing.
 - Trained undergraduate and postgraduate researchers in biochemical laboratory techniques and soil analyses, including the use of specialist equipment and experimental protocols.
 - Provided ongoing practical guidance and troubleshooting to support independent laboratory research.
- Lab Demonstrator and Postgraduate Tutor, University of Birmingham & University of Bristol** 2019 - 2026
- Delivered undergraduate laboratory practicals, tutorials and small-group teaching across the biological sciences.
 - Assessed coursework and oral presentations providing constructive feedback in accordance with marking criteria.
 - Supported students in developing practical laboratory skills and applying experimental methodologies and protocols.
 - Undertook additional professional development in small-group teaching, academic writing instruction, international student engagement and inclusive teaching practices.
- Science Tutor: Bristol Tutors, Keystone Tutors, Justin Craig Education** 2017 - Present
- Provide individual and small-group Biology tuition across GCSE, IGCSE and A-Level curricula, including support for university and school entrance preparation, Oxbridge applications, personal statements and academic interview preparation.
 - Develop tailored teaching programmes to support subject knowledge, application and examination technique across multiple examination boards.
- School Governor, King Edward VI Handsworth School for Girls, Birmingham** 2023 - 2025
- Served on the Welfare and Curriculum Committees, contributing to school governance and oversight of educational provision.
- A-Level Examiner: Cambridge International Education & OCR** 2022 - 2024
- Assessed A-Level Biology examinations in accordance with standardised examination-board marking criteria.
- Master of Biology, Harrow School** 2021 - 2022
- Designed and delivered Biology teaching across IGCSE and A-Level curricula.
 - Delivered classroom teaching, practical instruction and assessment, supporting students across a range of abilities.
 - Designed and delivered an original super curricular module, *Life on the Ice*, providing academic enrichment in polar biology for students developing their wider subject interests and university applications.

SCIENCE COMMUNICATION & OUTREACH

- **Host, Polar Diaries Podcast (Ongoing):** Interview global polar scientists to make Arctic and Antarctic research accessible to audiences of all ages. Highly Commended, University of Birmingham Alice Roberts Award for Public Engagement in 2025.
- **International Lecturer (Ongoing):** Deliver polar wildlife lectures to audiences of 500+ aboard cruise ships.
- **STEM Ambassador (Ongoing):** Design and deliver interactive talks, workshops and mentoring programs for audiences ranging from school-age children to adults.
- **Co-Head of Education & Outreach, UK Polar Network (2023):** Led educational projects across the UK, including Antarctic flags and polar pen pal initiatives.
- **I'm a Scientist Get Me Out of Here (2023):** Winner for Excellence in Science Communication (£500).

PROFESSIONAL MEMBERSHIPS

- Association of Polar Early Career Scientists
- Royal Entomological Society
- Royal Society of Biology - Member (MRSB)