

# OCTAVIA BRAYLEY

I am a highly driven and motivated Ph.D. researcher at the University of Birmingham and British Antarctic Survey where I am investigating the ecological effects of a non-native species of insect on Signy Island, Antarctica. I am also a science tutor with six years of experience (inc. a former Biology teacher at Harrow School in Greater London), a school governor, STEM ambassador, and the co-head of education and outreach with the UK Polar Network. I am also the host of Polar Diaries podcast. I hope to have a career in research, science communication, and environmental policy.

## KEY SCIENTIFIC SKILLS

Academic writing, adaptability, attention to detail, communication, creativity, data analyses and statistics, experimental design, IT skills, leadership, organisation, problem solving, project management, research collaboration, resilient problem solving, science communication/public engagement, teaching, teamwork, time management, wet lab techniques

## CONTACT DETAILS

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UNIVERSITY OF  
BIRMINGHAM



British  
Antarctic Survey  
NATURAL ENVIRONMENT RESEARCH COUNCIL



KEYSTONE TUTORS  
TUTORING & EDUCATION CONSULTANCY



University of  
BRISTOL



STEM  
LEARNING



Polar Diaries



KING EDWARD VI  
ACADEMY TRUST  
BIRMINGHAM



HARROW  
SCHOOL



UK POLAR NETWORK

## EDUCATIONAL QUALIFICATIONS

### University of Birmingham

Biological Sciences Ph.D. (CENTA DTP) 2022 - current  
Title of project: *Insect responses to climate change in Antarctica and ecosystem consequences*

### University of Bristol

Biological Sciences MSc(R) 2019 - 2021  
Title of project: *The effects of light pollution on the circadian rhythms of intertidal organisms*

Zoology BSc 2016 - 2019 (2.1)

## PUBLICATIONS

Brayley O., Wakefield A., How M.J. 2022. The biological effects of light pollution on terrestrial and marine organisms. *The International Journal of Sustainable Lighting* 24(1): 13-18

Brayley O. 2022. Illuminating the problems of light pollution. *The Niche, British Ecological Society*

## JOURNAL REVIEWER

PLOS Computational Biology  
Polar Biology  
Proceedings of the Royal Society B: Biological Sciences

## CONFERENCES & WORKSHOPS

2023 - Royal Entomological Society Ento23 conference, University of Exeter. Poster presentation

2023 - CENTA Speed PhD  
*Group winner: Best PhD Thesis and Viva*

2021 - Marine Biological Association postgraduate conference, University of Exeter. Poster presentation  
*Winner: Best Traditional Poster Award*

2021 - Speaking of Science conference, Cardiff University. Oral presentation  
*Winner: Day 4- Committee's Choice Award Best "Fire" Talk*

## PUBLIC ENGAGEMENT ACTIVITIES

Host of Polar Diaries- a podcast where I interview polar scientists from around the world to promote research in the Arctic and Antarctic

International lecturer- I deliver lectures on polar wildlife to large audiences (often 500+) across the world on cruise ships

Co-Head of Education & Outreach with the UK Polar Network- I lead an innovative and dedicated education team who run the Antarctic flags and polar pen pal projects, design educational resources for secondary school students and organise a diverse range of outreach events

STEM Ambassador- I am able to share my passion for polar biology and inspire the next generation of scientists through various activities such as delivering workshops, giving lectures, creating educational resources, and mentoring GCSE students  
*Winner: I'm a Scientist Get Me Out Of Here (2023 Climate Zone)*

2020 & 2021 - Research without Borders. A multidisciplinary postgraduate festival, University of Bristol Doctoral College. Virtual presentation  
*Winner: 2020 exhibition*

2021 - Women in STEM Lily Newton Postgraduate Research Event, University of Bristol. Oral presentation

## PROFESSIONAL MEMBERSHIPS

Association of Polar Early Career Researchers, British Ecological Society, Royal Society of Biology, Royal Entomological Society

## RESEARCH EXPERIENCE

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### PhD in Biological Sciences

2022- Current

#### University of Birmingham & British Antarctic Survey (CENTA DTP)

##### *Biogeochemistry, Ecosystems, and Environmental Change research groups*

- Utilisation of complex biogeochemical methodologies and analyses to quantify various soil properties (pH and moisture), nutrients (carbon, nitrogen, phosphorous), gas release under different temperatures (carbon dioxide, methane, nitrous oxide), and microbial biomass using chloroform fumigation
- Detailed knowledge of calibration standards and chemical reagents needed to use industry-standard chemical analysers, including Shimadzu (TOC), Skalar Continuous Flow Analyser, Gas Chromatography System, and an Elemental Analyser
- Utilised accurate lab techniques to effectively store and separate live insect samples from soil, ensuring adherence to DEFRA regulation and licensing protocols when working with foreign soil
- I have so far attended two conferences and two symposiums
- I have completed a literature review on non-native arthropods, plants, and fungi in the polar regions and their effects on soil biogeochemistry which is currently being edited for journal submission
- Independently planned and researched future work and experiments, e.g., gut microbiome analysis
- Carried out various training courses and workshops, including science communication, university teaching methodologies, research integrity, research project management, microbial shotgun metagenomics, analysis of environmental omic data, grant writing, and advanced statistics

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

2019-2021

#### *Ecology of Vision research group*

- Independently designed and carried out animal behaviour experiments (including weekly fieldwork) to monitor circadian rhythms in shore crabs, *Carcinus maenas*
- Utilised and acquired training in a variety of technical and practical skills; animal husbandry (feeding of animals and maintenance of conditions in aquaria), data analyses using MatLab, coding of Raspberry Pi cameras for time-lapse experiments, use of a photometer and optical spectrometer for light intensity and wavelength measurements, and analysis of TEM invertebrate eye anatomy images
- Presented regularly in lab meetings, conferences, and public engagement events, requiring high levels of creativity and excellent communication skills to showcase my work to a range of audiences in engaging ways, e.g., through animations and social media campaigns
- Published a literature review (first authorship) in the International Journal of Sustainable Lighting which includes an introduction to a novel area of research on polarised light pollution

### Bristol Institute of Learning and Teaching, University of Bristol

2021

#### *Research Assistant & Project Manager*

- Utilised effective communication, organisation, and teamwork skills to manage the delegation of tasks and the supervision of the team to improve the feedback and assessment strategies in the department
- Gained training on ethics and thematic analysis to organise focus groups and analyse data
- A focus on working independently to research and bring resources together to create an online 'assessment landscape' for undergraduates, whilst also collaborating with other projects to create a feedback portfolio and resources for students
- Strong digital skills required to create Office surveys and to create and populate Excel spreadsheets and progress reports

### Molecular Palaeontology & Palaeocolour, University of Bristol

2017- 2019

#### *Assistant Researcher*

- Effectively carried out a complex multi-step enzyme extraction protocol, whilst also suggesting improvements to enhance efficiency and accuracy, to obtain melanosomes from feathers in a range of extant birds. This required technical and wet lab skills (biochemistry, microscopy, molecular), problem-solving, and quantitative analysis for scientific output
- Received extensive training to use the Scanning Electron Microscope effectively and independently whilst accurately preparing samples for SEM analysis

### Evolutionary Rescue and the Limits of Phenotypic Plasticity

2018

#### *Assistant Researcher* (collaboration; University of Oxford, Bristol, Catania, and Napoli)

- Research skills and subject application required to collect primary data on phenotypic plasticity of Senecio plants through growth analysis in the field and maintaining the growth of cuttings in a greenhouse (controlled environmental conditions)
- Required critical thinking, quantitative skills, and academic integrity to carry out genetic analyses and to evaluate and write results

## TEACHING EXPERIENCE

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### Bristol Tutors, Keystone Tutors, and Justin Craig Education

2017 - Current

#### *Science Tutor*

- High levels of creativity and organisation to prepare for tutorials and classroom revision sessions
- Effective time management to ensure tutorials are of an appropriate length for helpful learning
- Flexibility required when working with students of different levels, abilities, and exam boards
- Excellent communication skills and enthusiasm to work with students and their parents to ensure they gain the highest level of teaching to improve their subject knowledge and revision strategies whilst also boosting their exam grades
- Consistently obtained excellent feedback and impressive testimonials, allowing my hourly wage to be increased each year

**School Governor**

- Attend regular meetings and school inspections to assist with the running of the school (education/curriculum and welfare committees) to facilitate critical decision-making, maintain the school's ethos and strategic direction, and to monitor the educational performance of the pupils
- Utilise strong commitment to the school and its students, excellent communication and leadership skills, creative problem solving, an in-depth understanding and knowledge of the Department of Education safeguarding policies, and a collaborative approach to working with other board members

**Cambridge Assessment International Education (CIE) and OCR****2022 - Current****A-Level Examiner**

- Detailed understanding of the subject specification, high levels of attention to detail, time management skills, and an organised working style to mark over 1000 A-level scripts to a strict deadline with accuracy and consistency whilst teaching at Harrow and carrying out my PhD
- Fantastic communication skills required to work effectively and positively with my supervisor and the other team members and adaptability and flexibility needed to take on additional workload
- IT skills utilised to mark scripts through the CIE and OCR assessment portal effectively

**Harrow School****2021-2022****Postgraduate Master of Biology**

- Exceptional organisation, oral/written communication, time management, teamwork, and leadership skills required to teach at one of the most prestigious and historical boarding schools in the UK
- Took part in a wide range of training in safeguarding and child protection to teach in the classroom and to tutor 15 boys in a boarding house, including teaching the PSHE curriculum
- Enrolled in the Harrow New Master's Training Programme, where I learned the fundamentals of teaching and the intricacies of education and learning at Harrow and beyond
- Enjoyed teaching Biology to GCSE and A-Level students, requiring creativity to plan and design lessons, as well as superb time management, attention to detail, and strong knowledge of the IGCSE and A-Level specification (and mark schemes) to set homework and mark exams/coursework
- I was very enthusiastic and excited to teach my own Elective course, as part of the Harrow School Diploma, about polar biology and climate change, entitled 'Life on the Ice' which many boys chose to participate in, and thoroughly enjoyed throughout the year
- Adaptability, patience, leadership, and confidence required when assisting with the extra-curricular aspects of the school, including being an assistant rugby coach, taking a group of boys to a special needs primary school each week to participate in charity work through the Shaftesbury Enterprise, and being one of the main points of contact on the Sustainability Committee, attending COP26 on behalf of the school

**University of Bristol****2019 - 2021****Postgraduate Tutor & Lab Demonstrator/Teaching Assistant**

- High levels of creativity and strong communication skills required to carry out tutorials with undergraduate students
- Attended an intensive workshop in small group teaching and blended learning which enhanced my understanding of teaching methods including ways to build confidence and increase motivation in students to facilitate learning
- Organisational skills, attention to detail, knowledge of marking schemes, and ability to provide constructive feedback to mark written coursework and oral presentations
- Strong subject knowledge and awareness of lab protocols and methodology to assist students with technical practicals

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**VOLUNTARY ROLES**

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2023- Co-Head of Education and Outreach, UK Polar Network  
2023- Royal Chelsea Flower Show Volunteer, Royal Entomological Society  
2022- Social Media Volunteer & Writer, Sentient Media  
2021- Event Volunteer, UK Polar Network  
2021- Sea Champion & Education Developer, Marine Conservation Society  
2020- Chair of Round Table Talks, University of Bristol (Life Sciences Faculty)

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**COURSES & QUALIFICATIONS**

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2023- Writing in the Sciences, Stanford University - Coursera  
2019- Python Coding. R Programming. Advanced Microsoft Excel - Udemy  
2019- Teaching Science at University, University of Zurich - Coursera  
2016- GEC 431: Introduction to Research on Wetlands, University of Botswana (achieved a grade A)  
2015- British Science Association Silver CREST Award

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**INTERESTS**

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**Sport-** Certified Personal Trainer, Fitness Instructor, Corrective Exercise Specialist, and Nutrition Coach with a specialisation in Level 2 Mental Health Awareness (Premier Global NASM)  
**Dance-** Advanced ballet and contemporary training with the Royal Academy of Dance  
**Ice Skating-** Recently completed Level 5 certification  
**Music-** Working towards my Grade 6 ABRSM piano exam