

# James Owens

## Personal Profile

PhD Researcher specialising in the intersection of ecological conservation and computational science. I am passionate about applying modern technologies to environmental challenges, leveraging a professional background in software engineering (Java, C++) and advanced spatial data science (Python, R) to build robust, scalable solutions for biodiversity monitoring and habitat protection.

## Technical Skills

### Data Science & Statistical Modelling:

- **Python:** Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn, Streamlit.
- **R:** Tidyverse, Mixed-effects modelling (lme4), GAMs (mgcv/gamm4), Community Ecology (vegan), Bayesian Inference (brms), Shiny.

### Geospatial Analysis & Remote Sensing:

- **Software:** QGIS, ArcGIS Pro.
- **Libraries:** sf, terra, stars (R) | geopandas, rasterio, xarray (Python)

### Software Engineering:

- **Languages:** Python, R, Java, Rust, C, C++, TypeScript/JavaScript.
- **Web & Front End:** React, HTML5, CSS3 (SASS, Tailwind).
- **Databases:** PostgreSQL, MySQL, NoSQL (MongoDB), OracleDB.

**DevOps & Workflow:** Git, GitLab CI/CD, Jenkins, Docker, Conda/Mamba envs, renv.

## Employment

### PhD Researcher | Queen's University Belfast

*(October 2025 – Present)*

- **Stochastic Simulation Engine:** Developed an Object-Oriented Agent-Based Model (ABM) in Python to simulate the foraging movements of Central Place Foragers (CPF) and the deployment of probabilistic sensor networks.
- **Detection Probability Modelling:** Engineered a Python-based system using Reverse Sigmoid Functions to simulate realistic, non-binary camera trap detection decay, allowing for more rigorous testing of ecological models.
- **Cross-Platform Data Pipeline:** Designed a modular workflow where large-scale synthetic datasets are generated in Python and then processed via R for geospatial analysis and statistical visualisation.
- **Geospatial Analysis:** Utilised R (terra, sf, ggplot2) to perform spatial evaluations of Bayesian Geographical Profiling (GP) efficacy, identifying critical thresholds where sampling bias impacts model accuracy.
- **Robustness Testing:** Investigating the limitations of forensic GP methods when applied to complex biological movement, aiming to improve the reliability of site-prediction in ecological conservation.

### **Graduate Software Engineer, Billing – BT Group, Belfast**

*(September 2023 – Present)*

- Software Engineer within billing for BT Digital, focussing on wholesale billing activity.
- Responsible for design, development, and testing of releases ranging from new application development, legacy product EOSL and migration, and enhancing functionality of existing systems.
- Development is mainly done in Java and SQL utilising Oracle DB. Releases are deployed using GitLab for source control and Jenkins for build & deployment.
- Involved in a large-scale migration of a product library, during which I have been responsible for development of additional features, refactoring and optimising old functionality, and contributing ideas to improvements in how future development on the platform should be conducted.

### **Technology Recruitment Consultant - Anson McCade, Belfast**

*(September 2021 – August 2023)*

- Technical recruitment consultant responsible for all aspects of the hiring process
- Client management responsibilities, regular meetings with Senior stakeholders within the UK's biggest name in Defence and National Security.
- Vetting candidates on both technical skillset and discussing the procedure required for UK Security Clearance (SC & DV)
- Researching market behaviour, identifying client competitors and headhunting suitable candidates
- Mentoring junior consultants on engineering concepts and terminology (containerisation, microservices etc) to better equip them to identify suitable candidates

### **Undergraduate Demonstrator, Bangor University**

*(October 2019 – April 2021)*

- Assisting in undergraduate modules in the schools of Natural Sciences & Ocean Sciences
- Teaching students correct procedure for choosing and using basic statistics
- Introducing students to SPSS and R Studio for performing statistical tests and data visualisation

## **Education**

### **PhD Statistical Ecology**

*Queen's University Belfast - (October 2025 – Present)*

- PhD Candidate in School of Biological Sciences

### **PgDip Software Development – Distinction**

*Queen's University Belfast - (September 2022 – June 2024)*

- Studying part-time alongside full-time employment
- Topics covered include: Computer Science Fundamentals, Java Programming, Databases, Web Development, Agile Software Development.

### **MSc Zoology with Animal Behaviour – 1<sup>st</sup> Class Honours**

*Bangor University - (September 2017 – June 2021)*

- Proficient in R Programming for manipulating, analysing and visualising large quantitative datasets.
- Bioinformatics
- Use of ArcGIS and QGIS software
- Knowledge of Advanced Cellular, Developmental, and Evolutionary Biology.

### **CertHE Theoretical Physics**

*University of Sheffield - (September 2012 – January 2015)*

Gained experience in basic C/C++ programming. Left my studies early due to ill health.

### **A-Levels & GCSEs**

*Swinton Community School Sixth Form - (September 2005 – June 2012)*

A-Levels: Biology (B), Chemistry (B), Mathematics (B), Physics (B)

GCSEs: 15 A\* - C including Mathematics and English