Alex Searle-Barnes

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Data science and research experience

2017 – 2023

PhD and Research Technician – University of Southampton

I've collected, modelled and visualised the world's largest dataset to answer questions around the environment, climate and evolution. The data is from many sources and complex, needing to be reduced before modelling and subsequently visualising to presented as a story. Through method development processes, I've optimised data collection from analytical instrumentations (mass spectrometry, X-ray CT and quantitative surveys) resulting in numerical, text and image data all within the project constraints of time, sample throughput and facility cost.
I built a relational database to combine these multi-proxy data sources which integrates into **Excel**, **R**, SQL, Bash and **Python** along with my knowledge of statistics, mixed-effects modelling and chemistry to answer my research questions.

I currently study past ocean environments using the chemistry of fossilised shells (planktic foraminifera) to reconstruct past climates and better understand the impacts that current climate change is causing. I've analysed thousands of foraminifera shells at an individual chamber resolution, then have automated in R the processing of over 40 million data points as an input for proxy equations to indirectly reconstruct the lifetime habitat of the foraminifera, ocean temperature and polar icecap volumes. I've **published** my research in peer-reviewed scientific publications and presented it at international conferences. I've written new software to meet novel needs when no existing software existed, such as a timeline of historical events and climate as an educational tool.

Alongside my research, I report key performance indicators to the University's Deans and stakeholders as part of the Technician Commitment Working Group. We ensure visibility, recognition, and career development for those in higher education and research, by identifying skill area dependencies, demographic changes and survey responses, which aid sustainable decision making by the University's leadership teams. I have built a dashboard in **PowerBI** to present longitudinal results to summarise the impacts of the Technician Commitment over time.

I **support teaching** to undergraduates for a data science and statistics module. I also support 3rd and 4th year students with their research projects, including training with specialist software.

Professional qualifications

- Advancing Computational and Data Literacy course by BBSRC
- Taxonomy and Stratigraphy of Cenozoic Planktonic Foraminifera by Natural Environment Research Council ATSC
- Writing Quality Papers by Thinkwrite
- Interactive Data Analysis and Visualization with R Shiny by Transmitting Science

Education

University of Southampton, MSc Chemistry — 2016 – 2017

Advanced analytical skills in statistical analysis and laboratory based research projects.

University of Plymouth, BSc Chemistry (Honours) — 2013 – 2016

- Graduated with **1st class honours**. Core topics include Organic, Inorganic, Physical and Analytical Chemistry, with a focus on laboratory practical work.
- Research project investigating the geographical origin of oil collected from beaches in Devon using geochemical markers.

Key skills

- Working with a range of stakeholders from university deans, researchers, laboratory users, students and charity workers.
- Working to deadlines and budgets in the laboratory and subsequently writing high-quality reports on the findings.
- Managing my own time resulting with autonomy and trust.

Interests and hobbies

- I volunteer for The Loop, a harm reduction charity, providing services at nightclubs, festivals and in city centre communities and subsequently publishes its statistics for Government use.
- I enjoy cycling, amateur radio and gardening.

References available on request.