

## Research Experience Placement (REP) Scheme

**Project Title:**

Can rewilding offer refuge to species on the edge?

**Project Supervisors:**

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**Host Organization and Department (if applicable):**

Durham University, Department of Biosciences

**Project Description:**

Biodiversity is in decline and the UK remains one of the most nature depleted countries in the world. Under increasing pressure from climate warming, sensitive British butterflies are moving northwards or uphill to stay cool, but face many obstacles to keeping pace. Rewilding is a conservation strategy with growing popularity, which has the potential to restore habitat connectivity and local microclimate refugia and so help species cope with climate change. This project will focus on a long-running rewilding project in southern Scotland, Carrifran Wildwood, and its potential to protect a butterfly species on the edge – the Scotch Argus (*Erebia aethiops*). The region represents the southern range margin in Scotland for Scotch Argus, hence there is a real risk that the species will be lost from the area under climate warming. However, after more than 25 years of rewilding, vegetation regrowth in Carrifran Wildwood has created significant variation in microclimate across the valley, which we expect to buffer the species from climate change. The aim of this project is, therefore, to determine the extent to which rewilding in Carrifran has created local climate refugia for Scotch Argus and for how long such refugia could persist. The first objective is to conduct field surveys of Scotch Argus abundance and behaviour in Carrifran compared to a neighbouring control site, Black Hope. The second objective is to test whether Scotch Argus occurrence can be predicted by microclimate and vegetation, for which we already have high resolution (~6cm) maps.

**Skills and Career-Development Opportunities:**

For the first objective, the student will develop significant skills conducting fieldwork in the Scottish uplands on rough terrain with unpredictable weather. They will gain extensive practical experience of butterfly transect surveys, including learning to identify, sex and observe the behaviour of the Scotch Argus butterfly. In preparation for fieldwork, the student will also receive training in basic navigation and how to use the necessary equipment, including a GPS (possibly dGPS), Kestrel weather meter and Garmin inReach for remote communication. If not already trained in First Aid, we will make arrangements for the student to complete First Aid training prior to fieldwork. The student will gain valuable transferable skills in project planning, decision making and teamwork. After fieldwork, the student will develop skills in data management and analysis in R, for which training will be provided if necessary.

**Wider context of research:**

This project fits into a wider body of research being undertaken by Dr Senior's research group, particularly PhD student Cameron Goodhead. This work is assessing the extent to which rewilding can offer an efficient and cost-effective means to restore structural and climatic complexity to degraded landscapes, and thus restore climate-resilient habitats for vulnerable species. Fieldwork by the placement student in 2026 will add to existing survey data collected in August 2025, as well as high resolution 3D maps collected in prior years using drone-based structure from motion photogrammetry.

**Project Timeframe:**

Fieldwork is expected to span a 2-week period in July or August, following 1 week of preparation in Durham. The remaining 3 weeks will be used for statistical analysis and summarising the project findings. Please note that there is project flexibility to maximise opportunity for participation. For example, applicants who cannot conduct remote fieldwork can instead conduct a desk-based project using biophysical models in R to predict the behaviour and fitness of Scotch Argus under different environmental conditions.

The supervisor is unavailable from 4<sup>th</sup>-20<sup>th</sup> September, hence the project cannot take place during this period.