

## 2024\_45\_DoLS\_WP: The evolution of ecosystem function

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Summary: As climate change and the sixth mass extinction gather pace, the importance of biodiversity and nature-based solutions for society is clear. The benefits that nature provides for us, such as carbon capture, supporting food production, and the filtration and cleaning of water and air, are the key to building a sustainable global economy.

Our recent work has produced the world's largest database of how changes in biodiversity affect the delivery of these benefits, with > 220,000 direct measurements of biodiversity and services.

This PhD will incorporate evolutionary information into this database in order to form an understanding of how ecosystem services have evolved. This information will be used to predict how ecosystem function will change in under-studied parts of the world, on the basis of known evolutionary relationships between species.

To do this, the student will make use of existing software and statistical tools, such as Phylogenetic Generalised Linear Mixed Models. This work will be carried out in collaboration with Hitachi, who are CASE partners in this work. The student will also have the opportunity to direct data collection carried out by a team of MSc students and paid research assistants, to allow them to focus on data analysis and methods development

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