

2023_03_Predicting the effect of anthropogenic activity on insect biodiversity change

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(a) Motivation for the project

A number of recent studies have documented declines in insect abundance, biomass, diversity, and occupancy, leading some researchers to conclude that insect decline might be a worldwide phenomenon (van der Sluijs, 2020; Sanchez-Bayo, 2019). If true, the implications would be concerning, given the importance of insects to ecosystems services such as pollination (Potts et al., 2016). In understanding insect biodiversity change, two core problem relates to the lack of available data for much of the world and for many taxonomic groups (Saunders et al., 2020), and the difficulty in reconciling multiple disparate forms of evidence.

(b) Context and background

This environmental informatics project uses data science to synthesise and model ecological data on the impact of anthropogenic threats on insect biodiversity. This project therefore aligns with the following NERC remits:

- Ecology, biodiversity and systematics
- Terrestrial and freshwater environments
- Tools, technology and methods

This project grants the student an opportunity to learn skills in data science in a meta-analytical context, which is a strong skill that's increasingly valued. The project is ideal for a student aiming to pursue a career in data science and biodiversity conservation, specifically focusing on anthropogenic impacts on insect biodiversity at a broad scale.

(c) Objectives and methodology

Students would use meta-analyses to investigate the effect of an IUCN threat type on insect biodiversity (see protocol here <https://osf.io/jna9p>). Students collected data will then be uploaded to Dynameta (<https://github.com/gls21/Dynameta>), a new interactive meta-analytic platform of insect response to anthropogenic threats, built by a masters student on a previous project at the NHM. All project types would be desk-based, typically including both a period of data collection and analysis (in R). Students would be based at the Natural History Museum, with Dr Joe Millard (joseph.millard@nhm.ac.uk) as primary supervisor and Prof Andy Purvis as co-supervisor. During their time at the museum students would also collaborate closely with researchers on the NERC funded GLiTRS project (<https://glitrs.ceh.ac.uk/>).

Project length: 10 weeks