

**PROJECT TITLE:** Bucking the trend: an endangered insect rises again. Using collections to interpret range expansion in the Bracket Fungus Beetle *Diaperis boleti* and its relatives from Europe to the Himalayas.

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**Project keywords:** “invasive species”, “Insect decline”, “environmental change”, Beetles, Coleoptera, “Fungus Beetle”, “Endangered species”, “Museum collections”.

**Proposed start date:** 3<sup>rd</sup> June 2024

**Project description:**

The Four-Spotted Fungus Beetle *Diaperis boleti* (Coleoptera; Tenebrionidae) is associated with bracket fungi on deciduous trees and was considered a great rarity in Britain throughout the 19<sup>th</sup> and 20<sup>th</sup> Centuries and given a status of Red Data Book (Vulnerable). In the early 2000s it began to expand its range and it is suddenly much commoner over large areas of England. This range expansion is mirrored in Continental Europe and Asia, and it recently, for example, arrived in Nepal (Schawaller, 2024 in press). Such a range expansion and reversal of status is difficult to explain against a much-publicised background of ‘Insect Decline’, and therefore merits investigation.

The Natural History Museum has hundreds of specimens of *Diaperis boleti* and its relatives, other members of the genus *Diaperis*, and these have not been carefully examined. Each specimen has labels saying when and where it was collected and by study of the information on these labels a student can map the historical distribution of these insects in the past, and compare it with its modern distribution (obtained from e.g. I-Naturalist/NBN Gateway). The student can then produce maps showing the changes in the distribution and status of these insects over the last two centuries. A publication can be produced, which will also introduce new country records and attempt to shed light on reasons for its former decline, and subsequent expansion. This can also be used to predict where new populations might be found, and to try to correlate arising population with temperature or habitat change, i.e. to estimate the factors that may be favourable to the species’ expansion. This has some relevance to recent ‘rewilding’ initiatives taking place throughout the British Isles, which attempt to re-establish and reverse the fortunes of formerly declined or extirpated fauna and flora. The objective will be to submit for publication a paper on the information in the Natural History Museum’s collection of this genus, including new records and maps of its current and historical range.

**Candidate requirements:** Students will need an interest in insects and museum collections, and good dexterity/manual handling skills to be able to handle historical specimens without damage.

**Background reading:** Internet resources obtained by searching the scientific name ‘*Diaperis boleti*’ will provide good background information.

**Approximate Work Schedule in weeks (desk based/lab/report writing):** Based in the Entomology Collection Workspace at the Natural History Museum: 4 weeks training and data collection, 3 weeks data interpretation and analysis, preparation of write up and possibility of additional site visits, 1 weeks write up and preparation of final presentation.