

PROJECT TITLE: Historical and modern distribution of the endangered Heath Tiger Beetle *Cicindela sylvatica*. Factors driving an example of 'Insect Decline'.

Project Supervisor: Max Barclay, Department of Life Sciences, Natural History Museum, London SW7 5BD

Co-Supervisor: Joana Cristovao, Department of Life Sciences, Natural History Museum, London SW7 5BD

Project Enquiries: m.barclay@nhm.ac.uk

Project keywords: "Insect decline", "environmental change", Beetles, Coleoptera, "Tiger Beetle", "Endangered species", Coleoptera, "Museum collections".

Proposed start date: 3rd June 2024

Project description:

The Heath Tiger Beetle *Cicindela sylvatica* is one of the largest and most impressive predatory beetles found in Britain, where it was known since the 1700s: it is also distributed throughout much of Western Europe. It inhabits sandy heathlands, as a predator of other insects. The larvae live in 'trapdoor' tunnels in loose soil where they ambush other invertebrates.

Heath Tiger Beetle was formerly common on the Surrey Heaths around London, as well as in Scandinavia and much of Western Europe south to the Mediterranean.

In recent decades the species has disappeared from most of its known localities, and it is estimated that more than half the populations have disappeared in the last 25 years, even though in many cases the habitats remain apparently unchanged. The beetle has been given priority status under the UK Biodiversity Action Plan (UK BAP) and has been included in the English Nature's Species Recovery Programme. Various factors, such as dog walking, dirt biking, conifer afforestation and sand extraction have been invoked, but there are apparently no common factors uniting all the sites from which it has disappeared, while excluding the sites where it is still present. Some localities where it persists, have suffered more anthropogenic disturbance than those from which it has vanished, so its decline, like that of many insects, is poorly understood. The situation is mirrored in most other European countries within its former range, and it has been declared nationally extinct in some countries.

The Natural History Museum has over 400 specimens dating to the 1700s, mostly with accurate locality information. This is an opportunity for a student to produce a publication mapping its historical distribution and comparing this historical data with its modern distribution (obtained from e.g. I-Naturalist/NBN Gateway). This information on former distribution will shed light on reasons for its decline and identify areas where targeted searches could discover overlooked or 'lost' populations of this charismatic but globally threatened beetle.

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 '*Cicindela sylvatica*' will provide good background information.

Approximate Work Schedule in weeks: 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.