# CLIMIT

CLimate change impacts on Insects and their MITigation

CLIMIT aims to assess the combined impacts of human-induced changes in climate and habitat (area, isolation, patch quality) on some of Europe's most specialised and threatened grassland insects that depend on ants (myrmecophiles). CLIMIT will study their local adaptations, changing niches and different needs across a gradient of local climates from the Mediterranean to the North/Baltic seas. CLIMIT will compare the fates of these species under different scenarios of climate and land use change, which also includes the study of their potential to evolve adaptations to new environments. Finally CLIMIT wants to test current ideas for adaptive management to conserve myrmecophiles on large-scale sites and landscapes and to model potentials for mitigation of global change impacts.

The study species include seven social parasites of ants and three mutualistic butterflies together with the main foodplant(s), ants and parasitoids with which each directly interact. Sampling and experimental sites cover a large spatial scale from the Mediterranean to the Baltic and a range of different habitats and management schemes. A combination of methods including empirical fieldwork, experimental lab assays and different modelling approaches will be applied to achieve the goals of the project. In this context long term monitoring data sets from different European regions and other data from previous projects will be re-analysed. Major outputs of CLIMIT will be

(i) studies on the changing niches, local adaptations, and different needs of the study species across a European climatic gradient,

(ii) models of the processes that constrain each system's (meta-)populations,

(iii) predictions of the impacts of future scenarios of land use, climate and socioeconomic change in different regions,

(iv) new model predictions about how to mitigate the harmful impacts of multiple drivers on biodiversity,

(v) tests of management recommendations using existing large-scale habitat manipulations, and

(vi) general conclusions about the changing needs of myrmecophiles (estimated about 100.000 species globally) and non-myrmecophileous butterflies.

*Polyommatus bellargus*
Photo: Karl Heyde

The majority of deliverables will be designed as scientific papers to facilitate rapid knowledge exchange within the scientific community. Scientific results of CLIMIT will be translated to easily understandable forms (best practices, recommendations, guidelines) and published through popular science journals, newsletters and brochures. Beside the use of traditional media most CLIMIT outputs will be provided via open access. This includes the use of an online geographically referenced registration tool for the CLIMIT study systems, new open access scientific journals, and the accumulation of all relevant open access output in an online library.

Header Photo: Steffen Caspari

## Partners

Helmholtz Centre for Environmental Research – UFZ, GERMANY - coordinator
University of Oxford, UK
Lund University, SWEDEN
NERC Centre for Ecology & Hydrology, UK
Museum National d'Histoire Naturelle , FRANCE
Pfeifer -Environmental Impact Assessment (EIA), GERMANY

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