
A range shift in *Leucozona glaucia* in Great Britain

Stuart Ball^{*1} and Roger Morris^{†1}

¹Hoverfly Recording Scheme – United Kingdom

Abstract

Leucozonia glaucia is an easily identified hoverfly that commonly visits flowers, particularly Apiaceae, in Britain. Consequently, it is relatively well recorded. In recent years there have been noticeably fewer records from south-east England, although that is the most intensively recorded region. This led us to study its distribution and how it has changed over time. Three different methods were used: Mark Hill's FRESCALO, Species Distribution Modelling (mainly Maxent) and General Additive Models. Sufficient data was available for the years between 1980 and 2021, although it was only possible to use the period 1992 to 2018 for some analyses because this is the period for which ESA Landcover was available. No overall trend is evident in the relative frequency with which the species has been recorded. There is, however, a clear trend for a decline in eastern and south-eastern England, whilst at the same time, it has expanded in the north and west – most noticeably in NW Scotland. The covariates that correlate best with these changes are derivatives of temperature and rainfall. This may be related to larval biology, which requires further study. The ad hoc nature of the records makes it difficult to disentangle changes in the distribution and frequency of the animal from changes in recorder effort and behaviour. Recording effort is concentrated around population centres; the declines in eastern and south-east England are therefore likely to be genuine. However, the north-west is the least populated and most poorly recorded region, so it is more difficult to be certain whether changes there are real or are a consequence of the considerable increase in recording, especially photographic recording, that has occurred over the last decade.

Keywords: *Leucozona glaucia*, range change, Frescalo, Maxent, GAM, British Hoverfly Recording Scheme

^{*}Speaker

[†]Corresponding author: syrphid58@gmail.com