Common green grasshopper

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Omocestus viridulus L.

Climate Change Sensitivity:	HIGH	Ability to Manage:	MEDIUM
Non climatic threats:	MEDIUM	Vulnerability:	MEDIUM

Summary

The common green grasshopper's preference for taller swards in damper localities, together with apparent declines in the east and south of the country, suggest that it is sensitive to summer drying. Adaptation is likely to focus on ensuring its favoured habitat is maintained in areas likely to be less affected by changes in rainfall, especially in the uplands and other areas where topography and hydrology will promote cooler, wetter conditions.

Description

The common green is Britain's most widespread grasshopper species. It is mostly green, but may have brownish sides. It is medium sized, typically 14-23 mm long. It is winged and flies well, but wings never exceed the end of the body. It has a characteristic long, loud song. The females have longer wings and a noticeably long ovipositor, which helps distinguish it from similar species.

Ecology and distribution

The common green grasshopper is a generalist species of unimproved grassland. It prefers taller, damper grassland and feeds on a range of common, abundant grasses, including cocksfoot *Dactylis glomerata*, bent grass *Agrostis* spp, sweet vernal grass *Anthoxanthum odoratum*, rye grass *Lolium* spp., and Yorkshire fog *Holcus lanatus* (Cottam 1985). It is relatively widespread and common in the uplands, but has declined in the lowlands, particularly in the south and east.

It is the first of the grasshoppers to appear, in late spring and early summer. Nymphs can be found from April or May. After several moults, they reach adulthood in June or July, with adults surviving until November. Females lay eggs in the top layer of soil near the base of grass stalks in late summer.

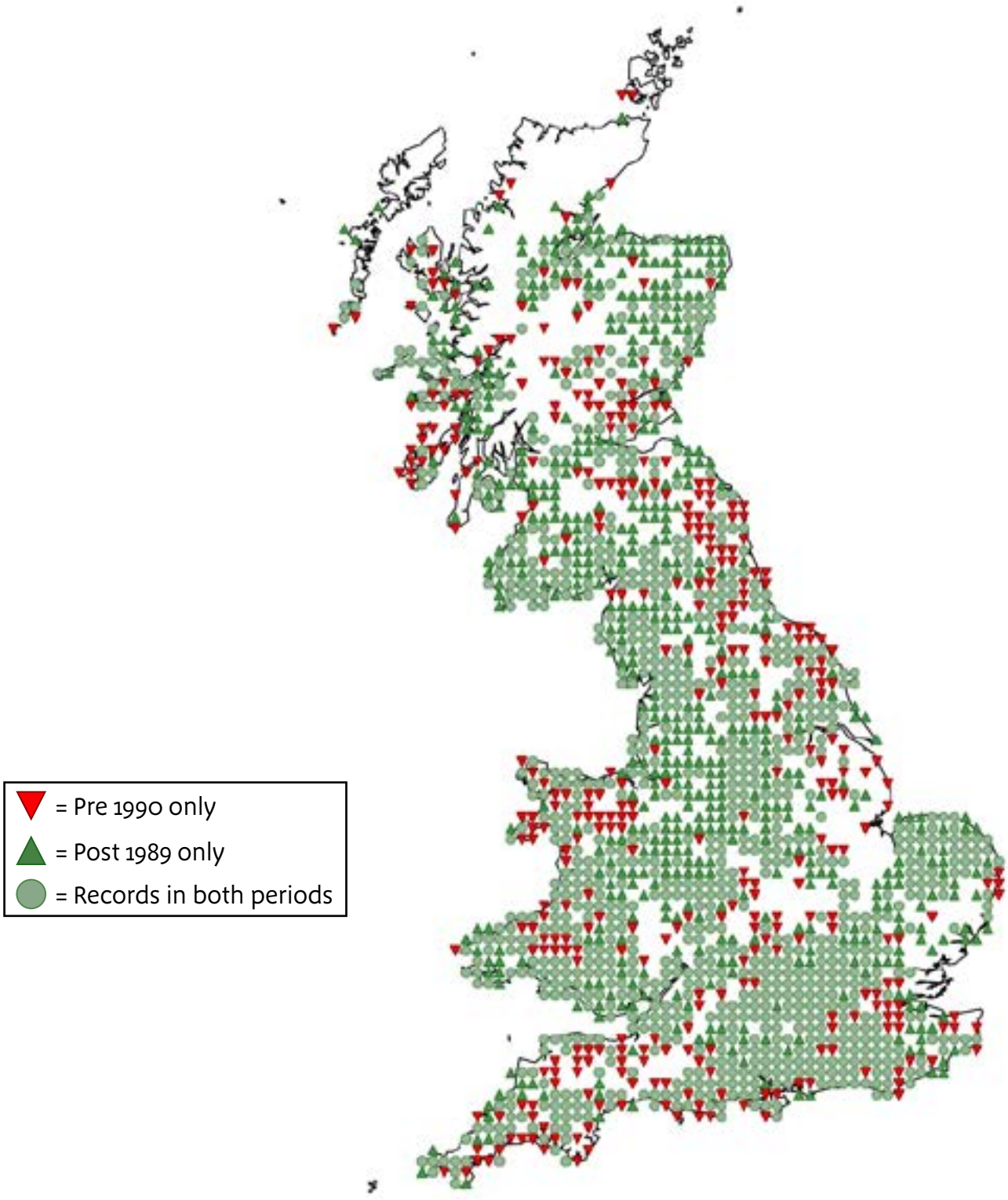
Although the common green grasshopper requires warm conditions (Willott & Hassall 1998), it has less ability to tolerate extreme high temperature than other species, and it will exhibit shade-seeking behaviour if exposed to warm conditions, avoiding short swards because of the danger of overheating (Willott 1997). It is also more tolerant of cooler conditions than other British species of grasshopper (Willott & Hassall 1998) and has an ability to raise its body temperature when it gets cool (Willott 1992).

It is still relatively common but has suffered declines in the lowlands. This is due in part to the loss and intensification of its preferred semi-natural grassland habitat, but climate change is also thought to be contributing to declines. Its local distribution in the south is associated with clay soils rather than more free draining soils (Gardiner 2010).

Its generalist grazing behaviour has been suggested as a mechanism for influencing the species richness of grassland (Branson & Sword 2009). Accordingly, its loss from its lowland grassland sites may in turn lead to changes in the floral composition.

The Grasshopper Recording Scheme and additional National Biodiversity Network presence records for common green grasshopper pre- and post-1990 are shown on the map below (10km grid scale). (See **www.orthoptera.org.uk** and **NBN Atlas terms and conditions**, and Appendix 1 for the list of NBN datasets included). The grasshopper recording scheme does not regularly cover all squares. Gains and losses of individual squares should not be over-interpreted as they may be due to changing recording patterns.

Presence of Common green grasshopper records, 10x10km grid.
Grasshopper Recording Scheme and NBN Atlas.



It is likely that the common green grasshopper has seen a net increase in distribution in Scotland (from 285 squares before 1990 to 421 squares after 1989, a 48% rise). In contrast, the species has seen much smaller net increases in England (from 835 to 920 squares, a 10% rise) and Wales (from 190 to 209 squares, a 10% rise). Considering a large increase in recording effort over time it is likely that these changes reflect at best a stable distribution in England and Wales (Beckmann *et al* 2015).

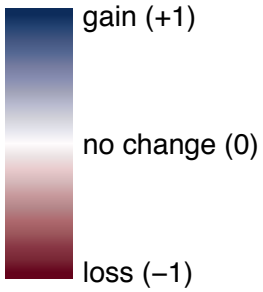
Confidence in climate change impacts[21]

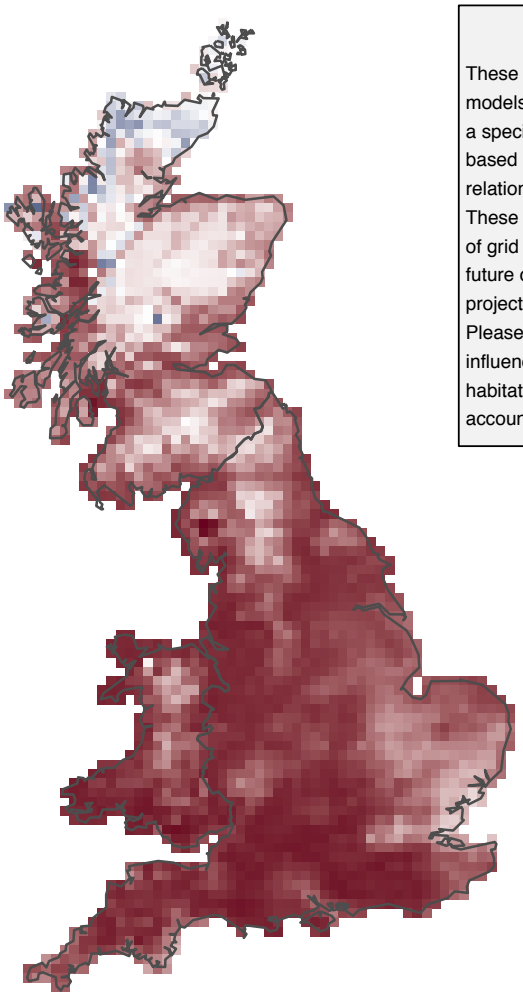
Distribution change: **LOW CONFIDENCE** Mechanism: **LOW CONFIDENCE**

The threat to the common green grasshopper from climate change can be inferred through modelling its climate envelope and its preference for taller swards in cool, damp locations. Indications of a possible decline in the south and east of England, the parts of the country that are experiencing the greatest increases in summer drying and warming, suggests that climate change may be a contributory factor.

21 An assessment of the strength of evidence that distributions are changing and the mechanisms causing change are understood. Refer to Part B, section 5 of the species section introduction for more information.

Projected change in potential distribution of common green grasshopper in the UK with a temperature rise of 2°C (Pearce-Higgins *et al* 2015).





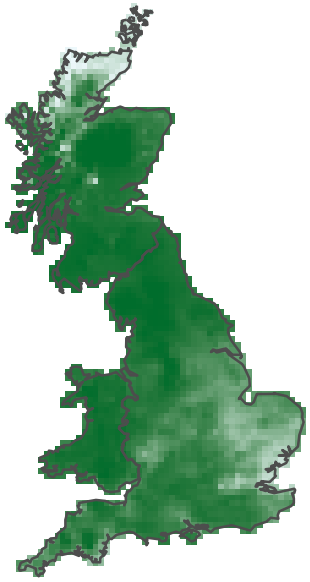
Climate suitability

These maps are created using statistical models which describe the probability that a species will be found in a 10 km grid square, based on its current distribution and its relationship to a number of climatic variables. These can be used to model the suitability of grid squares for a species under possible future climates when climate change projections are taken into account.
Please note that other variables that influence species distributions, such as habitat and land–use change, are not accounted for in the modelling process.

Confidence of change

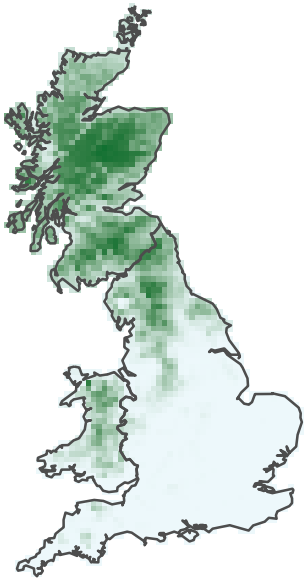
An assessment of the available data and other factors, as part of Natural England's Research Report NECR175, suggests that our confidence in this projection is very high. N.B. many confidence assessments are rated as low because there is a lack of published information on the likely influence of climate on the species concerned.

Current climate scenario



Climate suitability

Low (2°C change) climate scenario



Created by:	University of York	Created for:	Natural England	Created on:	August 18 2016

Further information on these projections can be found in the introduction to the species section (Part A, Section 3 and Part B Section 5). Note that this is a guide to where a species may be able to survive, it does not capture other issues such as habitat availability and fragmentation – see text above for further details. Contains public sector information licensed under the Open Government Licence v3.0. Please also see acknowledgement and copyright at the beginning of this manual.

Please read this case study alongside the relevant habitat sheets.

Adaptation options

Site management is not usually tailored to currently widespread invertebrate species, like the common green grasshopper; however, ensuring its persistence, and that of species like it, in southern and eastern England may require some adjustment to management of sites. The common green grasshopper's sensitivity to extreme heat suggests that adaptation should focus on ensuring its favoured habitat is maintained in areas likely to remain least affected by warming. In the lowlands, potential refugial areas where topography and hydrology lead to cooler conditions should be identified and conserved. At sites exposed to hotter, drier conditions, changes to the management of grassland to allow taller swards and create a cooler microclimate should be considered.

- Unimproved grassland in the uplands should be managed to ensure that the grasshopper's core areas are protected.
- On southern and eastern locations and lower lying sites with south-facing topography, grass swards can be maintained at a taller height or have taller elements within them to promote cooler microclimates.
- In some cases, maintaining or restoring the hydrology of sites may help to ensure the ongoing presence of cooler, damp habitats that it prefers.
- In southern and eastern areas, habitat creation can be used to increase topographic variation in available grassland, creating a diversity of microclimates.
- Monitoring will allow population changes in different locations to be identified and quantified.

Relevant Countryside Stewardship options

GS2 Permanent grassland with very low inputs (outside SDAs)

GS5 Permanent grassland with very low inputs in SDAs

GS6 Management of species-rich grassland

GS7 Restoration towards species-rich grassland

GS8 Creation of species-rich grassland

References and further reading

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