Male

Scale does Matter!

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Female

Introduction

Current woodland conservation policy (e.g. in the UK) stresses the importance to preserve, expand and re-connect habitat fragments at the landscape scale. However, little information is available regarding the impact of habitat connectivity on the movement of woodland organisms. To address this knowledge gap, research was undertaken on a non-flying specialist woodland invertebrate, the wood cricket (*Nemobius sylvestris*) on the Isle of Wight, UK.

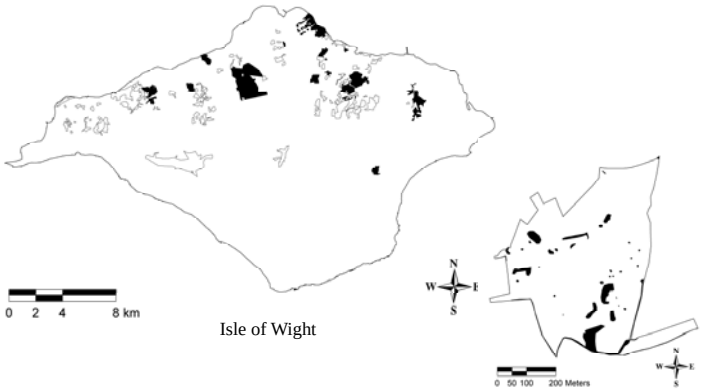
Objective

The objective of this study was to assess the relevance of a landscape scale approach for the conservation of this target species.

Methods

- In 2005, a landscape scale survey was undertaken and in 2006 a more detailed study was performed within 3 separate woodland fragments.
- In 2005, all mature broadleaf dominated woodlands larger than 5 hectares in the northern and central part of the island were surveyed
- In 2006, three broadleaf dominated woodlands (> 20 ha) under different management regimes were surveyed.
- For both years, wood cricket presence/absence was recorded together with a series of habitat variables, and a range of spatial variables were computed using ArcGIS (version 9.1).

Patchy distribution at two different scales

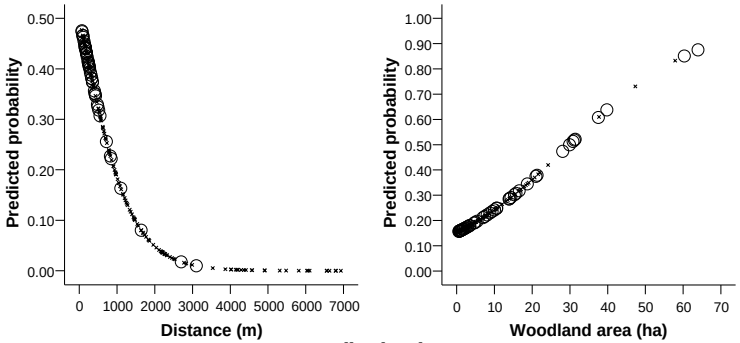


Isle of Wight

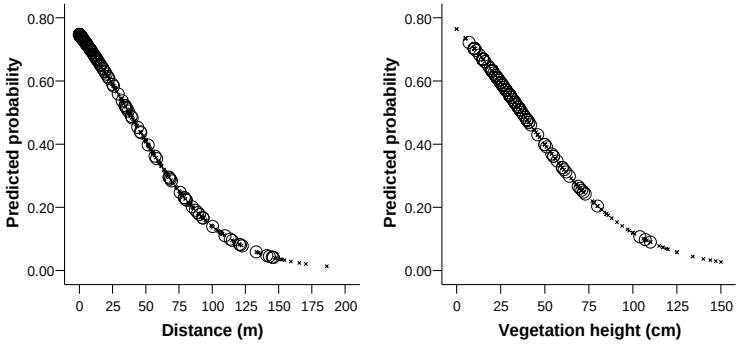
Borthwood Copse

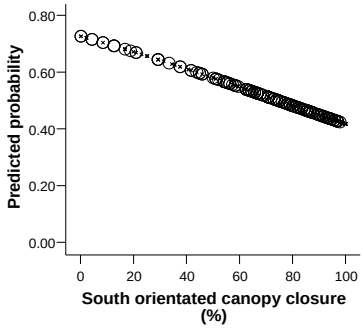
Wood cricket presence probability is explained by different variables at different scales

Landscape scale



Woodland scale





These graphs represent the output of logistic regression models fitted to a range of spatial and habitat variables. O = Locations where wood cricket was present; x = Locations where wood cricket was absent.

Within woodland variables explain more variation than variables at the landscape scale

This table summarizes results of logistic regression analyses using a range of spatial and habitat variables.

Model		Model fit			Explained variation
Landscape scale	*n*	χ^2	df	*P*	Nagelkerke r^2
Distance	207	40.39	1	0.000	0.27
Woodland area	207	20.42	1	0.000	0.14
Total model	207	62.83	2	0.000	**0.39**
Woodland scale					
Distance	402	101.2	1	0.000	0.30
Herbaceous vegetation height	402	58.50	1	0.000	0.18
South orientated canopy closure	402	10.56	1	0.001	0.03
Total model	402	208.6	3	0.000	**0.54**

Results

- The distribution of the species at both the landscape scale and within woodlands is patchy.
- At the landscape scale, a significant negative relationship was found between the probability of wood cricket being present and distance to the nearest neighbouring inhabited woodland, and a positive relationship was recorded between wood cricket presence and woodland (patch) area.
- Within woodlands significant negative relationships were found between the probability of wood cricket being present and nearest neighbour distance to an inhabited permanent woodland edge, vegetation height and South orientated canopy closure.
- At the woodland scale, variables used within the total model explain more variation than at the landscape scale.

Discussion

- The results identify the importance of different explanatory factors operating at different scales.
- For wood cricket (and possibly other woodland specialist species), results suggest that current landscape scale conservation initiatives should be supported by conservation efforts undertaken at the scale of individual woodlands.

Acknowledgements

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