

Overwintering sites of ladybirds, shieldbugs and allied species in Herts woodland, with particular regard to aspect

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Overwintering ecology is a poorly studied subject within entomology. The aim of this study was to investigate if two groups of insects that overwinter as conspicuous adults in British woodland exhibit a preference for south-facing over north-facing hibernacula (with the postulated reason being temperature-related differences attributable to differential shading). The hibernacula examined were leaf litter at the base of medium and large broadleaved trees and evergreen foliage on substantial shrubs and trees. Field work was conducted during January and February 2016 at three woodland sites in Hertfordshire, eastern England. Leaf litter was sampled on the north and south side of 146 trees, while evergreen foliage was sampled on the north and south side of 112 trees or shrubs. Sampling was conducted in a standardized fashion to enable the data to be analysed in paired comparisons. One-sided Wilcoxon matched-pairs tests were performed for the data collected, with prespecified hierarchical testing used to avoid inflation of type I error risk. The results for preference of south-facing aspect were as follows: all ladybirds in leaf litter, $P=0.02613$; all shieldbugs in leaf litter, $P=0.006881$; all ladybirds in foliage, $P=0.02382$; orange ladybirds in foliage, $P=0.02064$; and all shieldbugs in foliage, non-significant (but with an underpowered analysis). The results demonstrate a marked behavioural preference for south-facing hibernacula over north-facing ones. Further research is recommended to examine the relationship between temperature profile, hibernacula preference, and overwintering mortality.