

English Nature Research Reports, No. 650

Exotic plant species on brownfield land: their value to invertebrates of nature conservation importance

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Keywords: Brownfield, exotic plants, invertebrates, bare ground, ruderals, habitat mosaics

Introduction

Previously developed, post-industrial or 'brownfield' land commonly provides substrates which sustain populations of plants of exotic origin. It is becoming increasingly recognised that brownfield sites are amongst some of the most important sites in the UK for rare invertebrates.

The redevelopment of brownfield land commonly results in the eradication of spontaneous vegetation, of which exotic species may comprise a significant proportion. Where sites are reclaimed for nature conservation purposes, exotic species are rarely considered as valuable components of site design.

To date there has been no systematic investigation of the use of exotic plant species on brownfield land by invertebrate species of conservation importance.

What was done

A desktop study was undertaken in order to collate published and unpublished data on the use of exotic plant species by invertebrate species of conservation concern. The key element of this study was consultation with a panel of expert field entomologists with experience in brownfield sites and their invertebrate fauna. Since published information on invertebrates of conservation concern using exotic plant species is scarce, consultation with these key entomological experts was an essential part of this research. An evidence-based assessment of the value of exotic flora in sustaining populations of invertebrate groups of conservation importance and key species was undertaken, listing the plants as high, medium or low importance.

Results and conclusions

Although the data available is limited and often restricted to anecdotal reports, there are several examples of invertebrates of conservation concern using exotic plant species. This includes larvae and adults feeding on the vegetative parts of the plant, as in the case of some moths

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(Lepidoptera) and beetles (Coleoptera), as well as adult insects visiting the flowers to collect nectar and pollen as in the case of several species of fly (Diptera), bee and wasp (Hymenoptera). Certain exotic plant species have been identified as being particularly valuable for providing foraging opportunities for invertebrates of conservation concern.

The role of exotic species within brownfield sites is just one of a number of factors involved in the importance of 'brownfield' sites with regard to their rich invertebrate assemblages. Recent studies have shown that brownfield sites can harbour high invertebrate species-diversity including several scarce or rare invertebrate species. A total of 194 invertebrate species of conservation importance were assessed as being typical of brownfield sites. Of these, 50 were Red Data Book species, 131 were Nationally Scarce species and 17 priority species within the UK Biodiversity Action Plan. These include species of bee and wasp (Hymenoptera), beetle (Coleoptera), butterfly and moth (Lepidoptera), fly (Diptera), cricket (Orthoptera) and dragonfly and damselfly (Odonata). Features that are considered as being particularly important in encouraging invertebrate biodiversity are the size of a site and the habitat complexity within it, providing both continuity and diversity of habitats. Floristic and structural diversity are particularly important elements of the habitat mosaic, as are the nature of the substrate, the topography of the landscape, the presence of patches of bare ground, damper areas and water bodies and areas of shelter created by scrub, rubble, wood and/or metal.

English Nature's viewpoint

Invertebrates are one of the key animal groups for attention when considering the use and development of brownfield sites. Recommendations for the reclamation and management of brownfield sites to maximise their value for invertebrate conservation include adequate surveying of sites for their wildlife interest, site protection and monitoring, as well as specific recommendations for the management of bare ground, vegetation structure, floristic diversity and shelter. Exotic plant species commonly comprise a significant part of the flora of brownfield sites and should be managed as an integral part of a site's vegetation.

Selected references

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KEY, R. 2000. Bare ground and the conservation of invertebrates. *British Wildlife*, 11, 183-191.

Further information

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