

Recording Plants for Bugs

Our entomologists have recorded tens of thousands of invertebrates from the plots, including 16 species of butterfly, 8 species of bumblebee, more than 50 species of spider, and 47 species of ground beetle. A species of millipede new to Britain (*Anamastigona pulchellum*) has also been recorded on the Plants for Bugs site.



CAROL SHEPPARD

Volucella zonaria (hornet mimic hoverfly)

One of Britain's largest hoverflies, shown here on *Knautia arvensis*, is a regular visitor to the plots. The adults visit flowers, feeding on nectar. The larvae feed on detritus in the nests of social wasps.



ANDREW HALSTEAD

Bombus terrestris (buff-tailed bumblebee)

One of the six bumblebees commonly found in gardens. This species is the most commonly observed bumblebee on the plots. It is seen here collecting pollen and nectar from *Scabiosa columbaria*.



CAROL SHEPPARD

Oedemera nobilis (thick-legged flower beetle)

This beetle is often seen feeding on pollen in southern England. The male (shown here on *Leucanthemum vulgare*, ox-eye daisy) has enlarged hind legs, while the female's hind legs are thin. The larvae develop in plant stems.



HELEN BOSTOCK

Vanessa atalanta (red admiral butterfly)

One of 16 species of butterfly recorded visiting flowers on the plots. The caterpillars feed on common nettle. One of the few species of butterfly that is becoming more common.



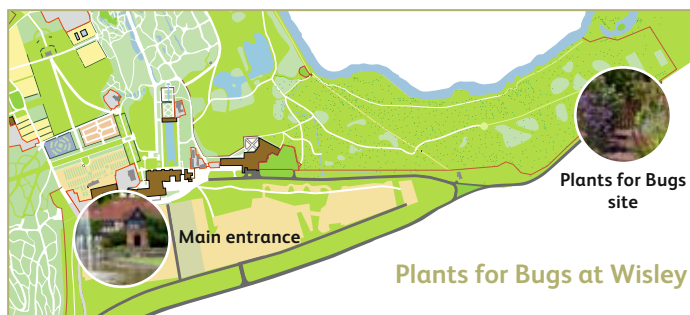
HELEN BOSTOCK

Leptophyes punctatissima (speckled bush cricket)

This bush cricket (shown here in its pre-adult 'nymph' stage, on *Armeria juniperifolia*) is often observed on the plots and in gardens. This species is vegetarian; other species are omnivorous and some are almost entirely predatory.

PLANTS FOR BUGS WISLEY

Twenty-first century studies such as Sheffield University's BUGS (Biodiversity in Urban Gardens Sheffield) have conclusively shown that gardens are a rich habitat for wildlife. Plants are a key factor in this, but it is unclear how the roles of native and non-native plants for wildlife compare. Current planting guidance for wildlife gardeners can be confusing and is largely based on assumptions or anecdotal evidence. Undertaken by the RHS Science Dept with support from the Wildlife Gardening Forum, Plants for Bugs is a unique study that will test whether the geographical origin of garden plants affects the abundance and diversity of invertebrates they support. The Wisley Plants for Bugs site is open to visitors. It is situated at the end of Howards Field (see below).



All photographs © RHS / photographer. Cover (clockwise from top left). Female *Misumina vatia* (flower crab spider) on *Valeriana officinalis* with hoverfly (Helen Bostock); *Thymelicus sylvestris* (small skipper) on *Scabiosa caucasica* (Carol Sheppard); nectar-sampling (Georgi Mabee). Inside (left). *Acrionicta rumicis* (knotgrass moth; Carol Sheppard). Middle (clockwise from top). *Palomena prasina* (green shield bug) on *Stachys officinalis*; *Pyronia tithonus* (gatekeeper) on *Stachys byzantina*; *Apis mellifera* (honeybee) on *Lobelia tupa* (all Helen Bostock); Plants for Bugs site, Wisley (Carol Sheppard); Vortis suction sampling (Georgi Mabee); Plants for Bugs plots (Helen Bostock). Right. Male *Oedemera nobilis* (thick-legged flower beetle) on *Geranium sanguineum* (Carol Sheppard).

► For more information, contact science@rhs.org.uk

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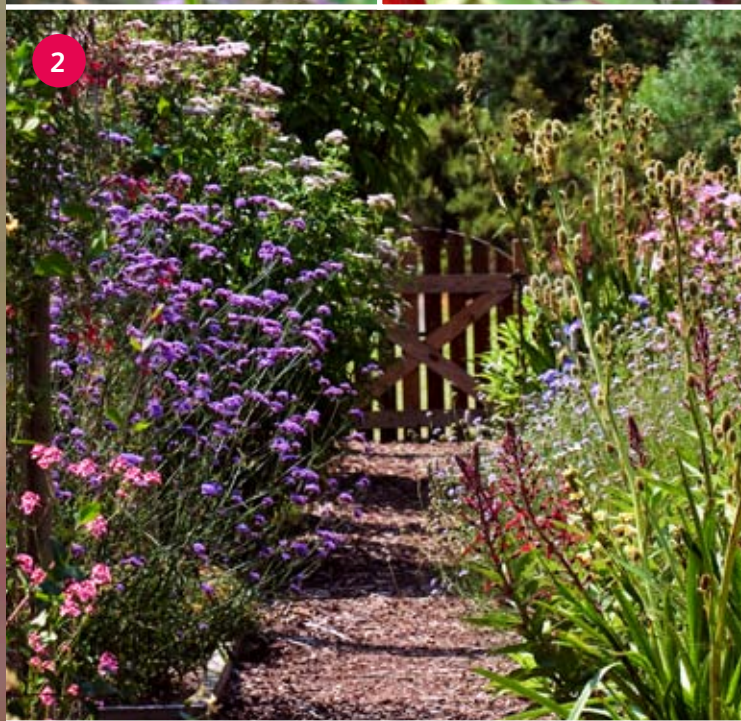
RHS PLANTS FOR BUGS

We know that some plants support more wildlife than others, but does it matter where the plants originate from? Views differ on whether only natives such as ox-eye daisies and primroses should be planted or whether exotic species such as fuchsia and verbena have a place in a wildlife garden too. The Plants for Bugs project, a four-year field study at RHS Wisley, will attempt to answer this question.

The project consists of 36 plots (each 3x3m) on two sites, one within RHS Garden Wisley ②, and the other at the adjacent Deers Farm trials site. Each plot contains a mixture of 14 species native to one of three zones: Britain, the Northern Hemisphere excluding Britain, and the Southern Hemisphere ①. Each mixture includes bulbs, perennials, shrubs, a climber and grasses or ferns, and is designed to replicate a garden border ③.

Plot design ►

The layout follows a randomised split-plot design with 18 beds at each site and a total of nine planting variations (native A, B and C; near-native A, B and C; and exotic A, B and C). Timber-edged 3x3m plots are separated by 1m-wide woodchip guard-rows. The plots are kept as garden-like as possible; hand weed control is carried out to prevent flowering and competition with the plant assemblages, and plants are watered, cut back or staked where required. No pesticides are used on the plots.



◀ Plant selection

A minimum of 14 plant species native to one of three zones has been selected for each treatment. The plant assemblages are designed to appear as similar as possible in terms of plant height, density and position in the plots. Wherever possible, plants are replaced like-for-like if gaps or winter losses occur. These pictures show one set of three corresponding plants: *Stachys officinalis* (left; Britain), *Stachys byzantina* (top; Northern Hemisphere), and *Lobelia tupa* (Southern Hemisphere).

Invertebrates from native and non-native plots are recorded from the ground (using pitfall and gastropod traps), the foliage (using a Vortis suction sampler ④) and the air (by visual observations). Soil fauna is also being investigated in a PhD in association with the University of Roehampton.

Other data recorded include plant density and canopy cover (vegetation volume), soil moisture, numbers of flowers, and nectar volume and composition.

An average garden contains around 70% non-native and 30% British native plants. Data from the Plants for Bugs study should reveal if there are any measurable differences in invertebrate numbers and species between these plant groups. This will inform the advice we give to gardeners about planting for wildlife.

