

# Plants for Bugs: a study of invertebrate plant preferences in British gardens



## Background

Conducted over four years by RHS Science at RHS Garden Wisley, Surrey, and supported and inspired by the Wildlife Gardening Forum, Plants for Bugs was a unique field experiment, designed to test whether the geographical origin of garden plants affects the abundance and diversity of invertebrate wildlife they support.

## Experimental design and set up

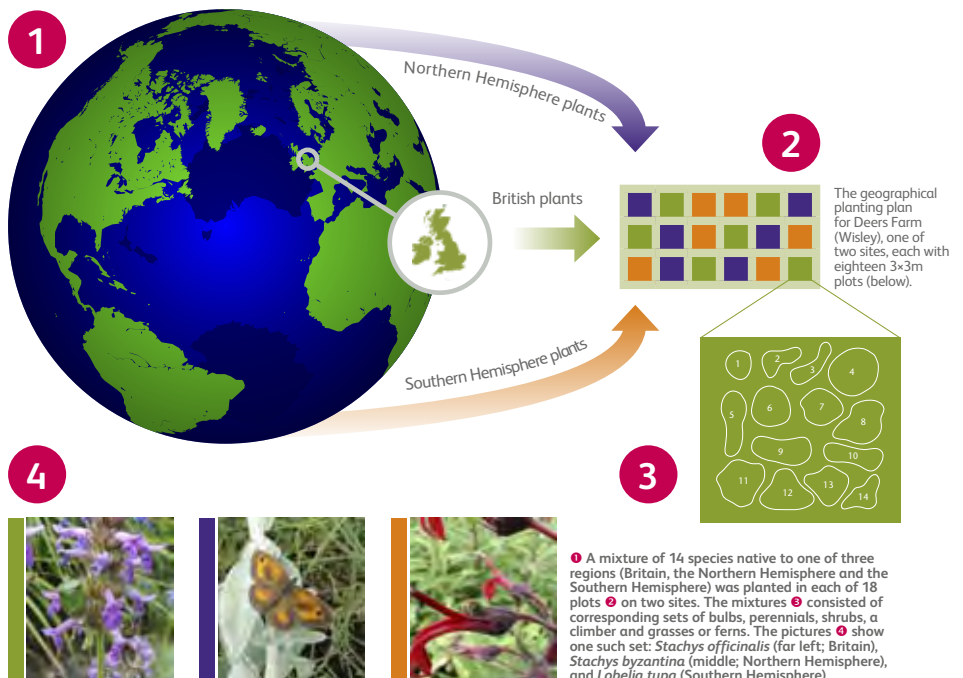
36 plots (each 3 x 3m, the size of a typical British garden border; see plan, right) on two sites at Wisley were planted with a combination of 14 plant species native to one of three geographical regions (treatments):

- ♦ Britain (native);
- ♦ Northern Hemisphere excluding Britain (non-native – northern);
- ♦ Southern Hemisphere (non-native – southern)

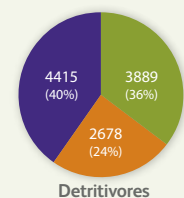
A mix of bulbs, perennials, shrubs, a climber, and grasses and / or ferns were planted in each plot in a consistent design across all plots. The plots were managed as typical garden borders and no pesticides were used. The study was designed to remove bias, and all protocols were developed to be scientifically rigorous.

## Sampling

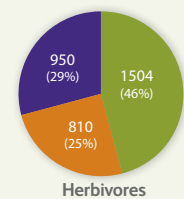
Tens of thousands of invertebrates were recorded from the plots by several methods: from the ground using pitfall and gastropod (slug and snail) traps; from the foliage using a Vortis suction sampler; and from the flowers (pollinators) by visual observation.



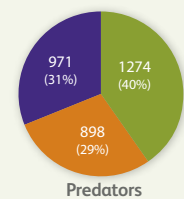
## Plant-dwelling invertebrate catch during the project



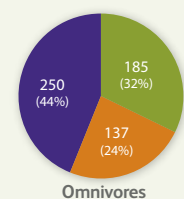
Detritivores



Herbivores



Predators



Omnivores

Breakdown of the 17,961 invertebrates identified from Vortis suction sampling over the four years of the project, excluding 4,741 uncategorised (mostly non-feeding adults).

■ British native plants  
■ Northern Hemisphere plants  
■ Southern Hemisphere plants

## Paper 1 findings – pollinators

The best strategy for gardeners wanting to support pollinating insects such as bees and hoverflies in British gardens is:

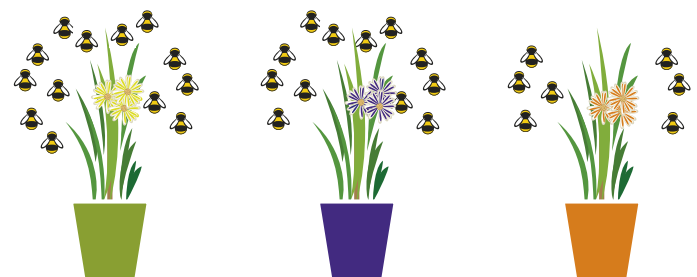
- ♦ To plant a mix of flowering plants from different regions.
- ♦ To weight plantings towards plants native to Britain and the Northern Hemisphere, though plants from the Southern Hemisphere can be used to provide nectar and pollen for some pollinators and extend the season by flowering later in the year than many British and Northern Hemisphere plants.
- ♦ To plant more flowers regardless of plant origin (native or non-native), as there is a direct relationship between the number of flowers and the number of pollinating insects.

## Paper 2 findings – other invertebrates

The best strategy for gardeners wanting to support plant-dwelling invertebrates (including those that eat living or decomposing plant material and those that feed on other invertebrates) in British gardens is:

- ♦ To plant a predominance of British native plants.
- ♦ To consider planting schemes based on Northern Hemisphere plants as these may support only marginally fewer invertebrates than British native schemes. This applies both overall (less than 10% fewer) and in three of the four primary invertebrate functional groups investigated (herbivores, predators and detritivores).
- ♦ Not to discount planting schemes based on Southern Hemisphere plants, as these still support a good number of invertebrates, albeit around 20% fewer than British natives.
- ♦ To plant more regardless of plant origin (native or non-native), as there is a direct relationship between the more densely a planting scheme is planted or allowed to grow, and the more invertebrates of all kinds (herbivores, predators, detritivores and omnivores) it will support.

We would emphasise that this interpretation is only intended for those choosing plants for an ornamental garden in Britain (home gardeners, professional horticulturists, community gardeners, garden designers and landscapers working in a garden setting). Outside the artificially managed garden – for example in managing semi-natural habitats where the conservation of native habitat and species are the primary concern – different criteria apply.



Paper 1: pollinators. If a garden contained flowering plants from a single region, the number of pollinators that visited British native plants would differ only marginally from the number found in a garden consisting solely of plants from the Northern Hemisphere, but would be almost double the number in a garden with only Southern Hemisphere plants.



Paper 2: plant-dwelling invertebrates. In a typical garden there is usually a mix of plants from different regions. But if you were to choose plants from a specific region (as we have done in this experiment), to obtain the same number of invertebrates as from a plot of British native plants, you would need about a fifth more Northern Hemisphere vegetation, and about a quarter more Southern Hemisphere vegetation.

■ British native plants ■ Northern Hemisphere plants ■ Southern Hemisphere plants



“Diversity of plant origin in gardens is a strength, not a weakness, in supporting pollinating insects.”

‘Plants for Bugs: all in the mix’,  
The Garden magazine 2015