



Gardens benefit bees and biodiversity in agricultural landscapes

Gardens are good for biodiversity, according to a study of intensively managed farmland in Sweden. The study has found that abundance and species richness of pollinating bees is higher near domestic gardens, with the pollination of a native plant also greater at these sites. Domestic gardens play a role in complementing 'natural' habitats for pollinators in impoverished environments.

The loss and fragmentation of natural habitats caused by agricultural intensification has negative effects on wild plant reproduction. Pollination failure, either caused by lack of mates or lack of pollinators, poses a serious risk to ecosystems. Studies that investigate how to minimise the risks posed by the loss of farmland biodiversity are therefore crucial.

The researchers analysed landscape in a region largely dominated by agriculture in southern Sweden. The percentage area of agricultural land use was on average 82%, made up of crop fields (91%), leys (6%) and permanent pastures (1%). Within each sector, two isolated domestic gardens of at least 500m² were identified. Phytometers (plants used to estimate pollination, in this case a bellflower) and pan traps (for trapping bees) were placed at two different distances from the gardens for a period of three weeks.

The study found that the abundance of bees was significantly higher at the sites closer to the gardens. A total of 244 bees, of 28 species, were sampled in the traps. Over the three weeks of the study, an average of 24 bees were sampled per set of proximate traps compared to seven bees per set of distant traps. The bumblebee *Bombus terrestris* was the most common of the social bees (27% of social bees) and the most abundant solitary bee was *Andrena nigroaenea* (29% of solitary bees).

Species richness of solitary bees was significantly higher in traps close to gardens; however, bumblebee species richness was only slightly higher. The average seed weight of the flowers tested at the different sites was significantly higher at sites closest to the gardens (seed weight was used as a measure of seed number). Proximate phytometers had a mean seed weight of around 33mg, while the mean seed weight of distant flowers was approximately 18mg.

The results demonstrate how gardens can act as a source of pollinating bees in landscapes dominated by agriculture. Gardens provide features beneficial for bee species, including diverse nesting sites and a continuous supply of nectar and pollen. The increased seed set for the bellflower closer to gardens highlights the role that this habitat plays in increasing pollination. The outcome of this research emphasises how modern agricultural landscapes are lacking in vital pollinator services.

Habitat types other than those that are natural or semi-natural can play a role in maintaining diversity and, consequently, should be made the focus of more scientific research, says the study. Acknowledging gardens as a resource for biodiversity could lead to improvements in the quality of existing gardens and domestic gardens could be included in conservation planning situations. For example, the position and management of gardens could increase the connectedness of isolated (semi)-natural habitat fragments. As the results from this study demonstrate, a dramatic lack of pollination, even 140m from gardens, means more measures need to be put in place to help pollinators thrive in agricultural landscapes.

Source: Samnegård, U., Persson, A.S., Smith, H.G. (2011) Gardens benefit bees and enhance pollination in intensively managed farmland. *Biological Conservation*. 144: 2602-2606.

Contact: anna.persson@zoekol.lu.se

Theme(s): Biodiversity

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "[Science for Environment Policy](#)"; European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.