Who is this information for?
Relevant to all gardeners (town, city and rural).

Why are pollinators important?
Insect pollinators are important for our environment and for biodiversity. They are essential for seed production by wild plants as well as flowers, vegetables and fruit grown in gardens. Pollinators support healthy ecosystems, particularly by helping plants to produce fruits and seeds which birds and other animals rely on. Also, they are valued by the public, and, as part of our natural world, contribute to our health and well-being.

Pollinating insects include honey bees, bumblebees, solitary bees, wasps, hoverflies and other flies, butterflies, moths and beetles. Since the 1950s, the distributions and diversity of some wild pollinator groups have changed in Britain, with certain species disappearing from large parts of the country. If we all take action in our own gardens, we can help to maintain and support populations of these valuable insects into the future.

What do pollinators need?
Different types of pollinators have different requirements. All of them feed on nectar (which provides energy in the form of sugars) as adults and many also feed on pollen (which provides protein). Bees also feed their larvae on pollen and nectar. Hoverflies have particularly varied life-cycles and the larvae of many some feed on plant pests such as aphids, making these insects doubly useful. Butterfly larvae (caterpillars) feed on plant leaves and different species need different larval host plants.

In addition to their food requirements, pollinating insects need the right sort of habitat to complete their life cycle.

How important are gardens for pollinators?
An astonishing diversity of pollinators can be found in gardens, whether town, city or countryside. For example, in a Leicestershire garden where records were kept for 30 years, the following were recorded:

- 13 of the 25 British bumblebee species,
- 55 solitary bee species (46% of the total recorded in Leicestershire),
- 94 hoverfly species (50 of which were seen regularly),
- 23 butterfly species,

Bees in particular need suitable places to make their nests, which may be below ground (mining bees and many bumble bees), in dense vegetation on the surface (carder bumblebees), or in holes in logs, plant stems, walls etc. (e.g. mason and leafcutter bees).
In the National Bumblebee Nest Survey carried out in 2004, gardens were found to be one of the best habitats for pollinators, with average densities of 36 nests per hectare, compared to, for example, 11-15 in grasslands, 11 in woodland and 30 in hedgerows in the wider countryside. In addition, bumblebee nest density and survival, bee abundance and species richness, and plant seed set, have all been shown to be higher near gardens. Gardens interact strongly with the surrounding countryside and can enhance pollinator abundance by providing plentiful flowers when the countryside may offer few (e.g. early spring and late summer/early autumn).

What you can do
Growing flowers for pollinators
One of the easiest and most rewarding ways of encouraging pollinators is to grow flowers rich in pollen and nectar. Many garden plants are attractive to pollinators, though their attractiveness varies both overall and for different types of pollinators. Trees and shrubs can be valuable as well as herbaceous plants. Highly bred varieties may be less suitable, especially ‘double’ flower varieties, which have extra petals and produce less pollen and nectar. For example, a study comparing four varieties of dahlia found that the double ‘pompom’ and ‘semi-cactus’ varieties were less attractive than open-flowered varieties.

Different types of pollinator like different types of flower so the best approach is to plant a diverse range in your garden. For instance, a study of gardens in Sheffield found that the abundance and number of different species of solitary bees increased with the number of species of garden plants. Bee species vary in the length of their tongues, and this affects the flower types that they prefer. Among plants favoured by bumblebees with short tongues in a national survey were rhododendron, cotoneaster, lavender, heather, comfrey, sedum, knapweed, bellflower and chives. Garden plants that long-tongued species preferred included comfrey, catmint, raspberry, rhododendron, foxglove, delphinium, dahlia, and honeysuckle.

It is also important to provide flowers throughout the season, to accommodate the life cycles of different species of pollinators. Some emerge early in the season, while others require nectar and pollen later. Social species like bumble bees need food for the queen bees in spring when they are founding the nest, throughout the summer for the workers to rear the young, and finally at the end of the season for the young queens to build up fat stores before hibernating for the winter. Good early sources of nectar and pollen include wallflowers, comfrey, lungwort and fruit trees. Dandelion and white deadnettle, though often considered as weeds, are also very useful at this time of year.
Late flowering garden plants favoured by bumblebees and others include dahlia, fuchsia (single varieties), Michaelmas daisies, sedums, marigolds, lavender and knapweeds. Ivy is a good autumn source of nectar for a range of species including honey bees, ivy bees and hoverflies, and is the larval food plant of the holly blue butterfly. It is easy to grow up walls and fences.

Other good plants for bees include wild marjoram, borage, vipers bugloss, musk mallow, hyssop, scabious, heleniums, veronicas and teucriums. These lists are not exhaustive and there are many other garden plants which support pollinators, for example you can find more on the following:

- Bees’ Needs website, (www.beesneeds.org.uk),
- the Bumblebee Conservation Trust, BeeKind website, http://beekind.bumblebeeconservation.org/

More information is also available on the BWARS website, including information sheets on some solitary bee species, http://www.bwars.com/index.php?q=information_sheets

It is always worth observing other gardens in your area to see what garden plants are best at attracting pollinators, then see if you can grow them

Providing nesting sites for bees
Pollinators not only need forage but also breeding habitat, and this is also something you can provide in your own garden. One of the most effective ways to do this is the provision of artificial nests for cavity nesting solitary bees e.g. mason and leafcutter bees (nest sites for bumble bees tend to have lower success rates). In the Sheffield study, artificial nests were used in every one of the 20 gardens in which they were provided. The best designs of those tested in this study were nests made of bamboo cane sections or wooden blocks drilled with holes. The bamboo sections were packed in plastic drainage pipes capped at one end with a postal type bung. Artificial nests in a range of designs are available from commercial suppliers, and they are also easy to make yourself.
How to make a ‘bee hotel’
Build a wooden box (6-8 inches in high), with one side left open and an overhang to keep out the rain. Fix this to a fence or wall. Drill blind holes between 2 and 6mm in diameter in some small logs, and put the logs into the wooden box for solitary bees to nest in. You could also add some bamboo canes sections cut to length and packed into drainage pipes or boxes. For further information see the information sheets on these websites:

http://www.bwars.com/index.php?q=information_sheets
http://www.foe.co.uk/sites/default/files/downloads/bee_hotel.pdf
http://www.buglife.org.uk/sites/default/files/Make a bee hotel.pdf

Other habitats
Most people like to keep their lawns regularly mown and short turf can provide nesting sites for some solitary bees, but if you don’t like mowing or have some extra space, tall vegetation is good for a wide variety of wildlife, including pollinators. It provides nesting habitat for some bees such as the common carder bee, and food plants for the caterpillars of several butterfly species including meadow grown, gatekeeper, ringlet, speckled wood and several others. Even better is a ‘wild flower meadow’. Butterfly food plants that you could grow in your own meadow include sorrel (for the small copper) and bird’s-foot trefoil (for the common blue). Bird’s-foot trefoil is also one of the best forage plants for bees, along with red clover, white clover and knapweeds, all of which are suitable for a wildflower meadow.

In general, the more habitat types and the wider the range of flowers you can provide in your garden, the more pollinators you are likely to attract.

• If you have a large garden, trees such as willow and lime, as well as fruit trees, provide good sources of early nectar.
• Bare ground, dry banks, old walls, piles of dead wood can all provide nesting sites for solitary bees and other species.
• Shady parts of gardens, log piles and compost heaps can provide larval habitat for many pollinators (especially flies) and nesting sites for bumblebees.
• Garden ponds or bog gardens can support the larvae of pollinators such as drone flies and can be flowery features if the right plants are used e.g. water mint, purple loosestrife, angelica, marsh woundwort.

Pesticides
Remember that pesticides, especially insecticides, can affect beneficial as well as harmful species and use sparingly if at all. Consider using alternative methods of pest control wherever possible, e.g. use barriers, physically remove pests.

Conclusion
Research has shown that gardens are very important habitats for pollinating insects. By growing a range of the right sorts of flowers throughout the year, leaving some areas of tall vegetation if you can, and providing some nesting sites, you can increase the value of your garden for these useful insects, benefit wildflowers and your garden plants, and ensure that your fruit and vegetable crops are productive.
The advice contained within this information sheets is evidence-based as far as possible. Experts from Government and a wide range of interested organisations, including research scientists, have helped to inform the development of this detailed advice. It is intended as good practice advice and should not be regarded as official guidance. Many other organisations also provide advice on managing your land for pollinators, and links have been provided here where appropriate.


