

# A BRIEF GUIDE TO BUILDING HOUSES FOR WILD POLLINATORS

## INTRODUCTION

Honeybees are important pollinators, however recent studies have shown that wild pollinators such as solitary bees, bumblebees, and butterflies often are more important for efficient pollination. Unfortunately, wild pollinators are decreasing in numbers and many species are endangered or already extinct.

In areas where there is shortage of wild pollinators it is possible to build various structures that can help re-establish a wild population. It has also become increasingly common to build houses for wild pollinators in gardens and in agriculture.

Even if there isn't an urgent need for housing for pollinators in an area it might be a good idea to establish a habitat for pollinators. As Steven Buchmann and Gary Nablan writes in "The Forgotten Pollinators":

*"If backyard bugwatchers become engaged with the interactions they see in their gardens, they might become stronger advocates for keeping highway medians herbicide-free, for assuring that only biological control agents are used to manage pests on food crops and for establishing corridors linking protected areas."*

These advice for how to build houses for pollinating insects have been compiled from various sources by artist and researcher Erik Sjödin and reviewed by Karin Ahrne, researcher at The Swedish University of Agricultural Sciences. The material has been compiled with Swedish pollinators in mind but are applicable to pollinators in most parts of the world.

## HOUSES FOR SOLITARY BEES

Most solitary bees dig nests in sandy soil. Suitable habitats for them can be created by digging pits or short trenches that faces south, so that open warm areas with sandy soil are formed.

There are also many solitary bees, for example mason bees and carpenter bees, who nest in holes in wood or in hollow plant stems.

A simple way to make homes for these bees is to cut straws of reed into 20 - 30 cm long pieces so that each piece has a wall section in the middle or one of the ends. The bees don't like to build their nests in holes where they can see right through.

The straws are collected in bundles with 10 - 30 pieces of straw in each. The bundles are then tied together with wire or strong string and placed in old milk cartons, plastic bottles or something else that can protect the straws from rain and from birds foraging in winter.

Instead of reed it's possible to use hollow stems from raspberry and elderberry bushes or bamboo.

Another easy way to make houses for solitary bees is to drill deep holes in logs and pieces of wood.

More advanced buildings can be constructed so that it is possible to inspect the bees and clean the holes (after a while the holes can be taken over by mites and other parasites).

The holes in a house for solitary bees should generally be 3 - 13 mm in diameter and 10 cm deep or deeper. Different species prefer different hole diameters but 8 mm works well for many species.

The houses can be placed both high and low. There are bee species that live both at or below ground level and high up in trees. However, the houses should be protected so it doesn't rain into the holes, firmly fastened so they don't sway in the wind or fall down, and preferably placed so they get morning sun and with the openings facing towards the sun.

If all goes well, females bees lay eggs in the holes in the spring / summer. The bees then develop from egg, to larva, to pupa, to adult bee, in the holes. In the spring / summer the following year the adult bees fly out to collect pollen and nectar, mate and lay new eggs.

Other insects than solitary bees, wasps for example, may also move into the newly created houses. These insects may not always be as efficient pollinators as solitary bees, but they also play their parts in the larger whole.

Examples of suitable hole diameters for some species of solitary bees:

Yellow-faced bees (*Hylaeus*) 3-6 mm  
Potter bees (*Anthidium*) 8-12 mm  
Carpenter bees (*Chelostoma*) 4-11 mm  
Mason bees (*Osmia*) 5-12 mm  
Mason bees (*Hoplitis*) 5-10 mm  
Leafcutter bees (*Megachile*) 8-13 mm  
Mining bees (*Anthophora*) 8-12 mm  
Carpenter bees (*Ceratina*) 5-10 mm

(Source: The Swedish Museum of Natural History)

## HOUSES FOR BUMBLEBEES

Some bumblebee species live underground, others at ground level and still others live high up in trees.

A simple way to build a house for bumblebees who live at or below ground level is to turn an old flower pot upside down and bury it completely or partially in the ground so that a cavity is created. The flower pot should have a diameter of about 15 cm and a hole in the bottom, which becomes the entrance hole.

It is also possible to build various bumblebee houses out of wood. A wooden bumblebee house may have one or two chambers. If the house has two chambers the first chamber will work as a place where the bumblebees can perform their needs when it rains and they don't want to fly out. The chambers should be at least 15 x 15 x 15 cm and maximum 25 x 25 x 25 cm.

The entrance hole and the hole between the chambers should be 10 - 20 mm. It can also be good to make some small vent-holes.

If the house is placed underground it is fitted with an entrance tunnel made of a hose or tube which extends up above the ground.

A wooden bumblebee house can be constructed so that it is possible to lift up the roof and inspect the bumblebee society.

In a bumblebee house there should be material available which the bumblebees can create their nest out of. Old mouse nests or vole nests are best, but it can also work well with loosely packed hay, airy moss, sawdust, or other fluffy organic material.

A bumblebee house should be placed in a sunny spot. It is also important to make sure that it doesn't rain into the house, and that it can't be flooded.

It is helpful if there is access to water near the nest, otherwise the bumblebees may spend more time searching for water than pollinating plants.

It can be difficult to get bumblebees to move into constructed bumblebee houses. Bumblebee queens wake up and begin to look for a suitable nesting sites in early spring. To attract a bumblebee queen and help her establish a community you can place a dish of honey mixed with water beside the nest, or in the first chamber of the house if it has two chambers.

## HOUSES FOR BUTTERFLIES

A butterfly house can serve as shelter for butterflies when it is raining or as housing for overwintering butterflies. An example of a pollinating butterfly that might use a butterfly house is the nettle butterfly. During the winter nettle butterflies often stay in spaces created by humans, such as outbuildings and woodsheds.

The opening of a butterfly house should be high enough so that a butterfly can step in with its wings folded together. On one of the walls inside there should be some bark that the butterfly can hang onto, and perhaps a branch or two. To attract butterflies to the nest you can place a dish of sugar water next to the house.

## IMPORTANT PLANTS FOR WILD POLLINATORS

Willow trees and willow shrubs bloom early and are important for pollinators, especially bees that are active in early spring. Flower meadows and ditches with great variety of wild grasses and flowers are paradises for bees and butterflies.

Many garden plants such as fruit trees, berry bushes and herbs such as sage, oregano, and thyme are appreciated by pollinators.

Important host plants for various butterfly caterpillars include nettles, clover plants, thistles, violets, garlic-mustard, mallow, many grasses and willow, hops, and currants.