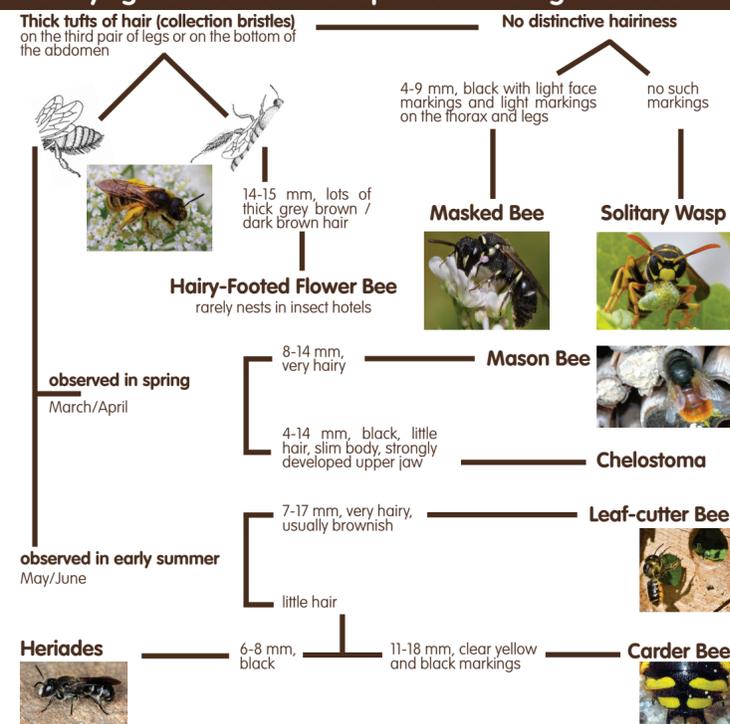


Identifying the most common species of nesting wild bees



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INFO-Nature 2 Diversity for bees

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Diversity for bees



together for nature

Discover the different bees in your garden – It is estimated that more than 87% of all flowering plants are dependent on animal pollination. Around 50% of pollinating insects belong to the order Hymenoptera. This group includes the honey bee, wild bees, and bumblebees. Among wild bees we find many “specialist” species that have been able to adapt perfectly to a small number of very specific plants. The increasing scarcity of pollinating insects has detrimental effects on the cultivation of important edible plants, as well as on the diversity of native wild plants.

The diversity of different species relies on the diversity of habitats and living spaces

There are over 20,000 species of bees worldwide. Luxembourg alone has some 350 species of wild bees. In this enormous diversity of wild bees, there are many “specialists” that require very specific habitats and food sources. Pollinator diversity thus relies on the diversity of habitats and living spaces.

The decline in bee species is explained by:

- The lack of food in cleared areas and sites that are over-farmed.
- The increasing scarcity of nesting places and safe areas due to the disruption of habitats.
- The careless use of pesticides in agriculture and by communes, local councils, and households.
- The proliferation of parasites, fungal infections, and viruses to which bees are becoming increasingly vulnerable due to environmental factors.

Many small details, both in the garden and your everyday life, can be of great help to bees.



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Solitary hermits

So-called hermit or solitary bees, cousins of the honey bee, do not live in colonies with a queen. Instead, each female builds her own cells into which she deposits nectar and pollen and an egg.

In the course of a year, the egg develops into a larva that eats the food reserves in the cell, grows, becomes an adult bee, and finally leaves the cell concluding a new cycle consisting of fertilisation, construction of cells, collection of nectar and pollen, and depositing of eggs.

In contrast to honey bees and bumblebees, solitary bees are not capable of stinging, and even if they could, their interest in doing so is very small. Their lack of a stinging impulse is attributable to the fact that they do not live in a group that needs to be defended.



Each year, only one generation of red mason bees flies. After 3-4 weeks spent flying and building the nest, the adult bees die and the next generation develops. The same does not apply to sand bees, which have two generations per year: one in spring and the other in summer.



Bumblebees: social wild bees

Not all wild bees are solitary. These large buzzing hairy bumblebees, for example, are social animals.

In contrast with honey bees, bumblebee communities have a life span of only one year: only fertilised queens will hibernate. Once spring arrives, the queens fly off in search of a place for their nests and establish a community.

While the community develops, worker bees take care of all the tasks like nest building, maintaining and watching over the nest, caring for eggs, supplying food... At the end of the summer, these workers raise the young queens and the male bumblebees (also known as “drones”). The young queens mate and hibernate. All the other bees in the community die before winter.

Bumblebees are threatened with the same dangers as other wild bees and honey bees.



Diverse living spaces

Hollow branches, reeds, sandy soils, empty snail shells, hollow spaces covered with leaves... all these habitats can become suitable nesting sites. These places are as diverse as the species that nest there. The way in which the nest is closed tells us about the species occupying it. Some species close brood cells with leaves or a paste made up of a mix of chewed up leaves and saliva. Other species use clay. Still others gather resin or small stones for this purpose.



Big family or apartment block

“Solitary” means “single”, but not necessarily “alone”, as more than one landowner has noted, particularly in the spring. Even if they are not part of an organised and coherent swarm group, bees often build in colonies, close to one other. In sunny weather, when bees fly the most, we can easily have the impression that the hedge or sandpit is occupied by an impressive population of bees.



Planting and promoting pollen-producing plants

The way in which the site is used plays a decisive role in gardens, too. The possibilities for feeding wild bees vary according to the purpose of the garden. Is it a recreational garden, a haven of peace and relaxation, a vegetable garden...? Anyone with a garden can create areas with wide varieties of colour and species without spending a fortune just by planting local seedlings and shrubs. As in old country gardens, you can plant herbs and flowers with the vegetables in your vegetable garden. But that's not all! From time to time, you can also allow your vegetables to flower. Perennial plants can be combined endlessly, to the delight of gardeners.



Creating and maintaining potential nesting sites

It's essential for different species of wild bees that nesting sites be as varied as possible. Create a variety of small structures. Many species of bee will come and settle here and find shelter when the weather is bad and the nights are cold. They don't always have to be insect hotels. These will also do the job:

- open surfaces of unused gravel, sand, or clay
- dirt paths left covered with sand or paved with sandy joints
- piles of rubble, dry wall
- dead wood, piles of wood
- stone gardens and flat roofs
- native tree seedlings within hedges or aromatic herb borders
- areas where the grass is only cut once a year



Avoid pesticides, but opt for alternative pest control methods to ensure a natural balance in your garden.

On a day-to-day basis, avoid using chemicals (cleaning products, paints, disinfectants, fungicides, and insecticides, etc.).

Support organic farmers and beekeepers in your region by buying their products.

Ask your local commune to maintain public spaces without using pesticides.



In order to help wild bees, sources of nutrition and potential nesting sites must be close to each other. Unlike the honey bee, wild bees do not travel far when foraging for food.

In general, it's a good idea to:

- favour wild plant species rather than cultivated species, and native rather than decorative seedlings of trees and shrubs. The latter generally only have a small amount of nectar and pollen, and wild bees almost never visit them;
- plant early-flowering plants, as many wild bees are already out in March/April;
- offer several varieties of closely related plants. This way specialised wild bees can still fall back on similar plants if they miss out on their preferred feeding plant because of bad weather;
- guarantee continuous flowering from March to September so that all generations of bees have something to forage for.



Reduce the sources of danger

Even if there is no lack of food in residential areas, the pesticides used by households and local communes are a threat to bees. A fair and sustainable agricultural policy in Europe and stricter and more reliable legislation on pesticides are urgently needed to protect pollinating insects and biodiversity.



Plants for the garden – Food for the bees



Hedges and seedling trees and shrubs are a breeding ground and a living environment for a large number of small animals and birds. But that's not all! If bushes and trees are carefully chosen, these can also be a precious source of food for insects that visit the flowers. Info-Nature 1 helps you to choose.



Aromatic plants

Aromatic flowering plants, particularly herbs such as mint, are precious sources of nectar and pollen for many insects. These plants can be combined with varieties of stoncrop and sedum to make hardy year-round arrangements in boxes and on balconies. Many herbs also do well in partially shady areas.

Perennial plants and shrubs

Flowery meadows are mainly made up of perennials such as dandelions, buttercups, meadow sages, centauries, autumn crocuses... These meadows form a stable structure, and they are a living environment for countless insects depending on the type of soil, climate, and use of the site.



Fruit trees and berry bushes

can even enrich the diets of their owner, thus acting as a habitat for plants, animals, and people.



Climbing plants

Some climbing plants are good providers of nectar and pollen. In general, climbing plants don't last as long in pots, and they are more difficult to care for. It is best to plant them directly in the ground. Climbing plants need a stable trellis, but most of them also require a good dose of fertiliser and large pots.



Bulbs and tubers as signs of spring

Bulb plants can be bought as flowers in the spring, or even planted at the end of the autumn. Because of their specific growing conditions, early flowering plants generally grow in partially shady or shady areas, on more humid sites. Bulb plants also grow in window boxes or flowerpots, but when potted they generally don't last longer than one season. Varieties suited to balconies should also be protected from the winter frost or replanted in the garden after the flower has wilted.



For terraces and balconies

Plants that flower in balcony window boxes and in planters not only look good, but they also attract a lot of visitors to their blossoms. Unfortunately, many plants traditionally used for balconies, such as geraniums, provide almost no nectar or pollen. If you want to offer visitors more abundant food, it's best to opt for flowering plants from the traditional range for balconies, or for a hardy wild native plant. Even if you plant flowers with nectar or pollen on your balcony, generally they will attract only insects that are still present in the surrounding area.

English name	Flowering period	Nectar & pollen for	Flower colour	Site	Botanical name
Hellebore	II-IV	B, BB	○ ●	☀	<i>Helleborus</i> i. v.
Pasque flower	III-IV	WB, BF	○ ●	☀	<i>Pulsatilla vulgaris</i>
Primula	III-IV	BB	● ● ●	☀	<i>Primula spec.</i>
Yellow whitlow grass	III-IV	B, WB	●	☀	<i>Draba aizoides</i>
(Wild) Strawberry	IV-VI	B, WB	●	☀	<i>Fragaria vesca</i>
Marigold	VI-X	WB	● ●	☀	<i>Calendula officinalis</i>
Common broom	IV-V	B	●	☀	<i>Cytisus scoparius</i>
Rock soapwort	IV-X	BB, BF	● ●	☀	<i>Saponaria ocymoides</i>
Marguerite daisy	V-X	WB, BF	○ ● ● ●	☀	<i>Chrysanthemum frutescens</i>
Fuchsia	V-X	BB, BF	● ● ●	☀	Fuchsia-hybrids
Roses	from V	B, WB, BB	● ● ●	☀	<i>Rosa spec.</i>
Holly	V	B, WB, BB	○	☀	<i>Ilex aquifolium</i>
Sage	V-X	WB, BB, BF	● ● ●	☀	<i>Salvia</i> i. v.
Thyme	V-IX	B, BB, BF	○ ●	☀	<i>Thymus</i> i. v.
Chive	V-VIII	B, WB, BF	●	☀	<i>Allium schoenoprasum</i>
Carthusian pink	V-IX	WB, BB, BF	●	☀	<i>Dianthus carthusianorum</i>
Speedwell	V-VIII	B, WB, F	●	☀	<i>Veronica</i> i. v.
Stoncrop	V-X	B, WB, BB	● ● ●	☀	<i>Sedum</i> i. v.
Blueberry	VI-VIII		○	☀	<i>Vaccinium corymbosum</i> "Blue crop"
Fan-flower	VI-X	B	● ●	☀	<i>Scaevola saligna</i>
Sweet pea	VI-IX	WB, BB, BF	● ● ●	☀	<i>Lathyrus odoratus</i>
Cucurbita	VI-VIII	BB	●	☀	<i>Cucurbita</i>

SITE:

- ☀ Sunny
- ☁ Half-shade
- ☷ Shady

FOR:

- B - Bees
- WB - Wild bees
- BB - Bumblebees
- BF - Butterflies
- F - Flies

i. v. - in varieties
spec. - includes different species



Flower pollen is rich in proteins and mainly serves as food for the larvae. Nectar is chiefly composed of sugar, and is the main source of energy for wild bees that are collecting the pollen.

English name	Flowering period	Nectar & pollen for	Flower colour	Site	Botanical name
Honeysuckle	VI-VIII	BF	○	☀	<i>Lonicera periclymnum</i>
Mint	VI-VIII	B, BB, BF, F	●	☀	<i>Mentha</i> i. v.
Round-headed leek	VI-VIII	WB, BB, BF	●	☀	<i>Allium sphaerocephalon</i>
Aster	VI-XI	B, WB, BB, BF, F	● ●	☀	<i>Aster</i> i. v.
Dyer's chamomile	VI-IX	B, WB, F	●	☀	<i>Anthemis tinctoria</i>
Cornflower	VI-VIII	B, WB, BB, BF, F	●	☀	<i>Centaurea</i> i. v.
Catnip	VI-IX	B, WB, BB	● ●	☀	<i>Nepeta</i> i. v.
Dahlias	VII-X	B	● ● ●	☀	Dahlia-hybrids
Nasturtium	VII-X	B, BB, BF, F	● ●	☀	<i>Tropaeolum minus</i>
Bindweed	VII-X	BF, F	● ●	☀	<i>Ipomoea tricolor</i>
Oregano	VII-IX	WB, BB, BF, F	●	☀	<i>Origanum vulgare</i>
Hyssop	VII-IX	B, WB, BB, BF	○ ● ●	☀	<i>Hyssopus officinalis</i>
Basil	VII-X	B, WB	●	☀	<i>Ocimum basilicum</i>
Purple loosestrife	VII-IX	B, WB, BB, BF, F	●	☀	<i>Lythrum salicaria</i>
Globe thistle	VII-IX	B, WB, BB, BF	●	☀	<i>Echinops ritro</i>
Spanish snapdragon	VII-X	BB	○	☀	<i>Antirrhinum hispanicum</i>
Heather	VII-X	B, WB, BB, F	○ ● ●	☀	<i>Calluna</i>
Cucumber	VII-IX	BB	●	☀	<i>Cucumis sativus</i>
Savory	VII-X	B, BB, BF, F	○ ●	☀	<i>Satureja</i> i. v.
Ivy	IX	B, F	●	☀	<i>Hedera helix</i>
Winter heath	XI-IV	B, BF	●	☀	<i>Erica carnea</i>

Viper's bugloss alone is visited by 37 different species of wild bees.

Maintenance of natural plant- and flowerbeds

In general, all you need to do is water moderately, weed, and remove wilted blossoms where required in order to encourage the appearance of new blooms. Mulch with a layer of greenery, leaves, or compost in order to suppress weeds and to prevent the soil from drying out. Avoid bark mulch as it can reduce the pH value. Soil for permanent plant- and flowerbeds should not dry out during the winter. Wait for spring to remove leaves and cut dry stems. Many insects use dry stems to hibernate. Perennial plants that have become too big can be divided or repotted. You don't need to use mineral fertilisers. Use ripe compost if necessary. Finally, don't forget to renew used soil in your pots.

Choice of plants

When you choose plants for your flowerbeds or the boxes on your balcony, above all take into account the following points:

- Different growing processes, competitiveness
- Flowering periods: some plants flower again after they are cut in the summer
- Adaptation to the site (soil and light)
- Natural life span

Nesting help for wild bees

Bird houses are certainly the easiest and most popular way to contribute to the protection of species in an urban environment. For several years now, providing nesting sites for insects has become increasingly popular. They are available in a wide variety of forms and are also decorative items. The most remarkable aspect is that these can be hung up in the smallest spaces, including on a balcony. Of course, these habitats will only attract species that are still close by, capable of travelling the distance between the food source and the nest, and above all able to find the right materials to camouflage and close the cavities in which they lay their eggs. What is certain is that a large number of insect hotels are not as successful as expected, are not adequate, or are even dangerous. This is why certain details absolutely must be taken into account.

It is best to provide insect hotels at the end of February/start of March, when the first bumblebee queens fly, followed closely by the first solitary bees. You will find nests that are ready to use at our nature shop in Kockelscheuer.

Creating an insect hotel - breeding place

The name "insect hotel" is often used to describe a group of nests that are very different from each other; however the term is actually rather questionable. But even though the term "hotel" is probably not exactly right, it describes this series of mixed nesting place in a good way. Of course, adult insects don't come to spend the night there. Insect hotels do not replace a natural environment either, but they serve as breeding places. Eggs are placed here with their food reserves to develop and hibernate. If a species finds suitable structures, a real little colony will actually form after a few years, and with good reason! Most wild bees prefer to lay their eggs where they themselves developed.



Bumblebees

Bumblebee boxes can house bumblebees, of course, but also one of their main predators: the wax moth. So their usefulness is questionable. It seems wiser to protect bumblebees by providing enough nutritious plants as well as by showing both tolerance and creativity. Unlike most solitary bees, bumblebees can in fact sting rather painfully. Generally, bumblebees are very peaceful, but they can also become grumpy if, for example, they are constantly prevented from reaching their nests. Solutions are generally simple. For example, you can deviate their approach flight using canvas sheets. natur&emwelt is happy to help you resolve your bumblebee or wasp nest problems.



Home-made nests



Stones for nesting

Insects that are fans of masonry are happy to settle in bricks, basalt blocks, or perforated granite blocks. In general they don't like perforated bricks, as the holes are too large. Hollow terracotta tiles that were used as roofing tiles in times gone by are popular with mason bees. These tiles can sometimes be fitted perfectly into dry walls or cover them. However, open ends must be blocked with cotton wool or mineral wool, depending on the fitting.

Stems for nesting

Hollow stems of bamboo, reeds, or straw can be cut into segments of around 20 cm long. Gather these segments together to form bundles. Insert one of the ends of each bundle into a protective wrapper such as a tin can, wooden crate, or plastic tube, and then hang up each bundle horizontally.



The residents of dead wood...

...will generally not use these tunnels in perforated wood, but will be content with pieces of wood at different stages of decomposition, and even completely rotten pieces.



Ground-nesting insects and inhabitants of steep walls

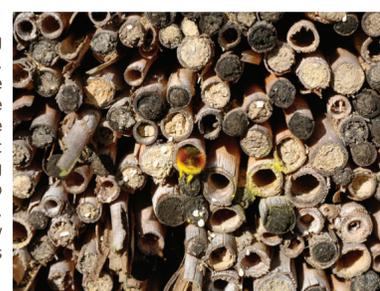
In a cleared urban environment, ground-nesting insects and inhabitants of steep walls are certainly the species that have the most difficulty finding a good place to nest. Crates or flower planters, filled 15 cm high with loess-type (sandy) materials and arranged vertically will do the job. The material should contain as little clay as possible in order to allow species that like to burrow to make their own tunnels. To find out whether the steep wall is suitable for these species, scratch the material with your nails. If it comes off easily, it is suitable. You can still drill holes in advance, which can serve as dwelling places. Piles of sand and other flowerpots filled with sand and crushed stones are other places appreciated by bees.

A simple playground sandpit can also become fascinating when downy sand bees nest in it.



To observe species

You will find nests with small transparent plastic tubes in shops, but the ventilation is poor and mould appears to such an extent that these nests are generally only colonised once. If you want to observe the insects, it's best to create your own nests specially adapted to this purpose. Using drill bits of size 2mm to 8mm, drill holes in a wooden log of 8cm to 10 cm in length. Next, cover the open end with a glass or plastic panel. In order to create darkness, add a wooden panel that you can open or close.



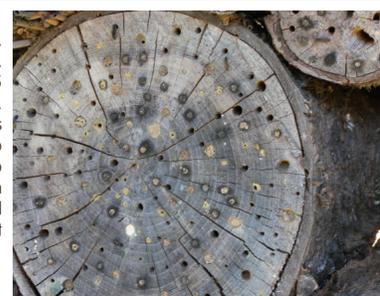
Stems containing pith

When arranged vertically, stems containing pith and other fine branches of elder, blackberry, mullein, artemisia, etc. are important. Close one of the ends of these stalks and branches with a protective wrapper (tin can, wooden crate, plastic tube, etc.) in the same way as for the nesting stems described to the left. Next, group them together or place them individually, protecting them from moisture. The hollow bricks mentioned above can also serve as support for these types of stems.

When you cut these stems, ensure that their open sides do not tear, that they don't fray, and that they are not pressed against each other so much that they become deformed.

Wood for nesting

Pieces of natural wood such as beech, ash, or oak, regardless of their shape (square, round) are suitable to drill tunnels 10-15 cm long with various diameters (2-10 mm). Pine, on the other hand, is less suitable as it tears easily. The perforated holes need to be far enough apart to avoid cracks. It is also important for tunnels to remain closed on the inside. Remove the shavings and wood debris at the entrances to the tunnels, so that they are clear and clean.



Some boxes become very handy "drive-ins" for birds. You can protect your insect nest with a fine wire mesh in order to prevent birds from helping themselves to the residents.

