Wildbees

The hidden heroes of your Garden

Table of contents

Foreword

In recent years, the media has been reporting on bee extinction. The wild bee is particularly affected. In Germany alone there are 550 different species of wild bee, of which a total of 40 percent are threatened. The wild bee has a significant influence on our ecosystem. It is not for nothing that it is considered the third most important farm animal after cattle and pigs. An extinction of the bee would have considerable consequences for the flora, the harvest of the fruits and for the biodiversity in Germany and Europe. Many people are not aware of the importance of the bee for the environment. They often associate the insect bee with the honey bee, which is bred by beekeepers. We humans bene t from the breeding of honey bees because they supply us with honey. However, many are not aware of the benefits of wild bees. However, the wild bees have a great influence on the harvest of many different types of fruit. These include, for example, the tomato, the pear or the plum. Many types of fruit and seeds cannot survive without the wild bee. If the individual species of wild bees die out, it is no longer possible to breed them.

Wild bee collecting pollen

We humans play a large part in why the wild bee is dying out. Climate change, pesticides and other environmental toxins, as well as habitat destruction are some causes of the extinction and threat to wild bees. The wild bee no longer has a nesting site and there is insufficient food. Another cause of wild bee extinction is the fact that these insects do not find the material they need to build a nesting site.

However, the good news is that you can actively contribute to the conservation and protection of wild bees. In this guide you will learn all the important information about the topic "wild bees". We will tell you all the important facts about this insect and its habitat.

The Wild bee – An Overview of all Relevant Facts

Food

Wild bee food consists of pollen and nectar. It needs pollen for the development of the larvae, while the adult bees only feed on the nectar. In principle, all wild bees have a vegetarian diet.

The wild bees take the pollen and nectar from the so-called bee-friendly plants. But not all flowers belong to this group. The scent of some plants attracts wild bees, but not all plants have the necessary nectar and pollen. This includes, above all, ornamental plants which have a pleasant fragrance and double flowers. These ornamental plants have an increase in the number of leaves, which means that the wild bees cannot reach the inside of the flowers. Often these flowers of the ornamental plants also have no pollen or nectar. The bees find no food in such plants.

The majority of wild bee species only feed on pollen and nectar from a very special genus of plants. Still other wild bees only need the nectar of a certain plant species for the care of their o spring. If this is the case, the wild bees are referred to as oligolectics (pollen specialists). Other wild bees, like the honey bee, have no preferences and can feed on different types of plants. This type of bees is called polyelectic species or pollen generalists.

Weight and Height

Adult wild bees (Latin name = Apidae) are about 20 millimeters in size. The width of the wild bees is up to 30 millimeters. However, the size of the individual wild bee species can vary. Wild bees between the ages of four and eight weeks can weigh a few milligrams up to 1.2 grams.

The Enemies of the Wild bee

The wild bee has many enemies that favor extinction. In general, the enemies can be divided into the following categories

- Predators
- Increasing spread of agriculture
- Human spread

Wasps are natural predators of bees

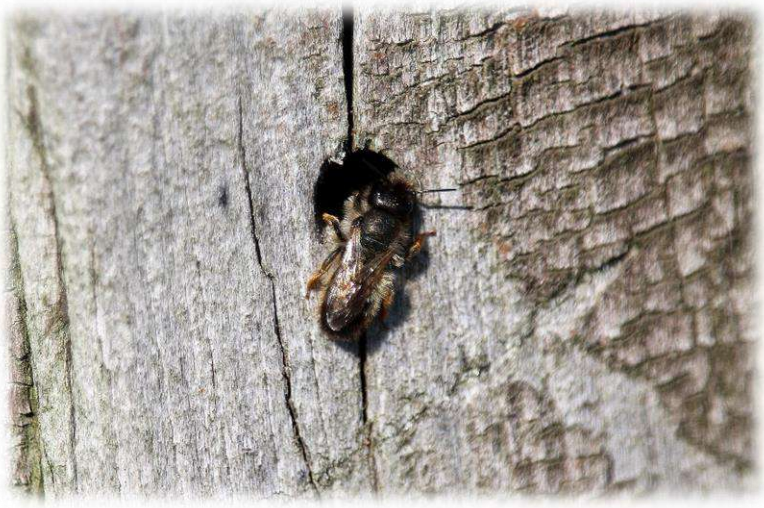
Wild bees' natural predators include wasps, birds, hornets and spiders. Today, however, agriculture is also a threat. While the wild bee has bene ted from agriculture and its structural diversity in the past, this has changed due to the increased industrialization. The consequence of this is that the wild bee is no longer able to find enough food and there are no nesting sites available. Agriculture has intensified more and more in recent decades, which has led to changes in Germany. The development of agriculture has led to a reduction in the number of relevant flowering plants. This is particularly noticeable for wild bees in late summer, as important sources of food are lacking during this time. In addition, structures such as stone piles, sandy paths or old hedges are increasingly missing. Agriculture as we know it today has little to do with the necessary habitat for important insects and wild bees. Agriculture also works with pesticides that are toxic to wild bees and other insects.

However, human expansion in the form of infrastructure also increases the decline in wild bees. In this way, the urban area of life offers less and less living space. This is particularly due to the fact that more and more apartments and houses are needed. The growing economy also makes a major contribution to this. Industry and economy have negative effects on the habitat of animals and insects. In addition, the sealing of the surfaces increases due to the construction of streets, sidewalks and parking lots. Allotments in cities and villages represent an additional expense for many people, which means that sealing is also carried out in these areas. Gardening has become less important to many people in recent years. In addition, many people choose ornamental plants in their gardens because they are not a source of food for the wild bee. The decline in these small structures makes a major contribution to the threat to wild bees.

In addition to these enemies of wild bees, climate change, parasites and diseases are also possible causes of bee death. In addition to chemical pesticides, neonicotinoids (chemicals) play a major role in bee death. This group of chemicals can damage the bees' nervous system. In such a case, chronic poisoning occurs. This chronic poisoning can even lead to

the death of the bee. The chemicals with neonicotinoids are among other things responsible for the fact that whole colonies are exterminated by bees. For this reason alone, organic products should be preferred. As an individual consumer, you cannot decide which poisons are used in agriculture. But by buying regional or organic products, you support the avoidance of the toxic substances.

The Way of Life and the Habitat of the Wild Bee



Nesting place of a wild bee in an old tree

The majority of wild bees prefer life as a loner. In this case, only the female is responsible for building the nests and supplying the brood cells. Most of the females receive no support from their peers in these elds. But there are also some exceptions for wild bees. These include bumblebees and some groups of furrow bees. These two types of wild bees have similar ways of life to the honey bee and live together as a colony of bees. The wild bee habitat can arise in different places. The following three dependencies must exist:

- A nesting site must be available.
- sufficient food must be found in the immediate vicinity.
- The right building material must be found for the construction of the nesting site.

Only if all three dependencies exist, a habitat for the wild bee can be created. All three dependencies must occur in the immediate vicinity. The immediate vicinity refers to a distance of 200 to 300 meters. As soon as one of these three resources is no longer available, there is no habitat for the bees. Natural nesting sites are the best for the wild bee. This includes piles of stones, dry stone walls, steep walls, plant stems, piles of branches or nature trails. Before a natural habitat is removed or destroyed by wild bees, humans should always note that natural nesting sites cannot be replaced by artificial aids.

Development and Growth of the Wild bee

The nests of all bees consist of brood cells, which are all separated from each other. The following materials are used for building so that these brood cells can be separated:

- Fibers from plants
- soil or resin
- pieces of wood
- The wild bees may also produce wax for the construction of the brood cells

After a cell has been completed, the wild bees impregnate the cell with their own glandular secretions. This type of impregnation is intended to protect against microorganisms and moisture. After completing this step, the wild bees create a supply of provisions. This task is usually carried out by the female wild bee. As soon as the brood cell has sufficient provisions, an egg is placed in it. The brood cell is then closed to protect it from other insects and animals. These steps are repeated until sufficient brood cells have been created. The majority of wild bees build their nests underground. For this purpose, passages are dug in the ground in which the brood cells will be located. But there are also bees that create unearthly structures. Dead wood, cracks in walls or plant stems are used for the unearthly structures. On average, a quarter of the wild bees in this country do not have any brood provision. This type of wild bee is also known as a cuckoo bee. The cuckoo bee smuggles its eggs into the nests of other wild bees. While the host bee supplies the host larvae with a pollen supply, the cuckoo larvae feed on this. As a result, the host larvae starve and the cuckoo larvae hatch.

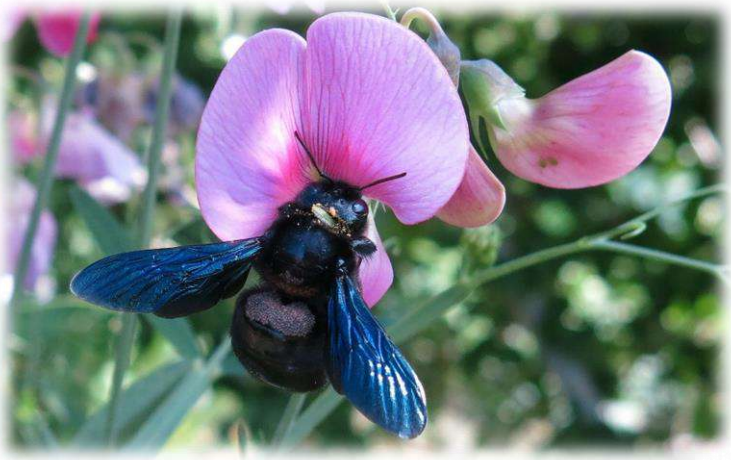
Perfect nesting conditions in a good bee hotel

The larvae from the individual cells take four to eleven days to hatch. After the larvae hatch from the eggs, you are in the growth phase. This growth phase takes about two to four weeks. When the larval phase draws to a close, some larvae spin a cocoon. This cocoon is the place where the larvae can rest for several months. The final step is the development from the larva to a full bee. This process is also known as pupation or metamorphosis. The duration of the metamorphosis depends on the season and the corresponding outside temperature. The colder the outside temperature, the more time it takes to develop. On the other hand, the process of hatching the bees takes less time in warm months. The life of the wild bees is approximately four to six weeks.

The Types of Wild bees

Different types of wild bees live in Europe and Germany. Depending on the type of wild bee, the appearance also differs. The differences can relate to the color or the shape. Some species can even be mistaken for the wasp or the hoverfly. The majority of bees have furry hair, but there are also wild bees that are practically bald. Around 550 wild bee species can currently be found in Germany. In order not to overwhelm you with the individual species of the wild bee, we briefly introduce them to you in this chapter:

- Carpenter bee
- Bind sand bee
- Wasp bee
- Scissors bee
- Horned mason bee
- Leaf garden cutter bee
- Field bumblebee
- Dark-soil bumblebee
- Holey bee
- Fur bee



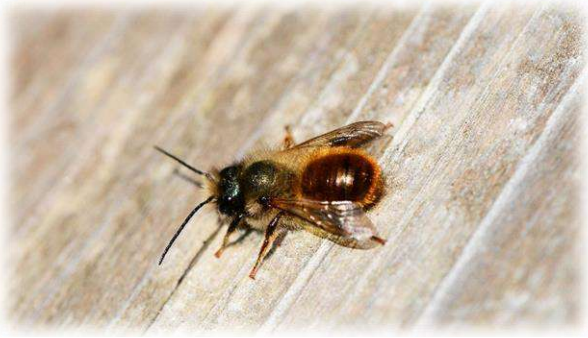
Carpenter bee at work :-)

The carpenter bee can be found especially in the warmer regions in Germany. This type of wild bee is a loner. The appearance of this variety is particularly striking and differs from conventional black and yellow bees in its black and blue color. The carpenter bee prefers to build the nests in the dead wood. Your preferred diet is pollen and nectar.

The Bind sand bee is also a loner and as the name suggests, this bee prefers to build nests in the ground.

With the wasp bee there is actually a risk of confusion with the real wasp. This type of wild bee is one of the endangered species in Germany. The wasp bees do not build brood cells for their eggs, but put them in the nests of other wild bees. This variety is so-called cuckoo bees.

The appearance of the scissor bee is characterized by its large mouth tool. In the months between May and August, this bee can often be found in our gardens. The scissor bee lays its eggs in brood tubes made from hollow plant stems.



The "horned mason bee" in the sun

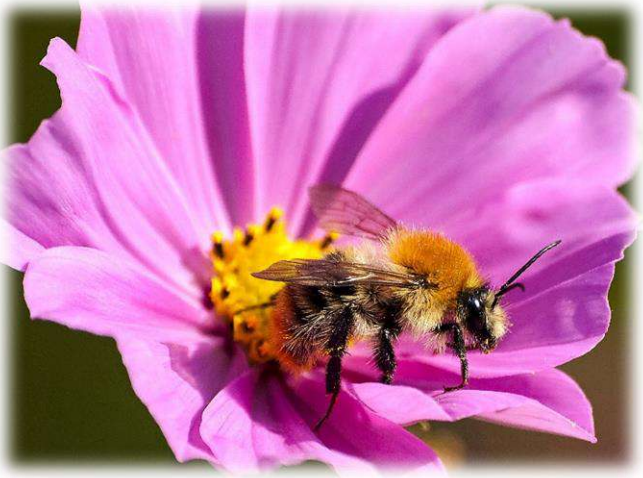
Another example of a striking appearance is the horned mason bee. The back of this wild bee is colored red and brown. The horned mason bee is also a loner.

The Leaf garden cutter bee got its name from the design of its nests. This bee uses pieces of leaves to build nesting tubes on them. These nesting tubes can be found in wooden columns and cracks in the wall.

As the name suggests, you can find the field bumble bee on meadows or on the edges of fields. She prefers plants like thistles or dead nettles.

Just like the bumblebees, the Dark bumblebee belongs to the wild bees. The dark bumblebee lives just like the bumblebee in bee states. There is also a queen in this type of wild bee, which is located in the holes in the ground.

You can find the Holey bee in your garden. It feeds its larvae itself. To find enough food for the larvae, the holey bee has to fly many flowers.



The furry field bumblebee basks in a blossom

For the "fur bee" the name says it all!

The Fur bee is already on the move in the colder months of spring. Their nesting passages can be found in steep or hanging walls.

The Difference between the Wild bee and the Honeybee

In general, the difference between the wild bee and the honey bee is that the honey bee is native to a colony of bees. The beekeeper takes care of the honey bee. They have been grown for several thousand years. However, most species of wild bees are solitary in the wild. However, this does not apply to all wild bee species. For example, the bumblebee lives in colonies, which makes it similar to the honeybee.

Honigbienen an ihren Waben

In contrast to the wild bee, the honey bee in Germany is not threatened with extinction. This is because there are over 100,000 beekeepers nationwide. Beekeeping is currently in vogue and the number of beekeepers is increasing. But the honeybees are not sufficient for the reproduction of the different types of plants. In addition to honeybees, mason bees and bumblebees are also required. For this reason, breeding honeybees is not a satisfactory solution. This is because the honey bee is not a substitute for the wild bee. The honey bee can only be seen as a kind of supplement to the wild bee. In Germany alone there were 28 genera of plants that can only be pollinated by wild bees.

The tomato can be mentioned as an example. The pollen of the tomato can be found in the elongated dust bags. These pollens are so tightly closed that they can only be shaken out with the help of the bumblebees. Unlike bumblebees, honeybees cannot generate enough vibration. The little bees lack the required amount of flight muscles for this. In addition, unlike honeybees, bumblebees have a particularly

thick fur. With the help of this fur, the bumblebees are able to absorb and distribute more pollen. For these reasons, pollination of the bumblebee is more effective than that of the honeybee. In addition to the tomato, there are other plant species that rely on the special types of wild bees.

The spreading of honeybees on fields and meadows is not helpful to distribute the flowers and pollen of these plants. Such a procedure can even have a negative impact on the number of wild bees: many wild bees live alone and the crowding out of wild bees when searching for food is extremely likely. The more honeybees there are in an area, the greater the likelihood that wild bees will leave this area.

In addition, the individual species of wild bees pollinate even in poor weather conditions. While the honeybees only fly off in warmer temperatures, the different wild bees are ready to go in colder temperatures. The extinction of wild bees would have the consequence that the plants are not pollinated by honey bees in bad weather.

The Ecological Importance of Wild bees

The wild bee is a useful insect, which is not only responsible for the beautiful flowers of carnations and roses. Rather, the harvest of pears, berries and tomatoes depends primarily on the pollination of the plant by the bee. The wild bee thus makes an active contribution to the biodiversity in Germany and Europe. This is because many plants rely on wild bees for pollination.

The daily "work" of the bee

As already mentioned, there are plants that can only be pollinated by certain types of wild bees. This is because the species-specific adaptation of the different wild bee species with the plants to be pollinated took place in the course of evolution. As a result, it is not possible for every plant to be pollinated by every ower; the broad beans, carrots or tomatoes rely on special types of wild bees for pollination. If these wild bee species become extinct, these plants cannot develop further.

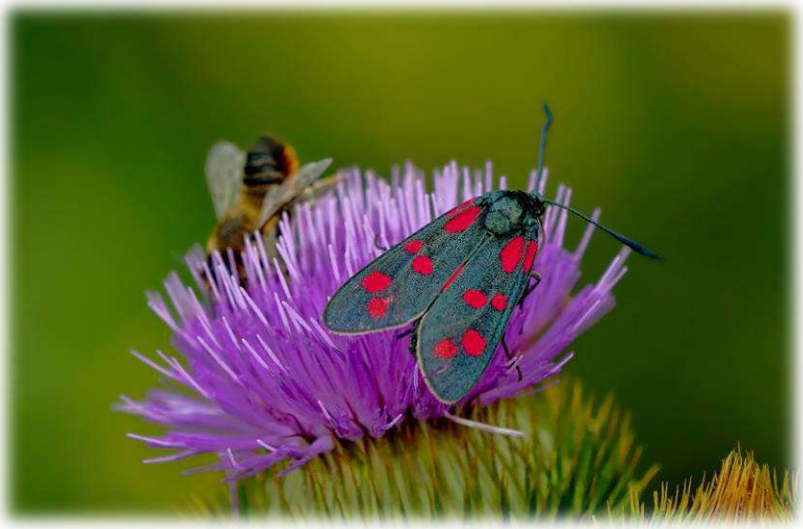
The lack of pollination would mean that we humans would no longer have certain types of fruit and vegetables. In Germany alone, about 80 percent of all plants are pollinated by wild bees. The extinction of different types of wild bees could have a significant impact on human food supply.

However, a lack of pollination from the extinction of wild bees would not only have consequences for humans, because this also affects some animal species. Many animals feed on flowering plants. These include, for

example, flies or butterflies. In the further course of the food chain, these insects are eaten by other animals. Accordingly, insects and animals, food for survival would be lacking. The decline in insects could be the reason why there have been fewer birds in agricultural areas in recent years.

Active Action – Help for the Wild bee

Although humans are guilty of the threat to wild bees, we can also take many measures to protect wild bees. The good thing is that a big change can be made with little e ort. There are many different ways to restore part of the natural habitat to wild bees. For example, you can convert your lawn into a meadow of flowers or build a small wall of natural stones in your garden bed in just a few minutes. When designing your garden, you should make sure that different elements and areas are represented. Instead of a large lawn, you can plant some beds with plants and flowers from the region. In addition, hedges and shrubs are a habitat for wild bees and other insects. An herb spiral, some sand and a nesting aid complete your garden. Such a garden design has the advantage that you do not have to spend a lot of money on it. Most of the elements are already found in nature. This way, not only the wild bees benefit from your garden, but you are doing something good for the whole environment.



Bee and butterfly on a thistle

Save yourself the hassle of gardening and don't pluck every weed from your bed immediately. This weed often begins to bloom and serves as a necessary source of food for wild bees. For example, thistles belong to the type of weed which is an important food source for some wild bees.

If you follow these steps, you will quickly find that many insects and small animals will visit your garden. Don't worry, you don't have to let your garden go wild, even a well-tended garden can provide a lot of living space for the wild bees.

In order to offer the wild bees a long-term habitat, the maximum protection of the landscape is of great importance. As many natural areas and natural paths as possible should be preserved. Dry meadows, lean meadows and nature reserves provide ideal conditions for insects such as wild bees. You can make an active contribution by looking for appropriate projects in your community.

Rock Gardens vs. „normal“ Garden

If you want to create a habitat for wild bees when designing your garden, you should always pay attention to a high structural diversity. With little e ort, you can create food and nesting opportunities for the wild bees. You have the option to choose between a rock garden and a garden. The rock garden is a special form of a perennial garden. The rock garden resembles the habitat of a high mountain range and different plants can be grown, which represent a habitat for the wild bees. The following plants fit into a rock garden:

- Reseda
- Thyme
- Stonecrop

The advantage of a rock garden is that the bees can build nesting places in the open spaces in the ground.

But even a conventional garden area can provide a habitat for different types of wild bees. The mixture of hedges, shrubs, beds and a lawn is ideal for this purpose. If you particularly enjoy gardening, you can also include a vegetable garden. The different vegetable and spice plants provide food for the wild bee species, which only specialize in certain pollen and nectar. At the same time, the vegetable plants can also be used by bees, which are extremely demanding. If you choose a vegetable garden, you must make sure that the wild bees also have access to the plants. Some plants are removed before flowering. This is the case with chives, for example. With this type of vegetable, you can simply leave a small part of the plants in the bed until the flower has faded.

Bees also like the flowers of the chives!

Marguerite, cowslip and squill are suitable in spring. If you prefer herbs, you should choose flowering herbs. These include lemon balm, basil, mint, thyme and lemon balm. Colorful flowers such as the spider flower or the straw beak offer pollen and nectar to many different types of wild bees. These flowers are also suitable to get the bees into the garden in the first place. The fragrance of the flowers attracts the individual bees.

In the warm summer months, various vegetables and the sunflower, catnip and scented nettle are suitable. For late summer and autumn, it is possible to grow sham sun and asters.

Plants from Wildflowers

The sowing of wild flower areas in particular offers a large habitat for wild bees. Alternatively, you can put a nesting aid in the garden. You can find special mixtures of wildflowers on the Internet or in specialist shops. Many supermarkets even offer these wildflower blends due to their high relevance. Planting wildflowers improves the food supply of wild bees and other insects. Such a variant is a suitable remedy in densely built-up settlements. When buying such wildflower mixtures, you should take special care that they are also suitable for pollen specialists among wild bees. The latter is particularly important because this type of wild bees is highly dependent on special plants. To clarify the problem, the bellflower – scissor bee can be called. This bee feeds its offspring exclusively from the bellflower. Without this plant, the bellflower cannot reproduce. The wild bee species that do not specialize in this special wildflower can also feed on the plant.

You can not only sow the seeds of wildflowers in your own garden. Rather, you can contact the nature conservation authority of your village or town and ask if you can also sow the seeds in the open countryside. However, you should always inquire in advance at the responsible nature conservation authority. Planting wildflowers makes a lot more sense than just setting up nesting aids. A nesting aid without the extensive range of pollen and nectar does not bring much.

Our wildflower mixture is perfect for sunny spots!

Wide Range of nesting Sites

The design of the nesting sites, which are of great importance for the wild bees, has already been mentioned in the previous sections. There are basically three types of nesting sites:

The wild bees feel right at home there!

- Old-wood breeder
- Stem breeder
- Ground breeder

The Old-wood breeders' nests are suitable for the types of wild bees that place their eggs in beetle holes in the old wood. This is primarily the blue-black carpenter bee. The stem nests are mostly found in hedges or bushes. Many wild bees also nest in the stems. The majority of wild bees' nest in the ground. Soil, grass gaps or sandy areas are used for this. Other types of wild bees also nest in uninhabited snail shells.

The Bee Hotel

Another way to offer a habitat for wild bees is the so-called bee hotel. This variant can help you to achieve an ecological balance in the garden or on a balcony. A bee hotel offers you many advantages. So, you don't need a lot of space for a bee hotel and can accommodate it even in the smallest space. In addition, the sounds of wild bees can contribute to relaxation. The most important thing is that with a bee hotel you can offer insects such as wild bees, wasps or bumblebees a nesting opportunity. A bee hotel is a great way to lay eggs.

In this chapter we have put together all the relevant information about the bee hotel topic for you. We explain what is important when buying a good bee hotel and how you can create a bee hotel yourself. In addition, we explain to you how to properly maintain a bee hotel and which mistakes you should avoid. So that the bene t of a bee hotel is optimal, there should be sufficient plants with flowers next to the hotel. Ideally, these are native plants that are not poisonous. For this reason, you should avoid chemical fertilizers and insecticides.

Buying a Bee Hotel

Finding a suitable insect or bee hotel to buy is not always easy. On the one hand, this is because the selection of insect hotels is not large. In addition, most insect hotels in discounters and hardware stores are of little use.

The insect hotels for sale often do not offer the wild bees a species-appropriate habitat. Rather, the decor is of a decorative nature and the insects cannot do anything with it. This is mainly due to the fact that cheap fillers are used. These fillers are mostly spruce cones, straw or wood wool. The materials used often have holes that are much too large and are not suitable for nesting. If you are looking for a suitable bee hotel, you should choose a model with dead wood and large pieces of wood. This wood should have openings that are not too big. These openings can help attract individually living wild bees. However, it is very important that the wood has no splinters or frayed openings. Such flaws can damage the wings of the bees.

Fir cones, filling material and badly drilled woods are not to be used & dangerous for the bees!

Building a Bee Hotel, Yourself

If you decide to build a bee hotel, choosing the right material is very important. Hardwood such as oak, fruitwood or beech should be selected as the base material. It is important to ensure that the wood is completely dry. You also need:

- Stems of raspberry or blackberry
- Hollow stems such as bamboo
- Small cardboard tube
- Clay tiles

Do not use wood wool or spruce cones. You don't need this type of filler to build a bee hotel

As soon as you have all the materials, you can start building the bee hotel. So that the wood does not tear when drilling, you should always drill it lengthways. When drilling, take a lot of time to work carefully. The individual holes should have a diameter of two to eight millimeters. The more openings of different sizes you work into the wood, the higher the likelihood that bees or insects will nest. Since most wild bees' nest in the sandy soil, you can also add a small patch of sand to your bee hotel.

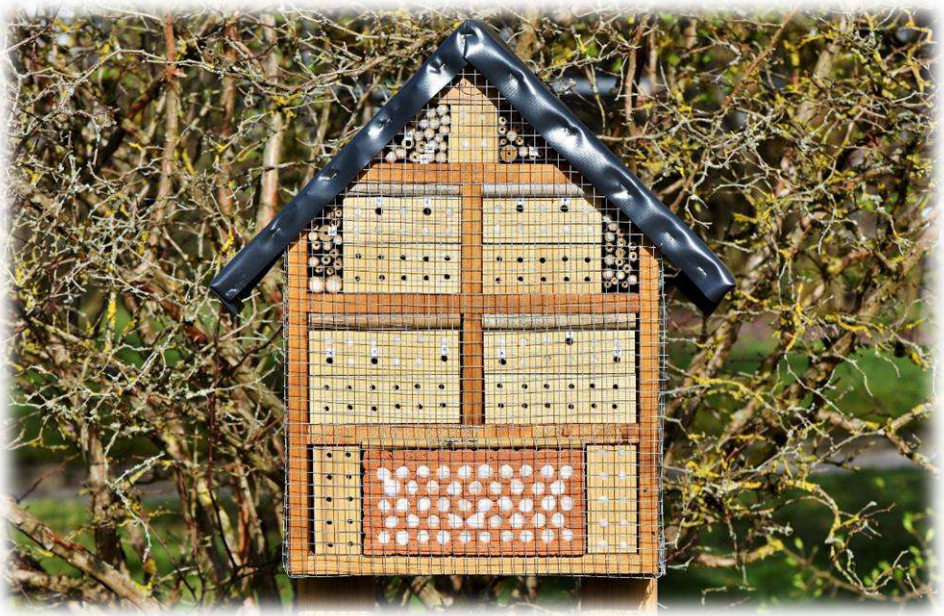
A beautiful home for bees!

After you have made the bee hotel, it must be attached to a protected location. It is best to choose a place with a roof so that no moisture gets into the bee hotel. If you have the opportunity, a place with sunlight is suitable for the accommodation of the wild bee hotel. The orientation southeast to southwest is optimal for this. In order to prevent the bee hotel from moving in the wind, a fixed installation is essential.

The correct Handling of the Bee Hotel

A bee hotel does not require a lot of effort, but there are still some aspects to be considered regarding the correct handling. It is not necessary to clean or maintain the hotel, as the insects carry out these activities themselves if necessary. Nevertheless, there are some tasks that you can carry out at the bee hotel over time. So, you should regularly remove spider webs. If some components such as straws or pieces of wood have fallen out, you can replace them. In addition, you should particularly carefully check the pieces of wood in which bees have already nestled.

To prevent fungal infections, you should check them every few years. It is also important to ensure that you do not change the bee hotel under any circumstances. So, find a suitable job right from the start. Look for the diameter that bees prefer. Accordingly, you can only incorporate openings of this size over time. In the long term, such an approach makes a lot of sense. This is how you can ensure that your bee hotel is used to the maximum. To ensure that the bees do not only use them as accommodation or nesting facilities, you should place the appropriate plants near the hotel. This way, the bees also have enough food.



Also, a beautiful bee hotel facing the sun

Conclusion

Humans are increasingly interfering in the habitat of wild bees. However, you can actively help prevent the wild bees from becoming extinct. Preserving the different types of wild bees not only has an impact on pollination of the individual plants. Rather, you secure the vital food for other insects and animals. As you learned in this guide, each one can help prevent wild bees from becoming extinct. Active action does not take much time and is easy to implement. Everyone can contribute to doing something for the environment. The wild bee is indispensable for maintaining biodiversity. You don't even need a large garden, because even a small balcony is sufficient. In terms of sustainability, the threat to the wild bee is a good example of how small changes can have a major impact on the environment. Albert Einstein had already mentioned that humans only have to live four years after the wild bee's extinction.

Therefore – let us all make a small contribution to the conservation of these little helpers.