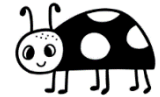




## **A Booklet**

For an  
Insect Paradise





## Contents

About us.....	3
What is an insect hotel and what does it do? .....	5
Which animals benefit? .....	6
Suitable plants .....	8
Choice of location for the insect hotel .....	9
Seasonal changes.....	10
The role of insects in pollination .....	13
Threats to insect populations .....	14
Acknowledgement.....	15
Sources .....	16



## About us

We are three students at the agricultural school in Dietenheim and are looking forward to taking our high school diploma in the school year 2024/2025. As part of our project, which we had to realise this year, we have chosen the topic 'Insects Paradise'. With this project, we want to take a closer look at the fascinating aspects of insects and nature and emphasise their importance for our environment and society.



### **Verena Fink**

My name is Verena Fink, I am 19 years old and come from Klausen. I am currently attending the agricultural college in Dietenheim and I am about to finish school and get my diploma. During the last five years of education, I have acquired a profound knowledge of agriculture and how to work with animals and plants. I am ambitious and always strive to learn new things. One of my weaknesses is my striving for perfection, which sometimes leads me to focus too much on details.

### **Michael Hofer**

My name is Michael Hofer, I am also 19 years old and come from Villabassa. I also attend the agricultural college in Dietenheim. I have very good organisational and communication skills and am motivated to work with my hands. However, I sometimes work hastily, which is one of my weaknesses. I am working on developing more patience and completing my tasks with the necessary care.

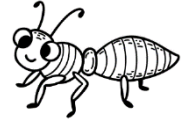
## **Jana Maria Oberkofler**

My name is Jana Maria Oberkofler, I am 18 years old and I come from St. Martin in Ahrntal. Like my two classmates, I attend the agricultural college in Dietenheim. I remain calm in stressful situations and I have a great passion for music. One of my weaknesses is my impatience, but I am actively working on it.

We are all motivated to put our knowledge of agriculture into practice and this way, contribute to sustainability.

## What is an insect hotel and what does it do?

An insect hotel is an artificially created nesting aid that provides a protected habitat for various insect species.



**Creating a habitat:** Insect hotels provide nesting and hibernation opportunities for various insect species, including wild bees, butterflies, beetles, and other beneficial insects. These structures help to compensate for the loss of natural habitats.

**Promoting pollinators:** Insect hotels are particularly important for the colonisation of wild bees, which are important pollinators for many plants. By providing suitable nesting sites, insect hotels can help to increase the pollinator population and thus boost yields in gardens and agricultural land.

**Increase biodiversity:** Insect hotels can attract numerous insect species, increasing biodiversity in a particular area. This diversity is crucial for the stability of ecosystems and for the provision of ecological services.

**Pest control:** Insect hotels can also attract beneficial insects that are natural enemies of pests. This can help to maintain the ecological balance in gardens and agricultural areas and reduce the use of chemical pesticides.



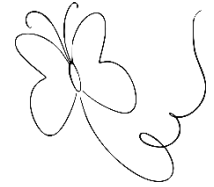
**Habitat preservation:** Insect hotels can be placed in both urban and rural areas to provide habitats for insects that are threatened by human intervention.



## Which animals benefit?

### **Butterflies**

Butterflies are among the most beautiful inhabitants of such an insect hotel. However, they also have a very important task, as they are the only ones that can pollinate plants with deep calyxes.



Butterflies cannot cope well with cold winters without protection. This is why most of them are in the egg, caterpillar, or pupa stage during winter time. The adult species then seek shelter in hollow trees or animal burrows. They then hibernate there until the next spring.

The vertical slit in an insect house is made for butterflies. Several of them can find shelter in the space behind it. During a mild winter, they can sometimes be seen flying out for a short while.

### **Lacewings**

Most people do not even notice lacewings because of their inconspicuous nature. They are well camouflaged by their elongated, green body and transparent wings. However, you should pay more attention to them because they are very good pest controllers. The larvae of lacewings eat hundreds of aphids until they pupate. This makes them one of the most useful insects and every plant owner should consider themselves lucky if they have them.





## **Wild bees**

Unlike honey bees, wild bees do not live in colonies in a beehive. Depending on the species, they look for their breeding holes in different places in nature. Most wild bees prefer holes in old wood, hollow branches, or walls. Insect houses equipped with drilled pieces of wood and bamboo are readily accepted by them.

The importance and significance of wild bees is often greatly underestimated. Yet they are particularly important for the reproduction and distribution of plants. It is only through their pollination that plants bear fruit, which we humans also consume. Without wild bees, the diversity of plant-based foods would be reduced. However, they need our help to survive, as their numbers are declining sharply. This is due to the destruction of potential nesting sites, the spread of monocultures, and the use of pesticides. This could even mean the end of some plant species, as there are wild bees that have specialised in these plants and are only pollinated by them. Most species of wild bees only live for one year and use the nesting box to lay their eggs. These then grow into larvae and swarm out as adult bees after the winter.



## **Ladybirds**

Ladybirds are also great beneficial insects that every plant lover should be happy about. They not only eat aphids and scale insects, but also spider mites and sometimes even fungal infestations on plants.

Ladybirds overwinter in groups and favour the filled rooms in the insect house or even the sheltered nooks and crannies.

## Suitable plants

To ensure that the insects find sufficient food it is advisable to pay attention to variety when buying plants. Native wildflowers such as yarrow, chicory, and red clover as well as herbs such as lavender, oregano, or thyme, provide sufficient nectar and pollen and are very popular with insects. Wild roses are recommended instead of highly cultivated roses.



## Choice of location for the insect hotel

Choosing the right location for an insect hotel is crucial to ensure that it is populated by insects and is ecologically sound.



**Protection from the weather:** The hotel should be protected from the cold, wind, and wet, ideally facing south to receive sunlight.

**Insect-friendly environment:** The insect hotel should be placed near flowering plants and water sources to provide food for the insects. Sealed surfaces or monotonous lawns should be avoided as these are not suitable habitats for insects.

**Protection from enemies:** The hotel should be positioned away from predators such as birds, cats, and dogs. A wire mesh can provide additional protection and a higher installation of approx. 80 cm protects against small children and other animals.

**Suitable locations:** Ideal locations for an insect hotel are house walls, trees, natural meadows and balconies or patios. The location should remain the same throughout the year so as not to disturb the insects' rhythm.



## Seasonal changes

The use of an insect hotel varies greatly with the seasons, as different insect species have different life cycles and activity phases.

Here are the typical seasonal activities in and around an insect hotel:

### **Arrival of the insects** (March to May):

With the awakening of nature and rising temperatures, many insects, especially wild bees, begin to visit the insect hotel. They look for nesting sites to lay their eggs.

**Nesting behaviour:** Bees and other insects use the various chambers of the hotel to build their nests there. Materials such as clay or parts of plants can also be collected.

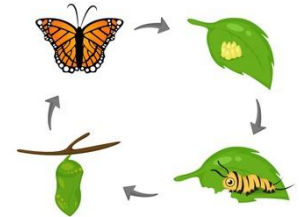
**During the summer:** The larvae that have hatched from the eggs are active and grow. Insect hotels can be very busy during this time.

**Feeding:** The insects are in search of nectar and pollen. A flowering garden near the hotel provides sufficient food.

**Visitors:** In addition to bees, butterflies, beetles, and other pollinators also use the insect hotel as a habitat or food source.

### **Preparation for winter** (September to November):

Many insect species prepare for the winter. Some wild bee species lay their eggs in late autumn, while others retreat into the hotel to protect themselves from the cold and wet.



**Restoration of the hotel:** It is useful to check the hotel in autumn to ensure that it is in good condition and that no pests or parasites have moved in.

**Dormant phase:** (December to February)

Insects are usually less active. Most species are in a dormant state or have retreated into the protective chambers.

**Protection:** The hotel offers protection from extreme weather conditions. It is important that it is well insulated to provide a safe haven for the insects.



### IMPORTANT!

The insect hotel should NOT be placed in a warm room during the winter. The larvae and pupae of the wild bees are sufficiently protected in the nesting places and wait for spring. In warmer temperatures, the insects believe that spring has already begun and hatch prematurely without finding food, which can lead to their death. The insect hotel should therefore always remain outside and in the same place.

#### After the winter: What needs to be done?

- No cleaning required: The empty chambers do not need to be cleaned as the next generation of bees will do this themselves.
- Remove spider webs: Remove spider webs from the hotel to protect newly hatched insects

**Prepare for spring**: Make sure there are plenty of flowering plants around the hotel in spring to provide a food source for insects.



## The role of insects in pollination



Insects are very important for the pollination of plants. Bees and butterflies in particular play a major role. They help to transport pollen from one flower to another, allowing the plants to reproduce. Many types of fruit and vegetables that we eat depend on these pollinators.

A healthy insect population is crucial for agriculture. When there are lots of pollinators, farmers can get more yield from their fields. This means they can harvest more fruit, vegetables, and other foods. In addition, a diverse insect population ensures that there is a greater variety of food, which is important for our diet.



## Threats to insect populations

Insects are exposed to various threats.

**Habitat loss:** The conversion of natural habitats into urban areas (also known as urbanisation) or through intensively farmed areas, leads to a loss of habitat for insects. This reduces the availability of nesting sites, food sources, and protection from predators.



**Pesticides:** The intensive use of chemical pesticides in agriculture has a major impact on insect populations. These chemicals not only kill harmful insects but also beneficial species such as pollinators and natural enemies of pests.



**Climate change:** Climate change alters temperatures and precipitation, which has a negative impact on the habitats and reproduction of insects. Extreme weather events such as droughts or floods can also worsen living conditions for insects.

## Acknowledgement

We would like to take this opportunity to thank all those who supported and accompanied us during our project.

Firstly, special thanks go to our teachers, who supported us with their valuable knowledge and experience. Their constructive feedback and motivation helped us to further develop our ideas and successfully realise our project.

A special thank goes to our Cooperation partners who not only provided us with a suitable space but also supported us financially. Their generous help and trust in our project have contributed significantly to our success. We greatly appreciate the cooperation and are grateful for the opportunity to realise our ideas in such a supportive environment.

Finally, we would also like to thank the people who were willing to give interviews. Without their contributions, this project would not have been possible.

We are grateful for all the experience and support we have received during this time.

Thank you very much!

## Sources

Warum Insektenbestäubung lebenswichtig ist - NABU

5 Vorteile von einem Insektenhotel im Garten | Der Nützlich – DerNützlich (dernuetzlich.de)

Insektenhotel Standort: Dort sollte eine Unterkunft aufgestellt werden

Insektenhotel im Winter: Sicher durch die kalte Jahreszeit » Insektenhotels

Insektenfreundlichen Garten gestalten (aok.de)

<https://www.ndr.de/ratgeber/garten/zierpflanzen/Pflanzen-fuer-Bienen-Hummeln-und-Schmetterlinge,pflanzen1236.html>

<https://gartenetage.de/ratgeber/insekten/insektenhotel-bewohner>