

Nature

How to attract wild pollinators in agricultural, forest, and natural areas?

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Sources: Presentaties Studiedag ENPLC 'Hoe wilde bestuivers aantrekken in landbouw-, bos-, en natuurgebieden' (23/09/2022); <https://www.bestuivers.nl/>; <https://www.ecopedia.be/>; <https://www.vdberk.be/>; van der Meer, Tijsma & Dijkhuis. (2020, 21 april). Inzaaien bloemen dooddoener voor wilde planten. [https://www.naturetoday.com.](https://www.naturetoday.com;); Kleijn & Fijen. (z.d.). Welke planten moet je inzaaien als je wilde bijen wilt bevorderen? <https://www.natuurpunt.be/pagina/ho-help-je-wilde-bijen-je-tuin>; [https://www.wur.nl.](https://www.wur.nl/); <https://www.natuurpunt.be/pagina/ho-krijg-je-een-waardevol-gazon>; <https://sapoll.eu/nl/>; Vlaams actieplan voor wilde bestuivers 2022-2030

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As a private landowner, you can take specific actions to attract and protect wild pollinators.

Worldwide, wild pollinators play a crucial role in the fertilization and reproduction of plants. In recent years, unfortunately, a decline in the number of these wild pollinators has been observed. To counter this declining trend, measures must be taken to protect these species - and the important role they play for biodiversity. Even as a private landowner, you can take specific actions to attract and protect - in an economically profitable way – wild pollinators.

The importance of pollination

Pollination makes fertilization and reproduction of plants possible through the transfer of pollen or pollen from the male parts of the flower to the female parts of the flower. This transfer of pollen can occur through animals, through wind, through water or through self-pollination. However, the vast majority of plants worldwide depend in one way or another on animals - or in other words "pollinators" - for their pollination. Both in agriculture and horticulture and in natural areas, these pollinators play an important role. Think, for example, of fruits such as apples, cherries and berries, vegetables such as

zucchini and tomatoes, or oilseed rape. The production of these agricultural crops - and of course much more than these few examples - depends on pollinators, who ensure the free spread of their pollen. Pollinators are also logically enormously important in natural areas. Without their presence, there would be a rapid impoverishment of local wild plants.

The different types of pollinators

Ants, bees, wasps, (hovering) flies, butterflies, moths, beetles ... all of these (wild) insects can contribute to the pollination of flowers. Even though the well-known honeybee - a domesticated pollinating insect - is often thought to

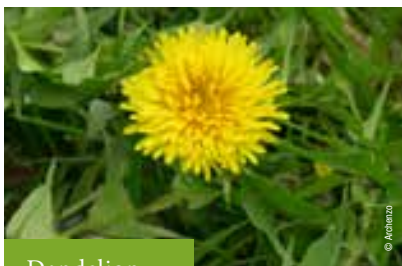
be the champion in this, recent studies show that wild bees, hoverflies and butterflies often contribute more to pollen transfer. The number of different species of wild pollinators is enormous. In Belgium, for example, there are more than 400 species of wild bees, more than 300 species of hoverflies and 75 species of diurnal butterflies, among others.

Bees can be divided into generalists and specialists. Unlike generalists (e.g., honeybees) who have no preference for one specific plant - and can pollinate the majority of flowers, specialists (e.g., gray sand bee, garlic mask bee and common slipper bee) depend on a specific plant or plant genus. To survive, specialists need a large enough population of that plant species.

Specifically, what are the most useful plants for wild bees?

As part of a study, Wageningen University checked which wild bee species flew to which plant species (the honeybee - *Apis mellifera* - was not included in this study). This allowed them to create a top 50 in which plant species were ranked according to the number of wild bee species, resulting in an overview of the most useful plant species for wild bees.

Top 5 plant species most visited by wild bee species:



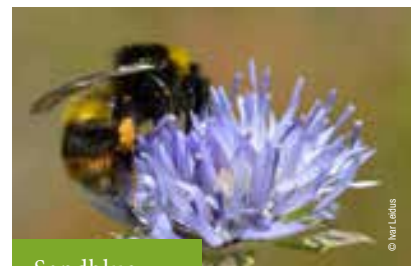
Dandelion

107 wild bee species



Field Thistle

98 wild bee species



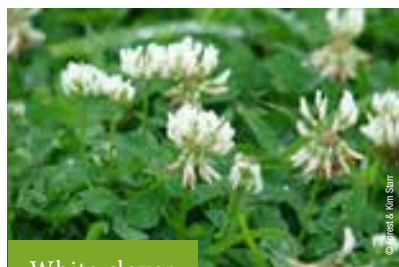
Sandblue

71 wild bee species



Common clover

71 wild bee species



White clover

67 wild bee species

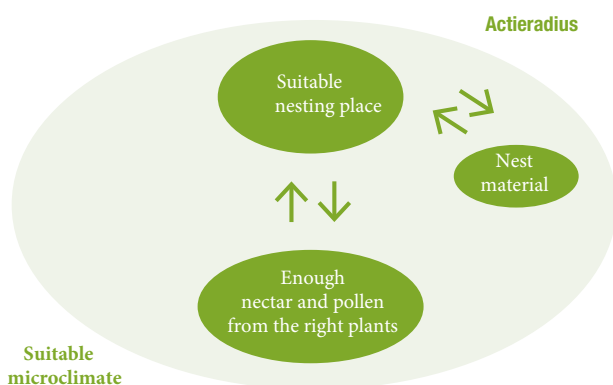


View the complete list



What do wild pollinators need?

To attract wild pollinators, certain elements must be considered. For example, there must be the possibility for the pollinators to create a suitable nesting place, and therefore suitable nesting material must be present in the environment. There must also be sufficient nectar and pollen from appropriate plants within their range - which differs for the different species. Of course, the microclimate - the climate near the ground that has a very individual character because of local conditions - is also important.



What do bees need?

Inspiring management measures

Start with a clear description of the objectives you want to achieve. For example, do you have agricultural crops that depend on a specific pollinator, or is a local pollinator in

your area threatened with extinction? Depending on the objectives you choose, your management measures will differ. What is important here, before these management measures can be successfully implemented, is to have a good picture of the environment in question. What texture (sand, clay, loam or a combination of these) does your soil have and is it rich in nutrients (organic carbon content, P, K...)? To obtain this information, consider having a soil texture survey done at, for example, the Soil Department of your country. Is water readily available? What kind of management is currently carried out (intensive arable farming, pasture management, organic farming, forestry, nature management, heath management, ...)? What kind of (micro)climate is present (sunny dry sides, moist environment with standing or flowing water, moist forest with shade...)? What wild plants occur naturally?

ObsIdentify

ObsIdentify is a free application for your phone that helps you identify what species are present in your area or what species you may encounter while hiking. Download the application using the QR code below on your phone. Then upload a photo of a plant, mushroom or animal here, click 'identificate' and find out immediately what species you have in front of you.



Download the ObsIdentify application for your phone here. <https://waarnemingen.be/apps/obsidentify/>

The LIFE ENPLC project

The Aanspreekpunt Privaat Beheer – Natuur en Bos is a partner in the LIFE project 'European Networks for Private Land Conservation' (ENPLC). Together with 17 other partners from 11 different countries in the European Union.

Climate change and biodiversity loss pose existential threats to privately owned or managed land. The objective of the ENPLC project is to support private landowners in the long-term conservation and restoration of their land, through the development of a European network. In this context, a partnership between private landowners and nature organizations was established, called the 'Conservation Landowners Coalition (CLC)'. Within the framework of this project, a study day was organized on September 23 at De Hoevens Estate on concrete management measures that private landowners can take within agricultural, forest and nature reserves to attract wild pollinators. After this training day, Landgoed De Hoevens was invited as an ambassador of the 'European Network for Private Land Conservation' for their commitment to ambitious sustainable private nature management.



Establishing a management calendar to benefit pollinating insects

Mowing cannot be done at just any time and not too often. This gives flowers a chance to bloom and guarantee the food supply for (certain) pollinators, and consequently, the survival of these populations. It is advised to establish a mowing schedule, taking into account the season and frequency of mowing.

Determining a mowing schedule is a complex matter that depends on the local situation. In theory, for flower meadows that already contain (some) flowers and herbs, mowing twice a year will be sufficient: once in spring and once in fall. If you only observe tall shiny grass, then your soil is still rich in nutrients, and it is best to mow three times a year. This is to ensure that the soil impoverishes so that flowers that naturally occur there have a chance to develop and spread.

Some tips for your management calendar?

First, stop fertilizing and liming and don't mow until the end of May. At that time, you can analyze what species are present and determine how often it is best to mow. Consider also playful actions such as "don't mow in May" in which the entire population is encouraged not to mow their lawn before May for the benefit of wild pollinators. Analyze what species of wild pollinators occur on your property, and when they end their life cycle. With this information, you can then also make informed decisions about when it's best to mow.

Want to know more? The book "Developing herb-rich grasslands" by Wim Schippers can get you started (Dutch)



Herb-rich grassland on Estate De Hoevens, The Netherlands

Phased mowing of herb-rich grasslands and flower borders, and phased pollarding of trees

With phased mowing management, you leave 10-30% of the area uncut each time. Applying this management to e.g. grasslands leads to a patchwork of blocks with alternating higher and lower cut vegetation. Also, for flower borders around an agricultural plot, this principle can be applied for example by not mowing one of the surrounding flower borders. This method allows wild pollinators to still be able to find food on this unmowed portion after the mowing. Moreover, many eggs, caterpillars and pupae are present on the plants during the mowing season and, if phased mowing management is not applied, not only the plants but also the insects themselves would disappear.

Phased pruning of trees follows the same pattern: do not prune all the trees at once, but always leave some trees unpruned so that pollinators can continue to gather food here.



Phased mowed grassland at a cemetery in Kontich ©Vertommen



Phased pollarded trees on Estate De Hoevens, The Netherlands

Planting and protecting flowering small landscape features (KLEs) such as pollarded trees, hedges, tree rows, standard orchards....

Several pollen-bearing tree species play an important role in the food supply of wild bees. Consider the willow - which we can think of as a star restaurant for bees - the maple, the linden, and, of course, fruit trees. Wild bees' favorite shrubs are hawthorn, blackthorn and spruce. In addition to providing pollen and nectar, such KLEs also provide beautiful nesting opportunities for wild bees.

Creating suitable nesting sites

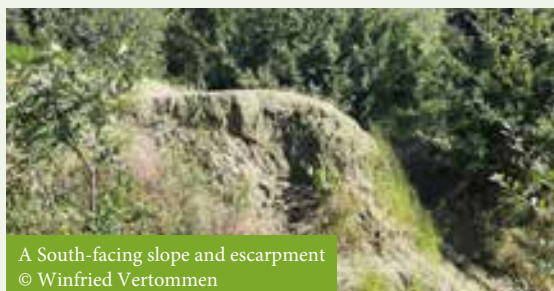
Wild bees need suitable nest sites. These nesting sites look different depending on the species: most wild bees dig their own nests in the ground, often in slopes or steep walls, or use above-ground cavities such as hollow stems or dead wood. Preferably, nest sites are south-facing, to have sun for most of the day.

Some tips to support wild pollinators in creating suitable nesting habitat:

- Prune trees and shrubs around suitable nesting sites and escarpments to prevent shading of these.
- During the spring, ensure that vegetation, near suitable nesting sites and steep walls, has been cut sufficiently short.
- Avoid paving and the use of root cloths and wood chips, as this makes it impossible to dig a nest in the ground.
- Provide relief by, for example, creating sand hills or preserving existing relief.
- Retain some dead trees and/or dead fruit trees and/or perennial stems.
- Place an insect hotel and/or wood piles.
- Install branch walls, which in addition to providing nesting habitat for wild bees, create a sheltered and safe place for overwintering diurnal butte



A grey sand bee (left) digging a nest in the ground © Natuurpunt



A South-facing slope and escarpment © Winfried Vertommen



Bee hotel © Vertommen

Establishing a forest edge to create a gradual transition

A forest edge consists on the one hand of a mantle with coppice or shrub species that are lower than the trees of the forest and, on the other hand, of a hem with more rugged grassy vegetation. Structural forest edges allow for a gradual transition between grasslands and forests and in addition, due to their range of flowers, nesting opportunities and other microclimates. Both in mantle and hem are an ideal habitat for various pollinators. Always provide a forest edge if possible, in an older forest that has existed for several years or even decades, in a newly planted forest, as well as in a forest that has yet to be planted. Be sure to plant species within this edge that are attractive to wild pollinators such as hawthorn, elder, or bilberry. A bramble in the hem also makes an excellent nesting site.



Forest edge

Establishing flower borders

Flower borders are strips of flowers and herbs sown along an agricultural plot to attract, among other things, pollinators. Before you enthusiastically begin sowing a flower mixture, it is important to evaluate what insects and plants are still present and what management has been applied to the plot in recent years. Analyze whether local rare plant species have been affected by excess nutrients in the soil are displaced by certain competitive grasses, and whether this phenomenon can be countered by proper mowing and disposal management (of grass clippings). If sowing a flower mixture is still the best solution, do not sow a "general" flower mixture, but consider the species that naturally (can) occur on the site, the local soil, the local climate, and your personal goals (do you want to attract specialists or generalists pollinators).

Need inspiration? Take a look at "Ecoflora. Ecoflora is an exceptional ecological nursery that specializes in native, wild plants and herbs. You can go there in the store next to the nursery, or order through the website www.ecoflora.be.



Flower border on Estate De Hoevens, The Netherlands

Nature

Overall, it can be said that a varied habitat is crucial for wild pollinators. A variation in the different nesting sites available, a variation in the landscapes available (forests, grasslands, flower borders...), a variation in the timing of management... in short, variation, variation, variation!



Field sown with the 'Veitshöchheimer Hempmix'. A seed mix for biodiversity and biogas production, developed by the 'Bavarian State Institute Viticulture and Horticulture' © LWG

Every year, the 'European Bee Award' awards to 2 innovative projects that protect pollinators in agricultural areas. In 2022, the "Veitshöchheimer Hempmix," won the first prize in the category of innovative land management techniques. They marketed in Germany a seed mix of 30 mostly native wild and cultivated annuals, biennials and perennial flowering plants that provide a beautiful variety of flowers, as well as biomass that can be used to produce biogas; an innovative agricultural cropping system that combines productivity, biodiversity and recreation.