

Bees, Food, & Future: How Declining Pollinators Threaten Global Nutrition

Why Bees Matter: Pollinators and Global Food Security

Life on Earth as we know it is dependent on pollination ([USDA, 2025](#)). Without short-range pollinators, such as bees, we would not have crops, flowers, or food. The work pollinators do is extremely underrated and underappreciated. They are keystone species, meaning that without pollinators, [ecosystems would collapse](#), rather than regenerate. Essentially, [Strong Sustainability](#) (a THRIVE [Foundational Focus Factor](#)) focuses on nature's ability to regenerate and thrive, which would not be possible without bees. Declining bee populations are a worldwide issue, with significant environmental and food security implications.

The Pollination process

In nature, bees collect pollen and seeds from plants as they feed. They then carry the pollen and seeds on their bodies to new locations, helping to spread the genetic diversity of plant species, improve environmental health, and increase plant diversity ([Australian Museum, 2025](#)). This occurs in every ecosystem on Earth, except for the Arctic, Antarctic, and the Tundra ([Klein, 2018](#)).

How Honey is made.

Source: [Flow, 2025](#)

Not only do they pollinate, they also provide food and other products of everyday use in the form of honey, honey bee venom, jelly, propolis, and beeswax ([UNEP, 2022](#)). Many livelihoods centre around bees and bee products, which produce more than 1.6 million tonnes of honey each year. The bee industry contributed ~USD\$12.7 billion in 2023, with projections of an increase in the future ([Zion Market Research, 2025](#)). Indeed, there are sacred texts highlighting the importance of bees in nearly every ancient culture and religion on Earth ([UNEP, 2022](#)).



A small bee pollinates a flower.

Source: [Unsplash](#)

Bees are primarily responsible for the pollination of 75% of all [crop species](#)

([UNEP, 2022](#)). Two-thirds of Australia's crop production benefits from pollination by bees ([Wheen Been Foundation, n.d.](#)). AUD\$100 million is also generated by the bee industry in Australia alone, and the pollination provided by wild bees globally is estimated to generate around AUD\$14.2 billion each year.

What's Driving the Decline: Agriculture, Chemicals, and Climate

There are thought to be more than 20,000 species of wild, native bees globally ([UN, 2025](#)). These native bees are adapted to local plant species and are crucial for the pollination of native plants. Unfortunately, native bee populations are declining globally, competing with the imported European Honeybee in many cases. The European Honeybees were previously introduced and are extensively used in the honey industry owing to their high production rates compared to native bees. They outcompete native species for food, but are essential for pollinating many imported food crop species. All bee species are at risk from multiple human-induced climate issues, such as:

- industrialisation
- pesticide use
- habitat loss
- pathogens
- pollution
- changes in weather patterns

These declines have serious repercussions for all life on Earth and could send many plant species extinct. [Values-Based Innovation](#), the use of ethical and thrivable pathways to ensure a viable future, must be employed here. Many sectors, including the agricultural industry and food processing industry, must consider whether it is better to micromanage food supply through the use of pesticides or to retain bees for future generations.

Furthermore, food does not need to look perfect; there can be imperfections that affect appearance but not taste or nutrients. As the lyrics in the Counting Crows song *Yellow Taxi* say, "I don't care about spots on my apples, just leave me the birds and the bees". These topics relate to [Values-Based Innovation](#), where we

question what really has value. It is vital to balance the health of the planet with insect pollination and food production. We must make conservation a part of [everyday thinking](#).

Industrialisation

Industrialisation in [agriculture](#) is the leading cause of honeybee declines, but is seldom discussed ([Shanahan, 2022](#)). This includes the use of pesticides, monocultures, and the loss of health, leading to colony stress and decline. Herbicides kill weeds that would provide nutrients, when combined with a low variety of plants available, leads to a decline in bee nutrition. Nutrition is known to affect the performance of adult bees and leads to altered behaviours such as altered feeding patterns as well as reduced health ([Schillcher, 2022](#)).

Air pollution

Bees rely on their keen sense of smell to locate plants ready for seed dispersal or pollination. Air pollution masks the aroma from plants, disrupting the bees' ability to locate them and reducing their pollination rate by up to 90% ([Zimmer, 2024](#)). As bees also feed on the pollen of plants, this reduces their food intake, reducing health and compromising population integrity.

Climate change

[Climate change](#) is disrupting the natural timing of plant life cycles, a phenomenon known as phenology. Many plants rely on [environmental cues](#), such as temperature and daylight, to determine when to flower or produce seeds. However, as these cues shift owing to climate change, the flowering period may no longer align with the activity of pollinators like bees. This mismatch reduces pollination success, leading to fewer plants, diminished biodiversity, and a decline in overall ecosystem health. As a result, food availability for both wildlife and humans may also decrease.

Nutritional Fallout: From Fruits to Health

Risks

Pollinators are required to supply humanity with [nutrients](#). Many of the foods we rely on grow as a result of pollinated plants. Without bees, there are no nutrients, and humans become malnourished. [Systems Thinking](#) is an approach that looks at problems, interventions, and change not in isolation, but as part of interlinked systems. Its application in this case considers multiple perspectives or scales and highlights the necessity of bees and the importance of their roles.

Potentially, the loss of bees could result in severe health concerns owing to a lack of nutrition as well as blindness and [death](#) ([Smith et al., 2022](#)). Bees are essential for life on Earth as we know it. A loss of bees would result in a loss of crops, fruiting plants, vegetables, and flowers, some of which are edible. This would mean people have to rely instead on staples that require less pollination, such as root vegetables and crops spread by hand. As livestock are also reliant on pollinated fodder, such as soy beans, the dairy and meat industries would also be impacted. Coffee would also be in short supply, potentially costing the world's economy hundreds of millions in revenue each year ([Grand View Horizon](#)). While pollination can occur without bees, such as with wind or by humans, bees carry out the vast majority of this role.



A bee on a flower.

Source: [Unsplash](#)

There is also increasing evidence that a compound found in bee venom kills breast cancer cells. While more research is needed in this area, there is hope that this could be a step towards a breast cancer-free future ([Duffy et al., 2020](#)).

Biodiversity at Risk: Beyond Crops

Genetic diversity, maintained by bee pollination, is essential for maintaining plant health. It is also increasingly vital for plants to adapt to alterations in their environment with the ever-compounding threat of climate change. This then gives plants a chance to survive disasters such as extreme drought or flood, providing food security for the bees. Genetic diversity also offers resistance against emerging diseases and influences productivity ([Dequen et al., 2022](#)).

What You Can Do: From Gardens to Global Action

Every individual can help bees and assist with pollination efforts. Planting bee-attracting trees or flowers in your garden can attract bees and provide food. Check for locally native species for best results. Buying pesticide-free products or electing not to use pesticides is another effective means of aiding bees, as it helps to maintain bee genetic diversity, improves bees' health, and allows for a more productive, healthier society for both humans and bees. Advocating for more bee-friendly spaces in urban areas, [educating others](#) on the importance of bees, and advocating for organisations that protect bees are also ways to ensure bees are not disregarded in the future.



Bees pollinate small native flowers such as this pink flower.

Source: [Unsplash](#)

Conclusion and Call to Action (CTA)

Pollinators are essential. We cannot keep disregarding their importance and expect the world to function. Without pollinators, ecosystems would collapse, and the world would change dramatically. Bees keep the world turning and ecosystems flourishing. More must happen to protect bee populations from decline. Pesticide use must decline, as should the creation of hazardous odours such as those that cause air pollution. Yards should become more bee-friendly by planting pollinator-attracting trees and flowering plants.

Achieving THRIVE goals

The United Nations' [Sustainable Development Goals](#) (SDGs) provide a shared blueprint for peace, prosperity, people, and the planet, aiming to guide global action on the world's most urgent challenges. [SDG15: Life on Land](#) promotes the sustainable use of terrestrial ecosystems and the maintenance of biodiversity and ecosystem services, including those services carried out by bees. [SDG13: Climate](#)

[Action](#) highlights the need for action on mitigating climate change to protect biodiversity and the functionality of ecosystems. A part of mitigating climate change is the preservation of biodiversity to ensure functionality, and hopefully flourishing, continues. However, the SDGs do not go far enough. This is where [THRIVE](#) comes in.

The THRIVE Project's Foundational Focus Factors are a means of not just achieving sustainability, but exceeding it. Thrivability is where both humanity and nature holistically flourish in partnership. Pollinators contribute to [Strong Sustainability](#), an FFF of THRIVE, by providing ecosystem services such as maintaining plant genetic diversity, assisting plant spread, and ensuring new generations of plants. [Systems Thinking](#), the consideration of all levels of a system in planning and management, ensures that the end product is not the only factor considered. The use of pesticides in agriculture needs to wholly consider the benefits and downsides before deciding it is worth the risk to bees. [Values-Based Innovation](#), the innovation that drives effective change, ensures efforts to assist bee populations and ethical paths of action.

A Thrivable Framework

THRIVE, The Holistic Regenerative Innovative Values Entity, is a not-for-profit environmental organisation committed to ensuring a thrivable future for all. Visit the [THRIVE website](#) to find information on making meaningful changes to help the planet and people, and to live a healthier life. Read insightful [articles](#), [whitepapers](#), and [journals](#) to expand your knowledge. Watch great [presentations](#) and find out how to participate in the [workshops](#) and monthly [webinars](#). Subscribe to the [newsletter](#) to keep informed on work at THRIVE and [volunteer](#) to contribute to meaningful change.

Why trust us?

At *THRIVE Project*, we're all about facts that matter—and a future that flourishes. Our team of researchers, writers, and thrivability experts dig deep into the science so you don't have to. Everything we publish is based on credible sources, double-checked for accuracy, and written with one goal in mind: helping you make sense of the world and how to improve it. We're independent, non-profit,

and here to spark real change with knowledge you can count on. Find out more about [our team](#).

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