

Executive Summary: Emerging threats and opportunities for conservation of global pollinators

**The call to
action plan by
Bee:wild**



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 **bee:wild**



**University of
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Bee:wild
is sparking a
global movement
by connecting local
action to planetary
impact. Take action.
Find inspiration
on page 12.



FOREWORD



Razan Khalifa Al Mubarak,
President of the International
Union for Conservation of Nature (IUCN) and
Board Member of Re:wild

Nature's most extraordinary work often happens quietly. As we go about our lives, an incredible community of pollinators – bees, butterflies, moths, birds, bats, and others – sustains the ecosystems that feed and nourish us.

Their invisible care supports the vast majority of wild flowering plants and much of the food we depend on. Pollinators are not only essential to biodiversity; they are vital to our food security, our economies, and our wellbeing.

Yet today, these vital species face growing challenges – from habitat loss and pesticide use to climate shifts and invasive species. Emerging pressures, such as microplastics and light pollution, add new urgency to our efforts.

*“The choices we make today
will shape the future –
not only for pollinators,
but for all life on Earth.”*

Razan Khalifa Al Mubarak

If we lose pollinators, the consequences will ripple far beyond nature itself. The services they provide are fundamental to human survival – supporting everything from the food on our plates to the health of ecosystems that regulate our climate and clean our air and water. Their decline is a warning signal that we cannot afford to ignore.

The good news is that solutions are within reach. Through stronger policies, sustainable farming practices, technological innovation, and local and global action, we can safeguard pollinators and the ecosystems they sustain.

Bee:wild's work shines a light on these solutions. By planting for pollinators, reducing light pollution, supporting regenerative food systems, and encouraging sustainable business practices, each of us can contribute to a healthier, more resilient planet.

The choices we make today will shape the future – not only for pollinators, but for all life on Earth. Together, we can ensure that these remarkable species continue their vital work, sustaining the natural world that sustains us all.



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Project partners

Bee:wild is a science-led, non-profit civil society movement, powered by brands, that aims to increase pollinator numbers for the benefit of nature and healthier people.

Bee:wild is a campaign of Re:wild, a leading nature conservation organization focused on the most effective solution to the interconnected climate, biodiversity and human wellbeing crises; protecting and restoring the wild.

 [Learn more at beewild.org](https://beewild.org)

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**The call to
action plan
by Bee:wild's
Executive
Team**

EXECUTIVE SUMMARY



Pollinators like bees, hoverflies, butterflies, moths, and some birds and bats, are vital to nature and our food supply. Nearly 90% of flowering plants and over 75% of the world's main food crop types depend on them.

Yet pollinators are facing an ongoing crisis from many well-established and overlapping threats. In addition, it is becoming clear that there are many new and emerging risks which are multiplying the negative impacts of these established threats. This report highlights not only these well-known risks, but also emerging opportunities for early, coordinated action to protect pollinators before it is too late.

The ongoing drivers of global decline

The biggest pressures on pollinators today are not new, but they are intensifying, and include:

- **Habitat loss** driven by intensive farming, urbanisation, and infrastructure development, reducing food and nesting resources for pollinators.
- **Pesticides** like insecticides, herbicides, and fungicides, which can kill pollinators or affect their health, behaviour and ability to navigate.
- **Climate change** altering habitats, flowering times and pollinator activity periods as well as causing extreme weather like heat stress and drought.
- **Pests and pathogens** including a wide variety of harmful microorganisms.
- **Invasive species** like introduced managed bee species, which can compete with, and transmit diseases to native pollinators.

These threats interact in dangerous ways to produce a lethal cocktail of threats, making it harder for pollinators to survive and recover.

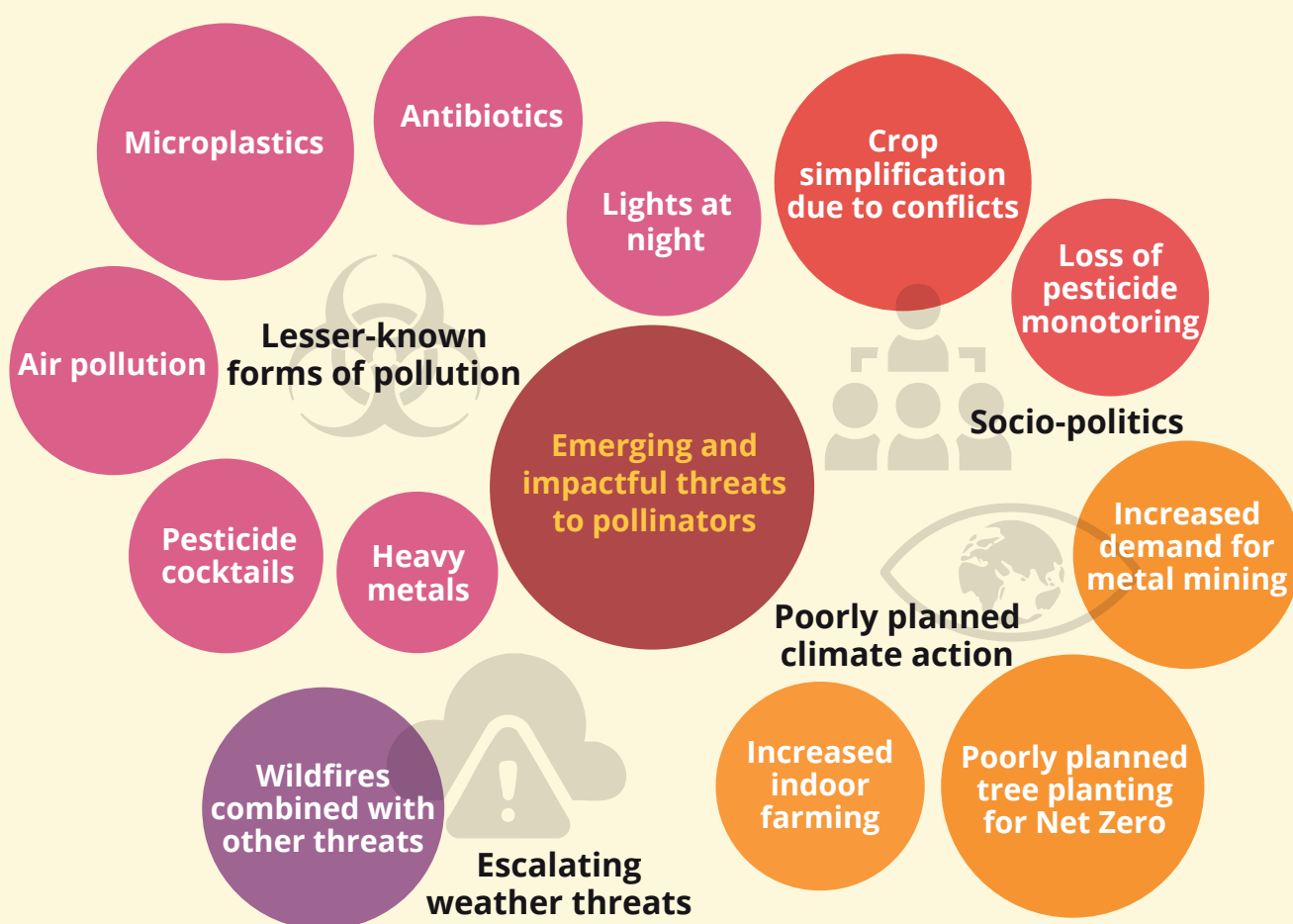
New and emerging threats to watch

Pollinators are increasingly challenged by a rapidly changing world shaped by new and emerging threats. We highlight four major themes that capture the breadth of the most novel and impactful emerging threats likely to accelerate in the next 5-15 years (Figure 1):

- **Lesser-known forms of pollution:** Microplastics, antibiotics, air pollution, heavy metals, and artificial light at night are harming pollinators in ways we are only beginning to understand, and mixtures of pesticides may be more dangerous together than previously thought.
- **Poorly planned climate action:** Some efforts to fight climate change, like large-scale tree planting, increased demand for mining for e-batteries, or indoor farming, may backfire if not planned well. The wrong trees in the wrong places can harm pollinators by replacing wildflowers, and indoor farms often remove habitat while relying on managed bees that may compete with wild ones.
- **Socio-political effects on the environment:** Conflict-driven crop simplification and reduced pesticide monitoring are leaving pollinators with fewer resources and protections.
- **Escalating weather threats:** Wildfires made worse by climate change are burning fragmented habitats, leaving pollinators with fewer places to feed and nest.

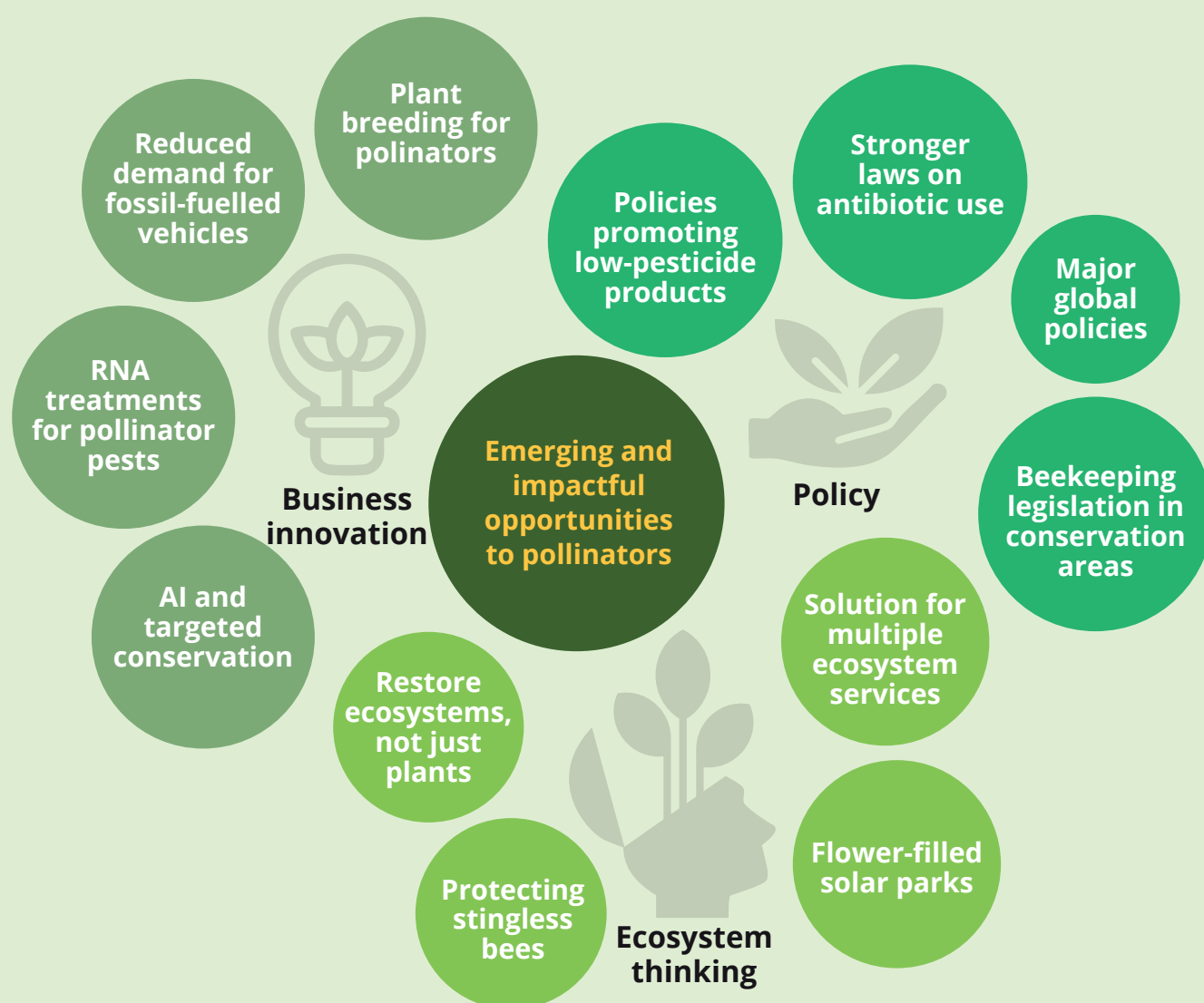
These threats must be met by new avenues for protection and recovery.

Figure 1: Emerging **threats** to pollinators at regional to global levels, scaled by novelty and impact (bigger circles indicate higher novelty and greater negative impact).



Microplastics are more widespread than previously thought. They likely pose a serious threat to wild pollinators as well.

Figure 2: Emerging **opportunities** for pollinators at regional to global levels, scaled by novelty and impact (bigger circles indicate higher novelty and greater positive impact).



This is not just a biodiversity issue: pollinators are central to our food systems, climate resilience, and economic security.



New and emerging opportunities to safeguard pollinators

We identified three major avenues of emerging and impactful opportunities that can help to prevent future pollinator declines (Figure 2):

More effective policies, laws and global frameworks: Stronger regulations, like responsible antibiotic use, reforming trade to favour low-pesticide products, and controlling beekeeping in conservation areas, could all reduce major threats to pollinators. International agreements, such as the EU Nature Restoration Regulation and the United Nations Convention on Biological Diversity (CBD) and Food and Agriculture Organization (FAO)'s global initiatives, are driving coordinated efforts to restore habitats and promote pollinator-friendly farming.

Business innovation - Technology and smarter practices: Advances in electric batteries, new innovations in pest control (e.g. using RNAi), plant breeding, and AI monitoring could offer new tools to support pollinators. These advances can help reduce chemical use, target threats more precisely, and improve habitat management, but require careful oversight to avoid unintended harms to pollinators.

Ecosystems thinking - Multifunctional and resilient landscapes: Creating pollinator habitats within solar parks, protecting stingless bees, and restoring full ecosystem functions, with careful consideration of what is planted and where, will support broader biodiversity. Nature-based solutions that link pollination with soil health, water retention, and carbon storage offer win-win approaches for people and the planet.

Rising threats, emerging opportunities

The themes identified in this report reflect both the escalating complexity of pressures on pollinators and the growing diversity of tools and opportunities available to help reverse their decline.

The top 12 threats and top 12 opportunities identified in this report, in order of a) novelty and b) impact, can be found on pages 10 and 11.

This report offers important insights we need right now to inform and guide governments, farmers, businesses, NGOs and civil society in supporting pollinators.

These vital species face more challenges than ever before, including some that are just starting to be understood, but we still have time to act. By recognising these emerging threats and opportunities, and working together, we can better protect pollinators and the vital role they play in sustaining ecosystems and the services they provide, including pollination of the food we rely on.

This is not just a biodiversity issue: pollinators are central to our food systems, climate resilience, and economic security. Protecting them means protecting ourselves.

TOP 12 THREATS



Emerging threats to pollinators (regional to global) ranked from highest to lowest by novelty, then impact



1. **Crop simplification due to conflicts** – War and conflict affects how land is used, reducing crop variety, which could harm wild pollinators.



2. **Microplastic pollution** – Tiny plastic particles are everywhere and can reduce pollinator health and lifespan.



3. **Poorly planned tree planting for Net Zero** – Planting lots of trees can help or hurt nature, depending on the type of trees planted, and where.



4. **Antibiotic pollution** – Antibiotics pollute the environment and may change bee behaviour.



5. **Air pollution** – Polluted air with gases like ozone and nitrogen oxides makes it harder for insects to survive and reproduce.



6. **Increased indoor farming** – Growing crops in enclosed spaces reduces natural habitats for wild pollinators and may spread disease through the introduction of managed pollinators.



7. **Increased demand for mining of metals** – Mining for materials like lithium and cobalt, used in batteries, damages land and water, which may harm pollinators.



8. **Pesticide cocktails** – Mixing different pesticides can weaken pollinators, and their use is increasing, particularly in some regions like Africa and South America.



9. **Light pollution** – Bright artificial lights at night confuse pollinators like moths and can reduce pollination.



10. **Heavy metal pollution** – Toxic metals like cadmium and mercury can harm pollinators' health, behaviour, and survival.



11. **Wildfires combined with other threats** – More frequent large wildfires destroy pollinator habitats, making recovery harder.



12. **Regional loss of pesticide monitoring** – Without proper tracking, harmful pesticides may be overused, killing pollinators and removing floral resources, as well as making pests resistant and damaging the environment.

TOP 12 OPPORTUNITIES



Emerging opportunities for pollinators (regional to global) ranked from highest to lowest by novelty, then impact



1. **Stronger laws on antibiotic use** – Better regulations could limit antibiotic pollution, especially in areas where there are no restrictions.



2. **Reduced demand for fossil-fuelled vehicles** – Electric vehicles can reduce air pollution that can be harmful to pollinators.



3. **Plant breeding for pollinators** – Crops can be designed for pollinators by providing more pollen and nectar, but more research is needed to ensure safety.



4. **Flower-filled solar parks** – Solar farms can serve as pollinator-friendly habitats if located well and designed properly.



5. **RNAi treatments for pests of pollinators** – New pest control methods using RNAi technology could protect bees while reducing pesticide use.



6. **AI and targeted conservation** – AI can track pollinators, detect pests, and help improve conservation efforts.



7. **Trade and agricultural policies promoting low-pesticide products** – Regulations could encourage farming with fewer pesticides, protecting pollinators and their habitats.



8. **Beekeeping legislation in conservation areas** – Implementing regulations could help minimise competition between managed bees and wild pollinators for essential resources.



9. **Restore full ecosystem function, not just plants** – Conservation should focus on rebuilding whole ecosystems, not just planting trees.



10. **Protecting stingless bees** – Efforts should focus on saving native stingless bees, which play a key role in pollination in the tropics.



11. **More effective global policies** – International regulations and laws, like the EU Nature Restoration Regulation, support pollinator protection and create groundswell support for pollinator conservation.



12. **Solutions benefiting multiple ecosystem services** – Protecting pollinators can also simultaneously improve soil health, water storage, and carbon capture.

A CALL TO ACTION

Bee:wild Campaign is sparking a global movement by connecting local action to planetary impact.

From gardens to corporate supply chains to city streets, every action we take can help secure a future rich with pollinators, resilient ecosystems, and healthy food systems.



Our core focus is restoring ecosystems and their services and protecting bees and other pollinators, with a focus on wild pollinators and clear call to actions:

1. Planting for pollinators and avoiding use of pesticides
2. Changing our diets to more plant based and pesticides free (organic or regenerative)
3. Rewilding urban areas (gardens, rooftops, community areas and parks) for more and better connected habitats for pollinators.

Whether you're an individual, business leader, government or policymaker, your choices can reverse pollinator declines and build a future of abundance and resilience.



What individuals can do

Plant for Pollinators

- Grow wildflowers and native plants in gardens, balconies, or community spaces. Plant species that grow throughout the year.
- Mow less often and mow higher (i.e. don't cut back too harshly) encouraging flowering plants in the lawn to set seed. Leave wild corners in your garden – messy spaces are nesting havens.
- No garden? Become a community gardener and rewild neglected urban and communal areas with native plants.
- Avoid using pesticides and herbicides on gardens and lawns.
- Reduce the use of pet treatments containing harmful insecticides (e.g. Fipronil) see for example wtwales.org/flea-treatments-and-wildlife.

Provide refuge for pollinators

- Install pollinator hotels and leave bare patches of soil or wood for ground-nesting pollinators..
- Support the creation of pollinator corridors see for instance Buglife's B-Lines (buglife.org.uk)

Change your diet

- Fill your fridge and tummy with pesticide-free, biodiversity-friendly fruits and vegetables.
- Choose foods grown without harmful chemicals and support organic and regenerative farming.

Speak up and spread the buzz

- Share the pollinator story with others - create more awareness through social media, community events, and everyday conversations.
- Contact elected officials to advocate for planting for pollinators, pesticide bans, habitat protections, and climate action.

Turn down the lights, turn up the buzz

- Turn off outdoor lights when not in use. Artificial lights can interfere with nocturnal moths and their pollination activities and potentially disrupt their reproductive cycles.
- Use low-intensity, downward-shielded lighting to reduce pollinator disruption.

Be a pollinator scientist

- Engage with citizen science actions with global and local groups like Butterfly Conservation (butterfly-conservation.org) Bumblebee Conservation Trust (bumblebeeconservation.org), UK Pollinator Monitoring Scheme (PoMS) (ukpoms.org.uk), Pollinating London Together (pollinatinglondontogether.com) and others like iNaturalist (inaturalist.org) Buglife (buglife.org.uk), Xerces (xerces.org), and Wild Pollinator Count (wildpollinatorcount.com)
- Support monitoring of species, map pollinator corridors, and track pesticide exposure using apps and AI tools.

Support global pollinator champions

Support organizations protecting wild pollinators for example Re:wild (rewild.org) , Buglife (buglife.org.uk) , WWF (worldwildlife.org), Xerces (xerces.org) and many more.

Promote solar + pollinators

Advocate for pollinator-friendly plantings around solar parks and other infrastructure.

What cities can do

Map and build pollinator corridors

- Map the city's B-lines/pollinator corridors for planning purposes.
- Transform underutilized spaces like road verges, riverbanks, and brownfields into habitat pathways.

Prioritize native planting

- Plant diverse, region-specific flowering plants that support local pollinators in communal areas, social housing, parks, schools, and hospitals.
- Plant a mix of flowers that bloom throughout the season so there is always food for pollinators.
- Plant vacant lots, green roofs, and walls to build layered urban habitats.

Prioritize healthy and nature friendly food supply

- Prioritize plant-based catering and food supply for public institutions, schools, hospitals, and care homes.
- Incentivise and promote locally sourced plant-based and pesticide-free food suppliers.

Embed pollinator health in planning and development

- Mandate pollinator-supportive green spaces in all new developments and government controlled housing and communal areas
- Prioritize recycled and sustainable materials in developments and buildings

Reduce plastic pollution

Minimise plastic use, and ban single use plastics and recycle more.

Educate and engage citizens

Run awareness campaigns highlighting the vital role of wild bees and ecosystem services.

What businesses can do

Support sustainable and regenerative agriculture

- Develop ambitious and accountable nature & biodiversity impact strategies with concrete actions that are carried out and monitored.
- Prioritize regenerative and low-pesticide agricultural sourcing for supply chains
- Promote biodiversity-positive products.

Invest in smart technologies

- Develop safer pest management tools like RNAi treatments.
- Apply AI for habitat and pollinator monitoring and pesticide tracking.

Create pollinator-friendly landscapes

Integrate wildflower-rich habitats into business properties, retail spaces, campuses, and infrastructure projects.

Promote pollinator-smart innovation

Plant breeding innovations for crops that provide more nutrition for pollinators.

Lead in sustainable supply chains

Minimize ecological damage through responsible sourcing for materials, including those for EV production.

Champion pollinator health in development

Ensure landscaping and horticultural projects support wild bees and other pollinators..



What policy makers can do

Strengthen agricultural and trade policies

- Incentivise regenerative and sustainable agriculture.
- Promote favourable trade for low-pesticide products.
- Regulate pesticide use effectively.
- Promote the development and use of labelling for biodiversity friendly products.

Support global coordination for pollinator recovery

- Establish international frameworks for habitat restoration and pollinator-friendly farming.
- Use AI to coordinate and monitor global conservation efforts.
- Support research with practical outcomes to identify the most effective pollinator conservation practises
- Ensure actions on the ground are science-based.

Restore and protect ecosystem services

- Restore full ecosystem functions, including pollinator webs, clean water, and soil health.
- Support large-scale rewilding projects in tropical and temperate ecosystems.

Enhance wild pollinator protections

- Implement tighter controls on beekeeping in conservation areas to protect wild bees and other pollinators.
- Promote the importance of wild pollinators in agriculture.

Educate and engage

- Integrate pollinator conservation into education systems.
- Foster partnerships with local and global organisations to scale impact.



We urgently need a holistic approach to pollinator conservation involving all levels – individual, industry, policy, academia, and charity.



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