

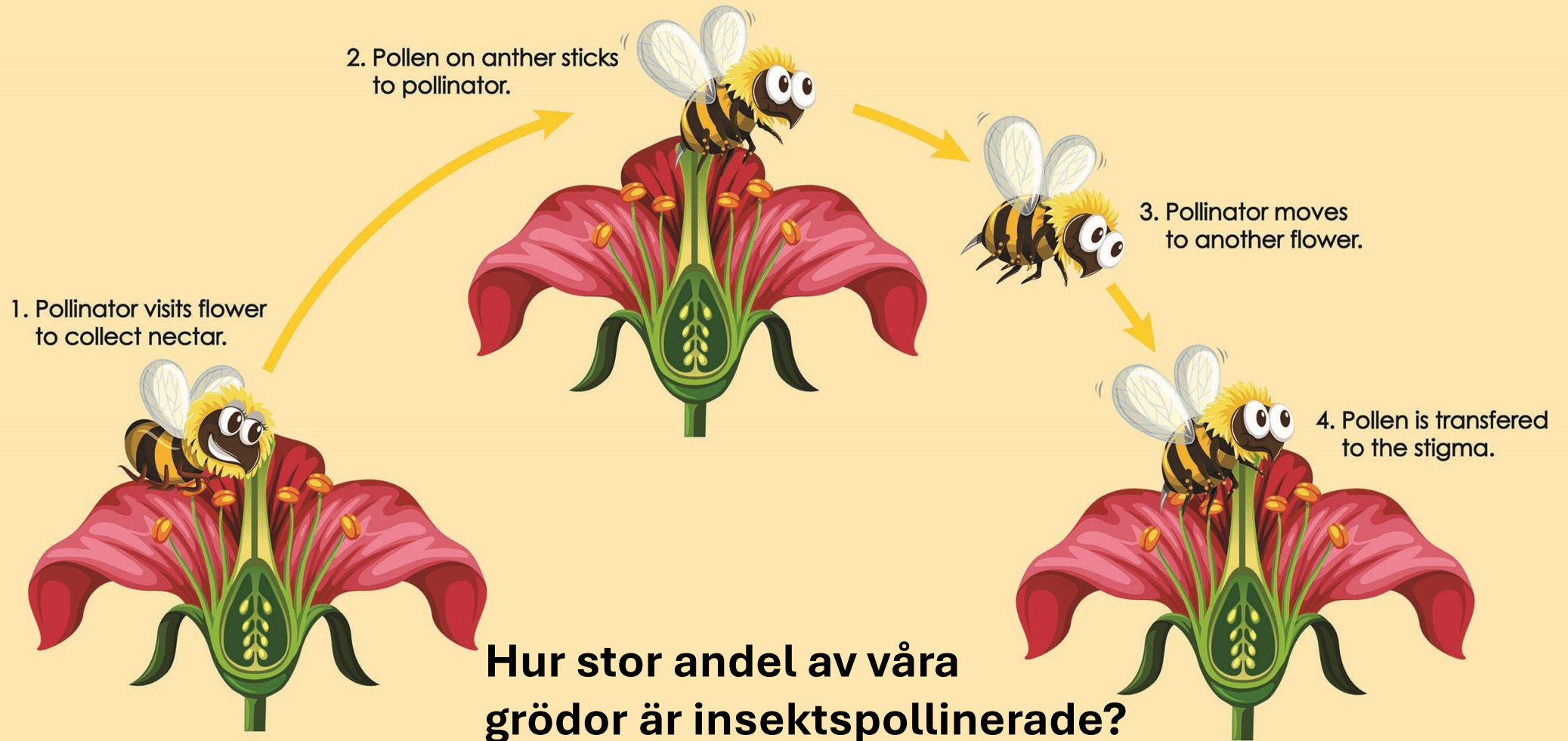
# Vilda pollinatörer i världen – aktuellt läge

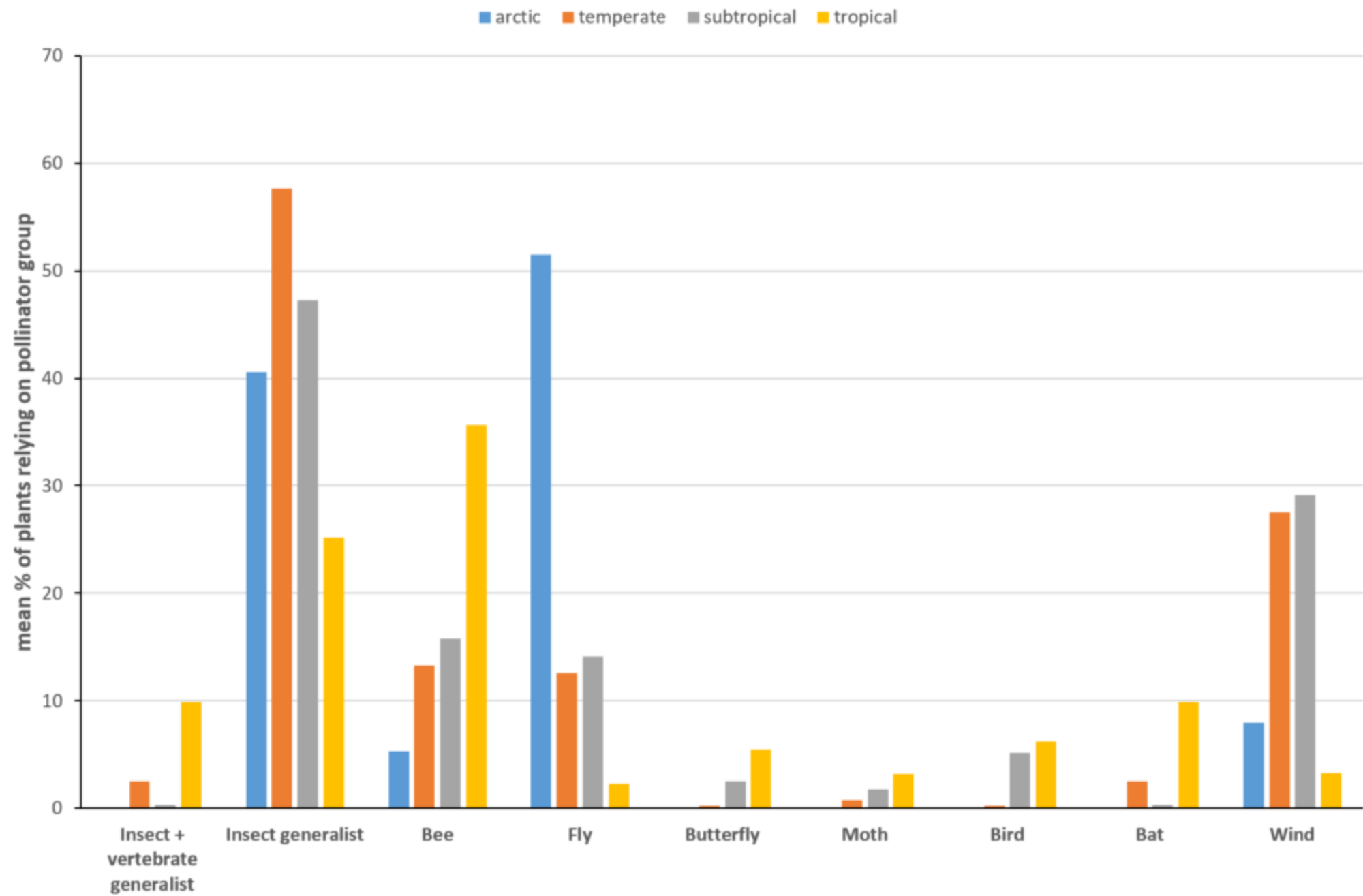


# Blommor och bin!



## Pollination







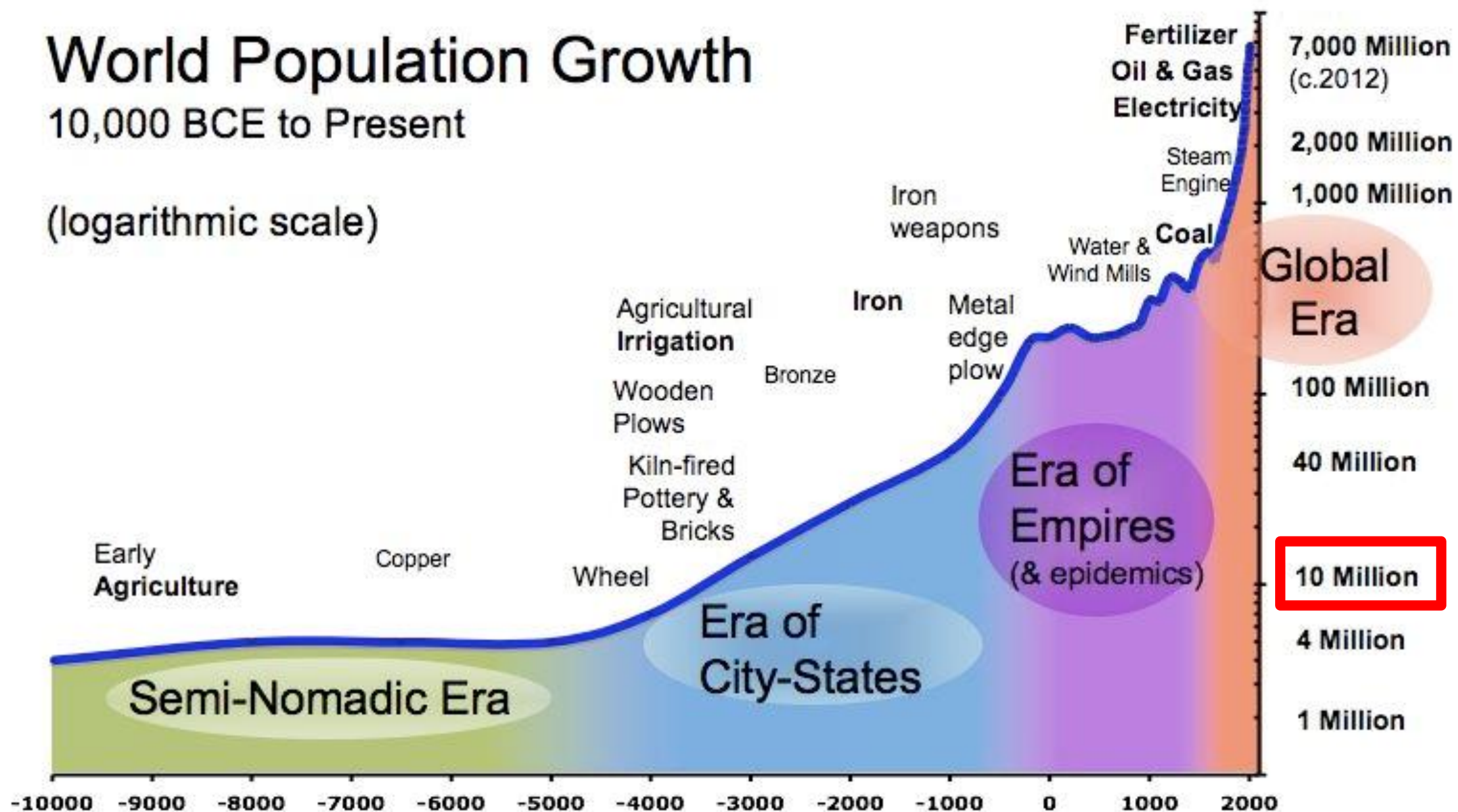
Vilka växter skulle vi ha kvar att äta och  
leva på utan pollinatörer?



# World Population Growth

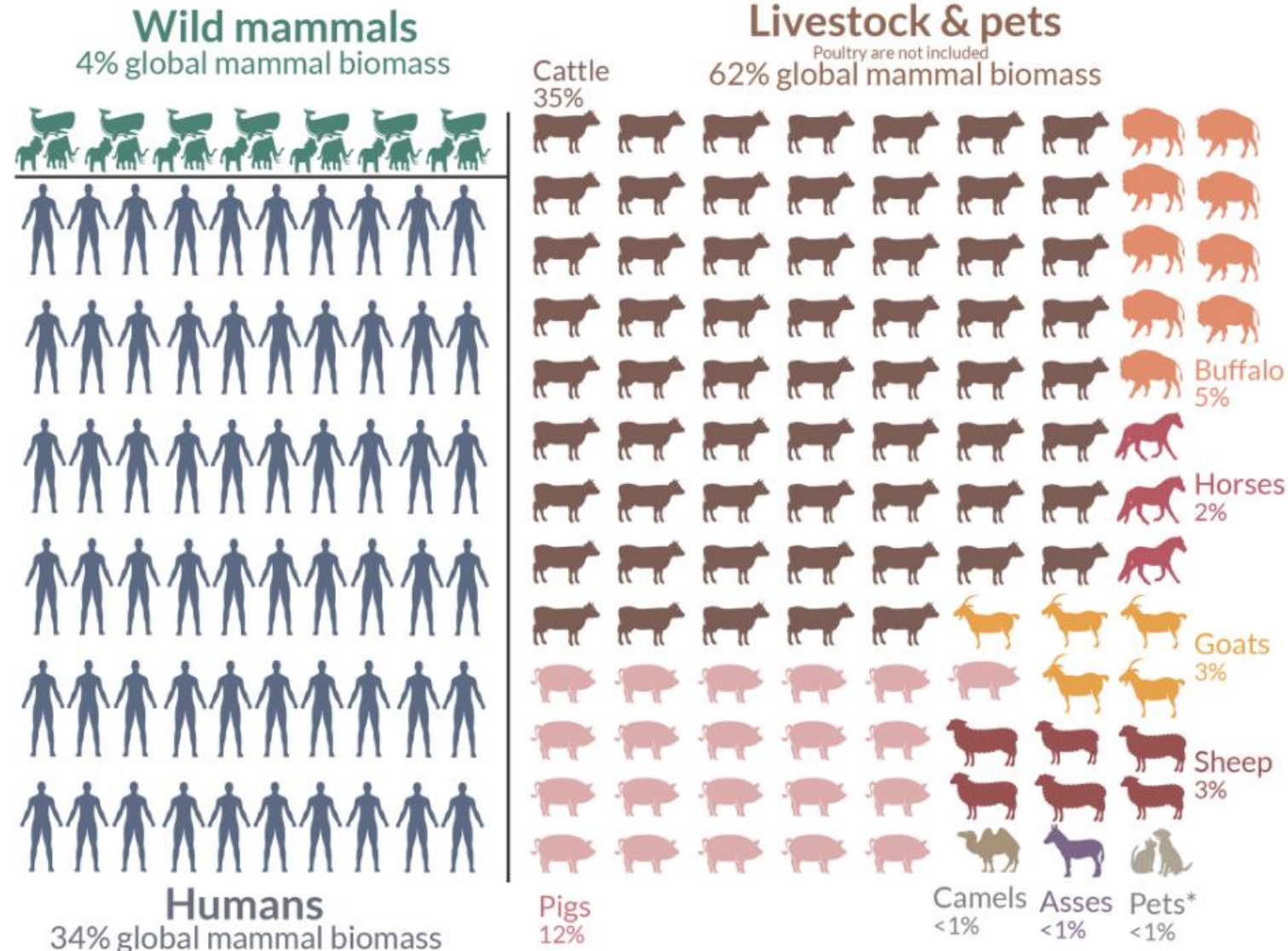
10,000 BCE to Present

(logarithmic scale)



# Distribution of mammals on Earth

Mammal biomass is shown for the year 2015.  or  or  = 1 million tonnes carbon (C)

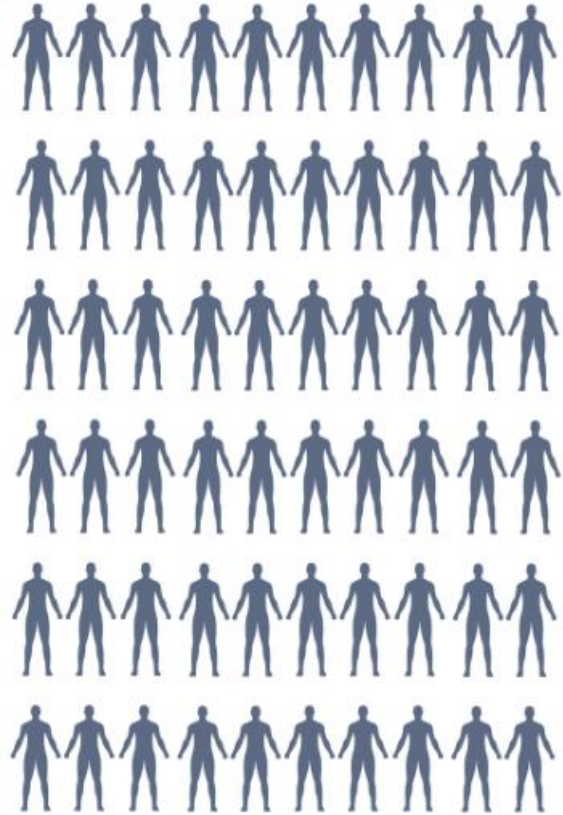


\*Bar-On et al. (2018) provide estimates of livestock only, without estimates of mammalian pets (e.g. cats and dogs).  
Pets have been added as an additional category based on calculations from estimates of the number of pets globally and average biomass.  
Data source: Bar-On et al. (2018). The biomass distribution on Earth. Images sourced from the Noun Project.

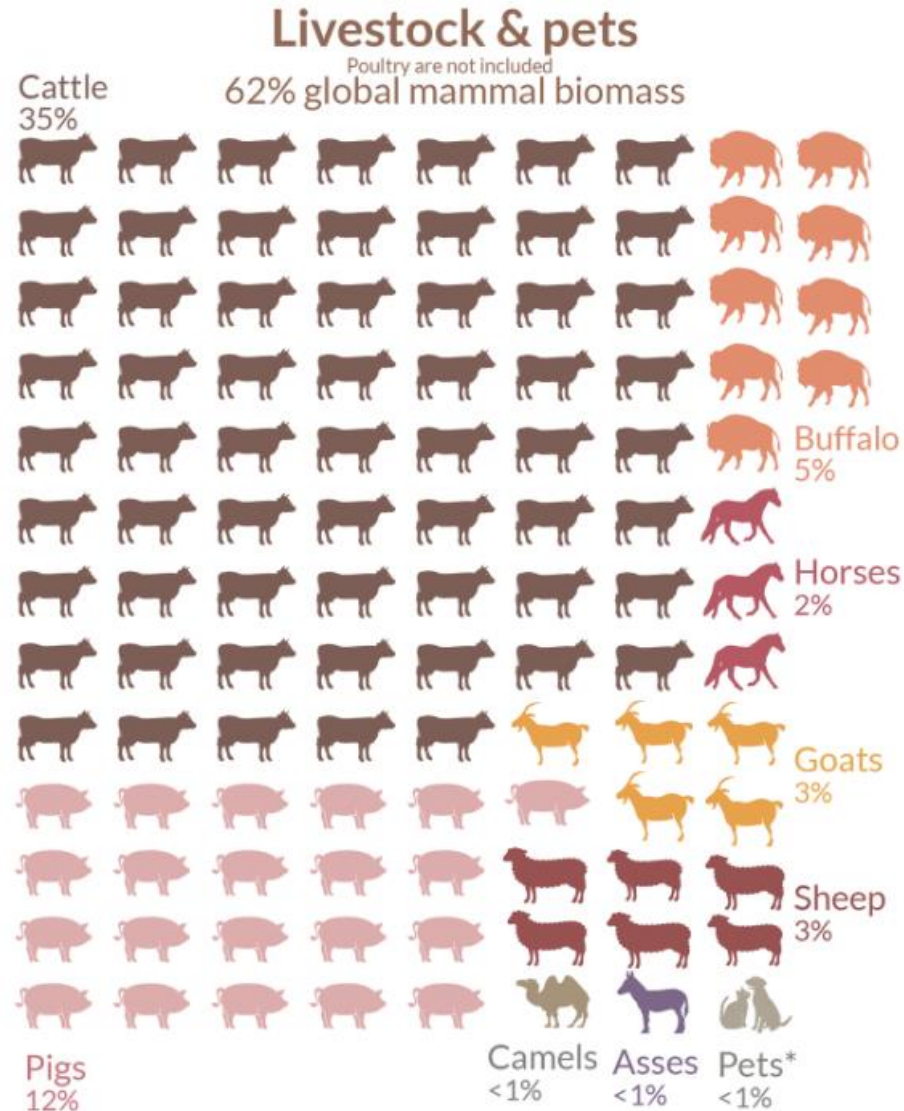


# Distribution of mammals on Earth

Mammal biomass is shown for the year 2015.  or  or  = 1 million tonnes carbon (C)



**Humans**  
34% global mammal biomass



\*Bar-On et al. (2018) provide estimates of livestock only, without estimates of mammalian pets (e.g. cats and dogs).  
Pets have been added as an additional category based on calculations from estimates of the number of pets globally and average biomass.  
Data source: Bar-On et al. (2018). The biomass distribution on Earth. Images sourced from the Noun Project.

## UN Report: Nature's Dangerous Decline 'Unprecedented'; Species Extinction Rates 'Accelerating'



Paris 6 May 2019

Current global response insufficient;  
'Transformative changes' needed to restore and protect nature;  
Opposition from vested interests can be overcome for public good  
Most comprehensive assessment of its kind;  
**1,000,000 species threatened with extinction**



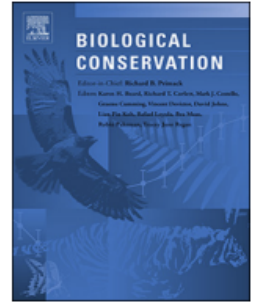


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journal homepage: [www.elsevier.com/locate/biocon](http://www.elsevier.com/locate/biocon)



## Review

# Worldwide decline of the entomofauna: A review of its drivers

Francisco Sánchez-Bayo<sup>a,\*</sup>, Kris A.G. Wyckhuys<sup>b,c,d</sup>

<sup>a</sup> School of Life & Environmental Sciences, Sydney Institute of Agriculture, The University of Sydney, Eveleigh, NSW 2015, Australia

<sup>b</sup> School of Biological Sciences, University of Queensland, Brisbane, Australia

<sup>c</sup> Chrysalis, Hanoi, Viet Nam

<sup>d</sup> Institute of Plant Protection, China Academy of Agricultural Sciences, Beijing, China



## RESEARCH ARTICLE

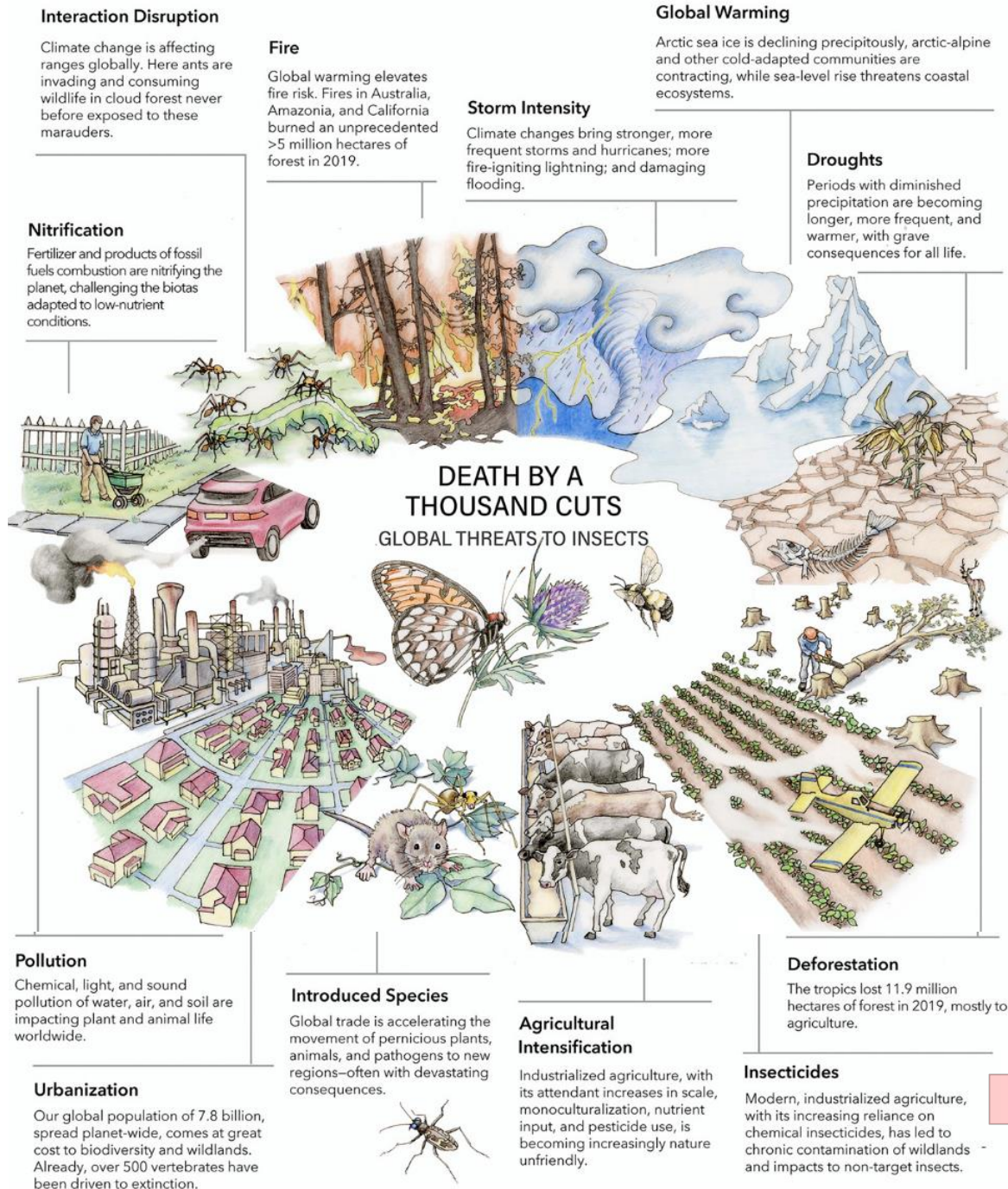
# More than 75 percent decline over 27 years in total flying insect biomass in protected areas

**Caspar A. Hallmann<sup>1\*</sup>, Martin Sorg<sup>2</sup>, Eelke Jongejans<sup>1</sup>, Henk Siepel<sup>1</sup>, Nick Hofland<sup>1</sup>, Heinz Schwan<sup>2</sup>, Werner Stenmans<sup>2</sup>, Andreas Müller<sup>2</sup>, Hubert Sumser<sup>2</sup>, Thomas Hörren<sup>2</sup>, Dave Goulson<sup>3</sup>, Hans de Kroon<sup>1</sup>**

**1** Radboud University, Institute for Water and Wetland Research, Animal Ecology and Physiology & Experimental Plant Ecology, PO Box 9100, 6500 GL Nijmegen, The Netherlands, **2** Entomological Society Krefeld e.V., Entomological Collections Krefeld, Marktstrasse 159, 47798 Krefeld, Germany, **3** University of Sussex, School of Life Sciences, Falmer, Brighton BN1 9QG, United Kingdom

\* [c.hallmann@science.ru.nl](mailto:c.hallmann@science.ru.nl)

## Splatter index



Wagner et al.

Insect decline in the Anthropocene: Death by a thousand cuts

PNAS

<https://doi.org/10.1073/pnas.2023989118>



**nature**

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# **Agriculture and climate change are reshaping insect biodiversity worldwide**

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<https://doi.org/10.1038/s41586-022-04644-x>

**Charlotte L. Outhwaite<sup>1,2</sup>✉, Peter McCann<sup>1,2</sup> & Tim Newbold<sup>1</sup>**

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**Received: 19 March 2021**

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**Accepted: 15 March 2022**

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**Published online: 20 April 2022**

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# Bevarat kulturlandskap -bevarar biologisk mångfald




















## Pervasive sublethal effects of agrochemicals as contributing factors to insect decline












 Lautaro Gandara,  Richard Jacoby, François Laurent, Matteo Spatuzzi, Nikolaos Vlachopoulos, Noa O Borst, Gülna Ekmen, Clement M Potel, Martin Garrido-Rodriguez, Antonia L Böhmert,  Natalia Misunou,  Bartosz J Bartmanski,  Xueying C Li, Dominik Kutra,  Jean-Karim Hériché,  Christian Tischer, Maria Zimmermann-Kogadeeva,  Victoria Ingham,  Mikhail M Savitski,  Jean-Baptiste Masson, Michael Zimmermann,  Justin Crocker

**doi:** <https://doi.org/10.1101/2024.01.12.575373>

This article is a preprint and has not been certified by peer review [what does this mean?].

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HOME > SCIENCE > VOL. 386, NO. 6720 > PERSVASIVE SUBLETHAL EFFECTS OF AGROCHEMICALS ON INSECTS AT ENVIRONMENTALLY RELEVANT...

 | RESEARCH ARTICLE | AGROCHEMICAL EFFECTS

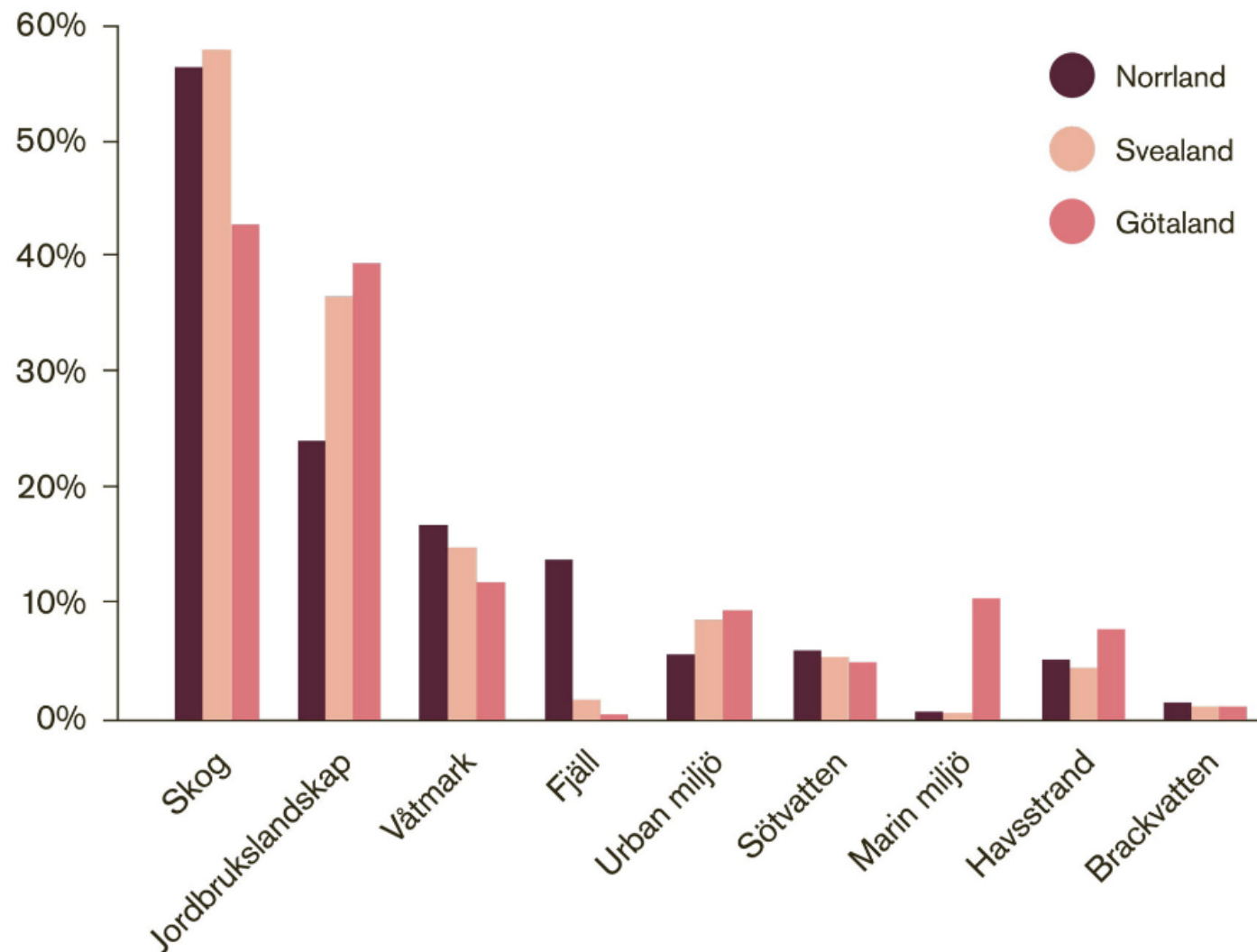
# Pervasive sublethal effects of agrochemicals on insects at environmentally relevant concentrations

[LAUTARO GANDARA](#)  , [RICHARD JACOBY](#)  , [FRANÇOIS LAURENT](#)  , [MATTEO SPATUZZI](#)  , [NIKOLAOS VLACHOPOULOS](#) , [NOA O. BORST](#)  , [GÜLINA EKMEN](#)  , [CLEMENT M. POTEL](#)  , [MARTIN GARRIDO-RODRIGUEZ](#)  , [...], AND [JUSTIN CROCKER](#)  [+12 authors](#) [Authors Info & Affiliations](#)



## Rödlistade arter i Sverige 2020

Andel rödlistade (%) per landskapstyp i förhållande  
till alla rödlistade i landsdelen



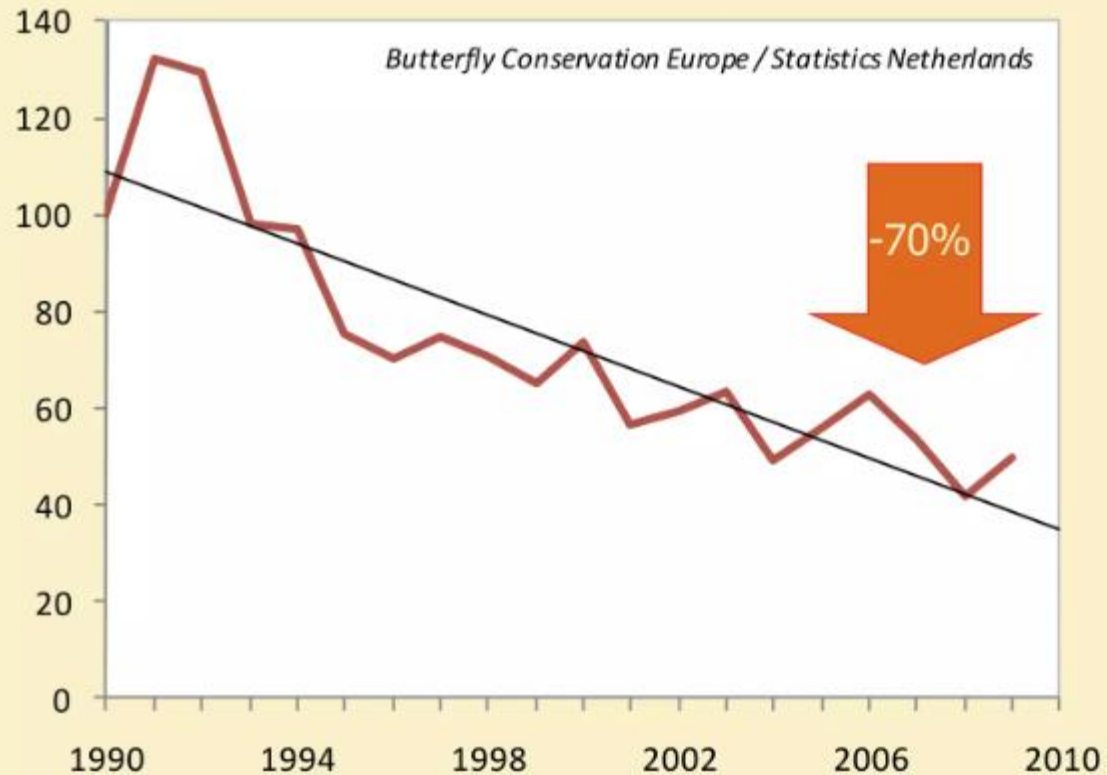


Bin 35% rödlistade



Dagfjärilar 32% rödlistade

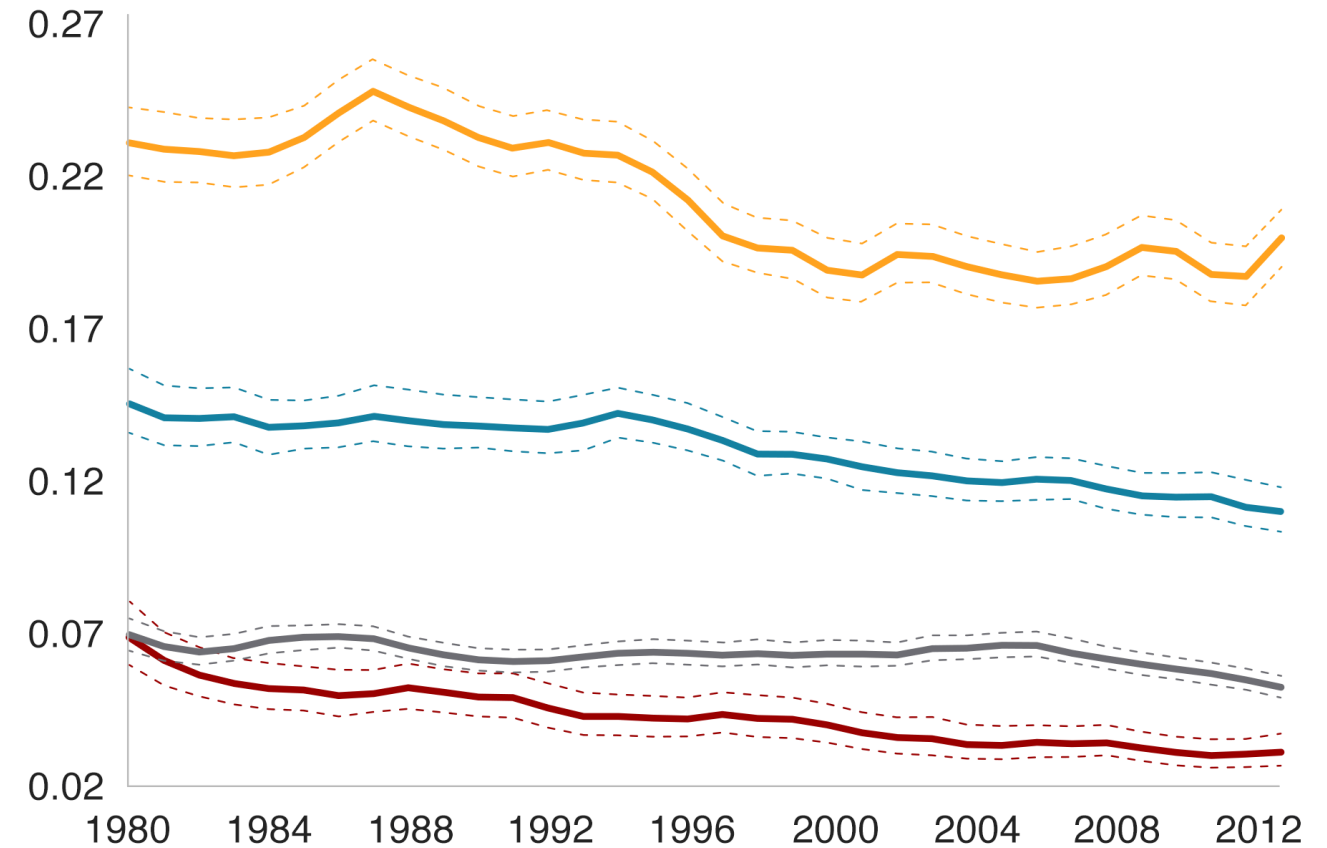
## European Grassland Butterfly



## Decline in pollinating insects in Britain

- Widespread species of wild bee and hoverflies
- Widespread southern species of wild bees and hoverflies
- Wild bees and hoverflies living in southern areas
- Wild bees and hoverflies living in upland areas

Occupancy



Occupancy is an estimate of the proportion of 1km grid cells where the species is present

Source: Nature Communications



# Slättergräsfjäril

## *Maniola jurtina*





🔒 | LETTER

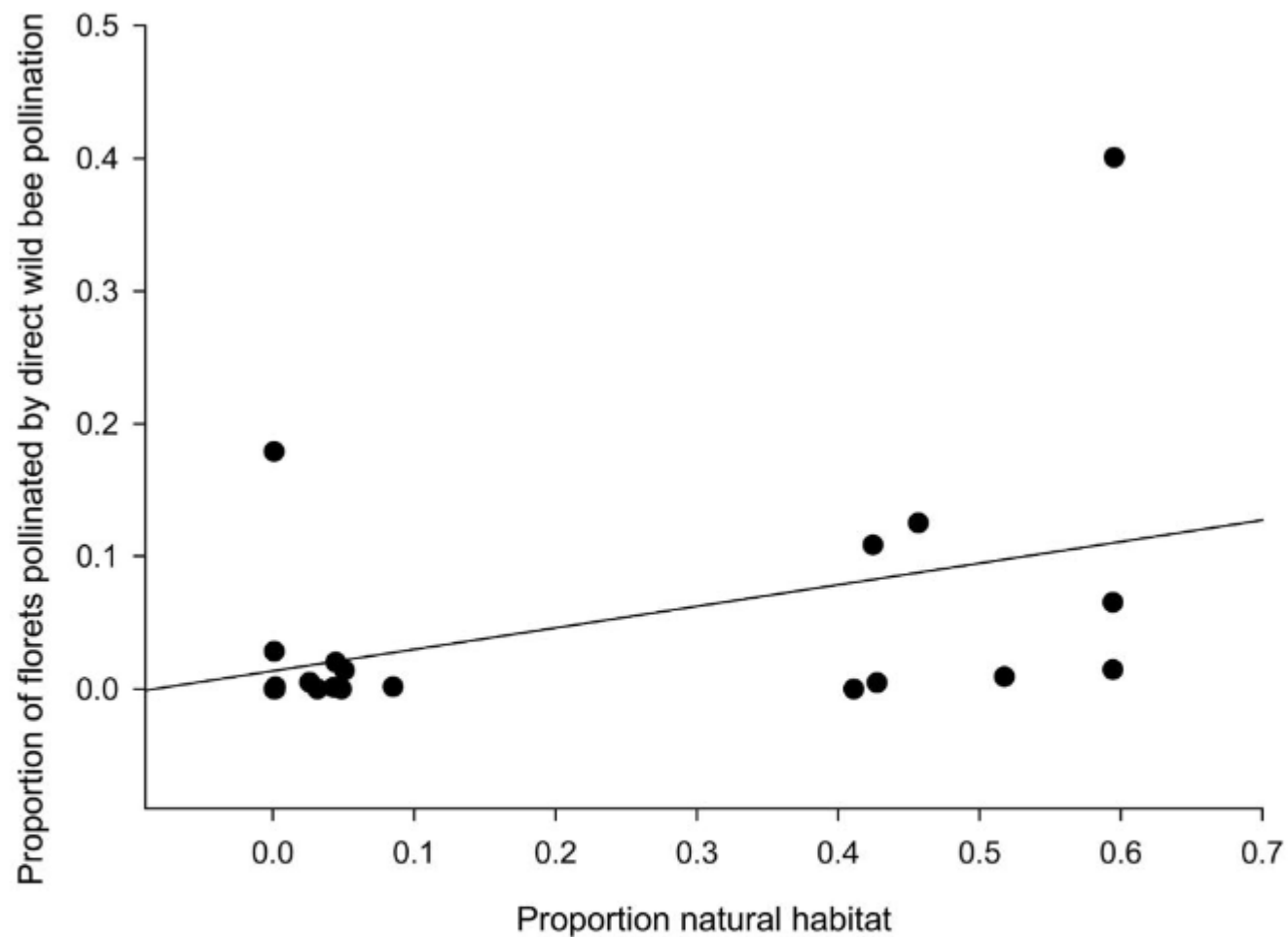


# Rapid loss of China's pollinator diversity

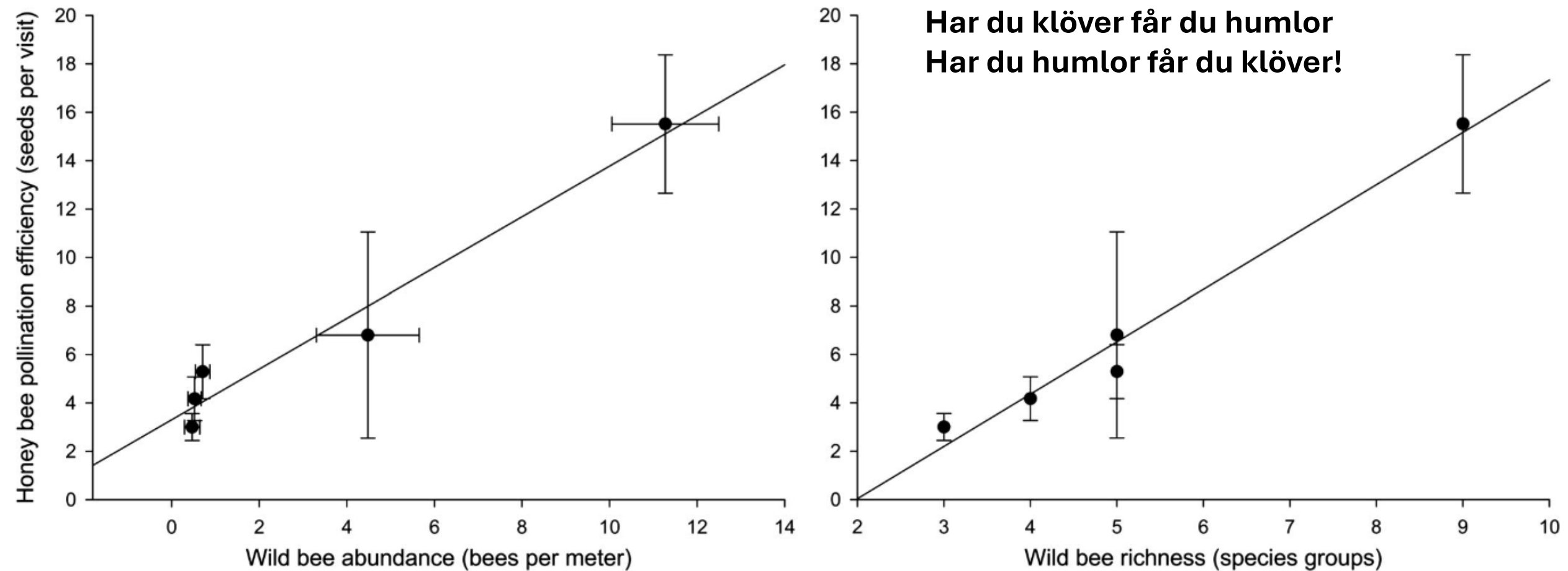
FANG-ZHOU MA, CHEN-BIN WANG, YAN-JING ZHANG, PENG CUI, AND HAI-GEN XU [Authors Info & Affiliations](#)

SCIENCE • 1 Sep 2022 • Vol 377, Issue 6610 • p. 1055 • DOI: 10.1126/science.ade2089





**Fig. 4.** Pollination services increased with increasing proximity to natural habitat. Natural habitat includes riparian, oak-woodland, chaparral, and mixed oak. Nonnatural habitat was typically agricultural land but may also include a small proportion of residential and urban land. Each point represents one field.



**Fig. 1.** Honey bee pollination efficiency is related to wild bee abundance and richness. Honey bee pollination efficiency is shown as mean seeds produced per single honey bee visit for a particular field; bars show SE. Each data point represents 20–25 honey bee visits to separate virgin female sunflowers on a single field. *(Left)* Wild bee abundance is reported as mean wild bee visits per 1 m length of a single row during 1 min in a particular field; bars show SE ( $n = 4$  transects). *(Right)* Wild bee richness is reported as the number of species groups.



# Trädgården som ekologisk resurs och refug

Bevara äldre träd

Livsmiljöer i eller i närheten av trädgården

Bomöjligheter

Mycket nektarväxter – från tidiga till sena  
(inga hybridlindar)

Kompost





# Faunaväkteri

Faunaväkteri är en ideell övervakning av hotade djur. Övervakningen bygger på ett nätverk av naturintresserade människor som bidrar med kunskap genom att tillsammans övervaka hotade arter. Alla är välkomna att spana arter och bli faunaväktare!

<https://www.artdatabanken.se/hjalpa-till/faunavakteri/>



SVENSK DAGEFJÄRILSÖVERVAKNING

<https://www.dagfjarilar.lu.se/>



<https://artportalen.se/>

## Endangered species - Red List



Expandera alla Minimera alla

▼ About pollinators

➤ **Endangered species - Red List**

• Pollinator experts - Red List of Taxonomists

➤ Data and research

➤ Action for pollinators

➤ Get involved

➤ Events and campaigns

➤ Resources



Photos © Frank Vassen

The European Red List is a review of the status of European species according to the IUCN regional Red Listing guidelines. It identifies those species that are threatened with extinction at the European level (Pan-Europe and the European Union) so that appropriate conservation action can be taken to improve their status.

Funded by the European Commission since 2006, through a mix of funding schemes, the European Red List is compiled by IUCN's Global Species Programme in collaboration with the Species Survival Commission and other partners and experts. To date 15,060 species have been assessed on the European Red List including invertebrate species such as dragonflies, grasshoppers, crickets and bush-crickets. In particular the red list has been key in establishing an understanding of the status of pollinating insects in Europe with three pollinator groups having been assessed so far ([butterflies](#), [bees](#) and [hoverflies](#)).

The compilation of information to produce the [European Red List of Moths](#) is currently ongoing, and is expected to be finalised by the end of 2024.

To learn more about the European Red List Initiative please consult [IUCN's webpage](#).

[Endangered species - Red List - EU Pollinator Information Hive - EC Public Wiki](#)

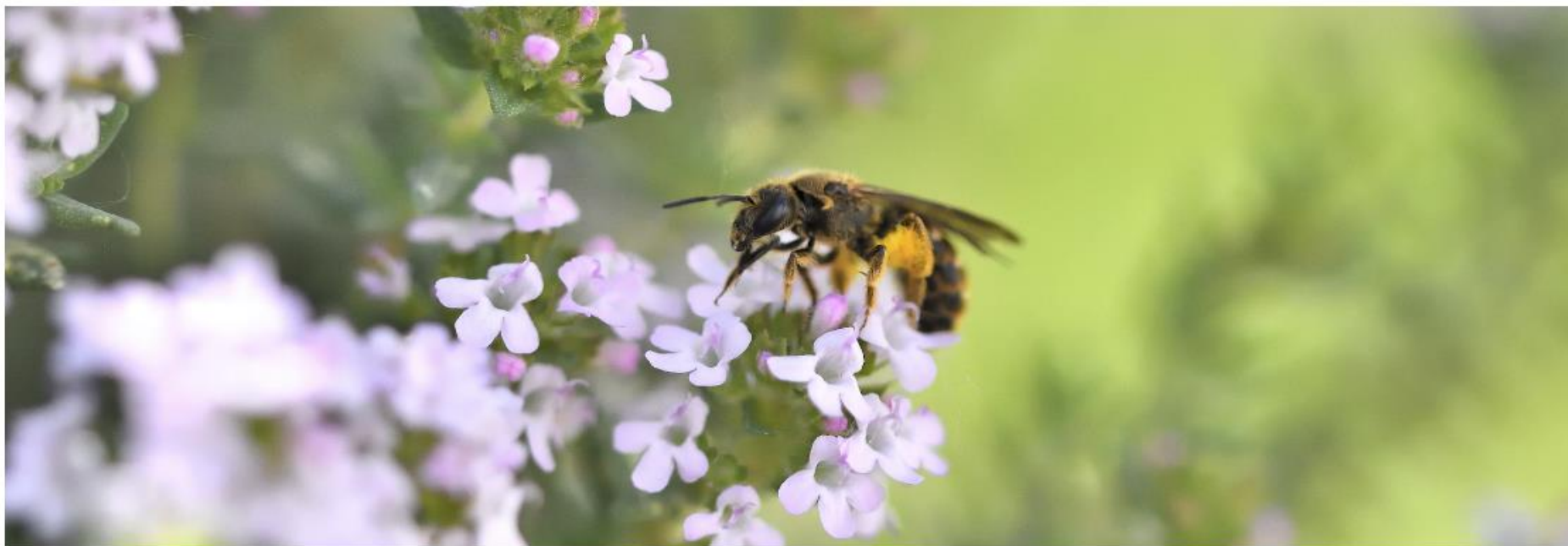


# Action for pollinators



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- > About pollinators
- > Data and research
- > **Action for pollinators**
- > Get involved
- > Events and campaigns
- > Resources



© Davide Bonora/Shutterstock.com

The decline of pollinators requires immediate and decisive action to limit the loss of key European pollinator species and to ensure the resilience of the ecosystems on which they rely. There are already important actions taking place across Europe, with the support of EU funding and EU policies in order to tackle the crisis facing pollinating insects. Projects taking place in the agricultural and urban landscape are key to tackling the main threats facing these important organisms and many are already taking place throughout many EU Member States, informed by ground-breaking and world leading research from several European research institutes.

*Find out more about pollinator conservation in Europe.*

[Action for pollinators - EU Pollinator Information Hive - EC Public Wiki](#)



[Policy](#) [Europe's Biodiversity](#) [Countries](#) [Resources](#)

# Welcome to BISE

## The source of data and information on biodiversity in Europe

Image © Agata Podgorska, Well with Nature/EEA

BISE serves as the European reference gateway for accessing data, information and knowledge regarding the status and progress towards EU biodiversity targets. This is derived from data collected through key nature-related policy instruments.

[Biodiversity Information System for Europe](#)



19 DECEMBER 2022 | INTERNATIONAL AGREEMENTS

# Kunming-Montreal Global Biodiversity Framework

**Authors:** Convention on Biological Diversity



The conclusion of the 15th Conference of Parties to the UN Convention on Biological Diversity saw the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF).

Amidst a dangerous decline in nature threatening the survival of 1 million species and impacting the lives of billions of people, the GBF aims to halt and reverse nature loss. The framework consists of global targets to be achieved by 2030 and beyond to safeguard and sustainably use biodiversity.

## FURTHER RESOURCES

- [Download the framework](#)
- [2023: The year of implementation for climate, nature and pollution reduction](#)
- [Resource: Assessment Report on Sustainable Use of Wild Species](#)
- [Resource: Assessment Report on Diverse Values and Valuation of Nature](#)
- [Resource: A Multi-Billion-Dollar Opportunity](#)



Frågor?

