MANIFESTO

Protecting Arthropods:

A call for urgent reform in EU pesticide regulation.

Pesticide Action Network Europe

buglife

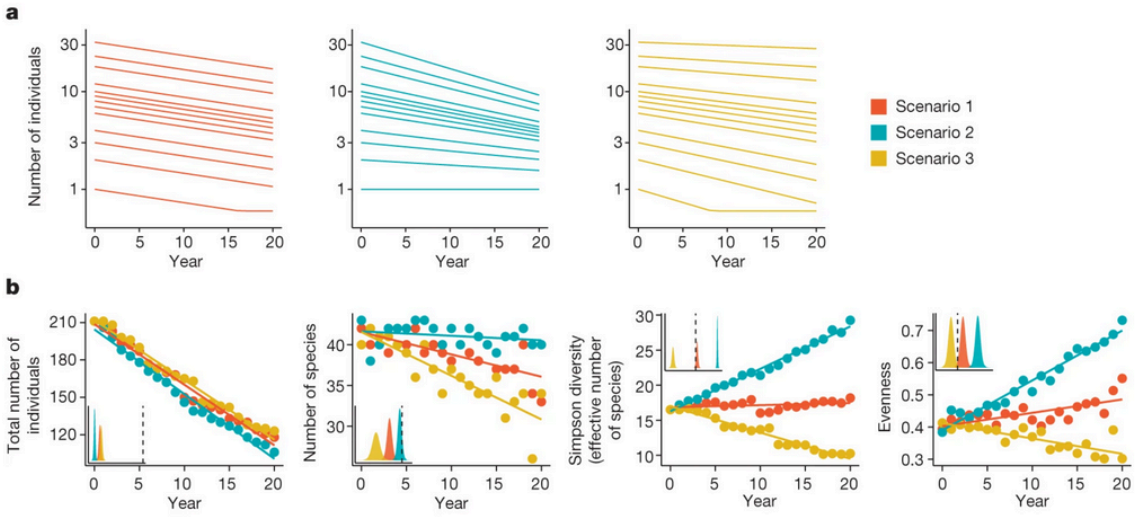
POLLINIS

BeeLife
European Beekeeping Coordination

Introduction

They are tiny, but they make life possible. Butterflies, bees, flies, millipedes, beetles, spiders, and numerous other invertebrates are the silent workforce that sustains European agriculture and ecosystems. Often overlooked as mere "bugs," these creatures are the ‘true engineers of ecosystems’: they pollinate our crops, keep our soils fertile and healthy, recycle dead organic matter, keep harmful pests in check and provide food to countless animals, all for free. Without them, food production would plummet, ecosystems would unravel, and the cost of farming would skyrocket.

The alarming reality? This workforce gifted by Nature is collapsing. In just 25 years, Europe has lost a staggering 75% of its insect flying biomass, even in protected areas.[1] This is not just an ecological tragedy, it’s a direct and growing threat to agriculture. Fewer pollinators mean lower yields.[2] Weakened natural pest control leads to heavier dependence on pesticides. Degraded soils threaten the foundation of food production, water retention, and purification. **If arthropods disappear, so does the future of European farming and life on Earth as we know it.**



Graphs from van Klink et al, 2023: This study verses about the multidimensional nature of biodiversity trends in assemblages of terrestrial insects, arachnids (spiders and mites) and Entognatha (springtails and allies) during the past decades. Effects of three conceptual scenarios by which species change over time (all species decline in proportion to each other (scenario 1, red); abundant species decline more than rare species do (scenario 2, turquoise); or rare species decline more than abundant species do (scenario 3; gold)) on population abundances (a), four biodiversity metrics (b).

The good news is that there is a clear path to stop the bug populations from collapsing.

1. Hallmann, C. A., M. Sorg, E. Jongejans, H. Siepel, N. Hofland, and H. Schwan. ‘More than 75 Percent Decline over 27 Years in Total Flying Insect Biomass in Protected Areas.’ PLOS ONE 12, no. 10: e0185809 (2017)

2. O'Reilly, A.D., Stanley, D. A. 2023. Solitary bee behaviour and pollination service delivery is differentially impacted by neonicotinoid and pyrethroid insecticides, Science of the total environment, 894 : 164399 ; Anstett, C., et al., 2019. La pollinisation du cassis: État des lieux dans un contexte de changements anthropiques Bourgogne-Franche-Comté Nature, 2019, 29, pp.194-205. Hal-02390639. Turo, K.J., Reilly, J.R., Fijen, T.P.M. et al. Insufficient pollinator visitation often limits yield in crop systems worldwide. Nat Ecol Evol 8, 1612–1622 (2024). https://doi.org/10.1038/s41559-024-02460-2

The root cause: a broken regulatory system

This crisis is not a natural phenomenon; it is a direct consequence of intensive agriculture, with pesticide use as a major cause. Yet, the EU Pesticide Regulation is supposed to prevent unacceptable harm to biodiversity, including to essential insect populations. So why are they disappearing at such a catastrophic rate?

The answer lies in a single, outdated, and deeply flawed document: **the 2002 Guidance Document on Terrestrial Ecotoxicology,**[3] specifically in Section 5 on non-target arthropods (NTA). For over two decades now, this framework, used by EU Member States and the European Food Safety Authority (EFSA) to assess the risk posed by pesticides on arthropods, has systematically failed to protect NTAs. This is no random accident. With industry employees participating in its writing, **the guidance sets protection standards so low they are effectively meaningless. The absurdity of this guidance defies all common sense:**

- It allows pesticides to be approved even if they cause up to 100% mortality in tested insects, assuming that populations will "recover."
- It ignores the real-world impact of pesticide mixtures, chronic long-term exposure, and the cumulative effects of widespread pesticide use.
- It only looks at individual molecules' exposure and ignores the pesticide cocktails interacting in nature on an almost constant level.

The result? A **regulatory loophole** that has enabled the collapse of bug biodiversity. This system is not just inadequate: it is unacceptable and not in line with EU law.

3. European Commission (2002). Guidance Document on Terrestrial Ecotoxicology Under Council Directive 91/414/EEC, p.19-24. https://food.ec.europa.eu/document/download/424e71a2-5beb-4fa3-9198-89be916c1789_en?filename=pesticides_ppp_app-proc_guide_ecotox_terrestrial.pdf.

A once-in-a-generation opportunity...

But change may be finally within reach. The guidelines are being rewritten. In June 2024, after years of warnings by scientists and EU Member States, the European Commission tasked EFSA with updating this document. The Authority has begun revising this outdated guidance after naming the group of experts to define the new methodologies and protection standards.

The revision of the NTA guidance document presents a rare and urgent opportunity to stop decades of regulatory failure.

This is a once-in-a-generation opportunity to secure genuine protection for the largest portion of biodiversity. If we act now, we can ensure that the new guideline is rid of its previous shortcomings and sets the right safeguards for the bugs that sustain our ecosystems and food supply.

...or an continued regulatory failure?

The revision aims to provide stronger protection for biodiversity against harmful pesticides. However, there are serious indications that it might not result in stronger protection standards, but instead reinforce the status quo.

PAN Europe raises **serious doubts** about whether the revision will bring meaningful change, or simply rubber-stamp EFSA's flawed preparatory work. An investigation by PAN Europe has exposed that EFSA's approach, developed in collaboration with Wageningen University, **fails** to introduce **meaningful improvements** and continues to prioritise industry interests over scientific integrity. Alarmingly, EFSA's preparatory work overlooks the risks posed by pesticide mixtures, prioritises only a handful of species that provide "ecosystem services for humans" (centred on human interests only), and offers no substantial safeguards for biodiversity in the field. It effectively disqualifies entire groups of essential arthropods considered a "disservice", such as grasshoppers, mites, thrips, and thousands of other species[4], thus dealing a severe blow to agriculture. If only a fraction of the ecosystem is protected, the stability and resilience of the entire system will be endangered.

4. See PAN Europe. (2024). *Licence to kill: an EU Guideline with far-reaching consequences.* URL: https://www.pan-europe.info/sites/pan-europe.info/files/public/resources/reports/November%20report%20-%20%27Licence%20to%20Kill%20-%20an%20EU%20guideline%20with%20far-reaching%20consequences%27.pdf

Concerns are mounting over whether EFSA's hand-picked experts have the independence and expertise to deliver real reform. Notably, only 3 out of 11 members (27%) are active ecotoxicologists, and very few entomologists are included, despite the guidance being about the impact of pesticides on arthropods. Six members (55%) have no direct expertise in the field; their primary qualification is employment by national pesticide regulators.

If the working group uncritically endorses EFSA's preparatory work, the outcome will be predictable: the updated guidance document **will maintain the existing shortcomings of the current guidance document, and new, controversial concepts will further undermine NTA protection.**

Our proposals for a successful protection of nature's workforce, the arthropods:

The future of European biodiversity is at stake. If EFSA fails to deliver a guidance document that protects arthropods, we will continue to see the catastrophic decline of these essential species. The situation is worse today than in the early 2000s. **With the crisis of biodiversity, the EU cannot afford a failed revision.**

Strengthen protection standards

- The new guidance must include assessing chronic, behavioural, and indirect effects on arthropods. Current testing focuses only on short-term mortality, ignoring long-term harm, behavioural disruptions, and ecosystem-level impacts, such as food web alterations.

- The new guidance must set protection standards ensuring that pesticides do not cause unacceptable harm to arthropod populations and biodiversity. The current arbitrary 50%-100% mortality threshold must be urgently replaced with a stringent protection standard based on rigorous scientific research. Pesticides that result in significant mortality or other adverse effects should not be deemed acceptable, as they pose a high risk to ecosystem health.

Assessment must go beyond a few model species

- The new guidance must require a broader range of species for pesticide toxicity assessment, across all key functional groups, including pollinators, predators, parasitoids, decomposers, detritivores, and scavengers. Species selection must be scientifically driven, prioritising the most sensitive species within each group to ensure risk assessments reflect worst-case scenarios, ensure preservation of ecological functions and protect the most vulnerable or threatened organisms.

- As an interim measure, the industry (pesticide companies) should be required to test all species from the current guidance document and report all findings, ensuring a more comprehensive risk assessment, as currently, the industry can choose which species to test.

Stop the use of the 'recovery' concept

- The unscientific concept of “recovery” for NTA populations should be removed from the new guidance document. It fails to consider real-world ecological risks and disregards the long-term environmental damage caused by repeated mortalities in insect populations.

Exclude the "ecosystem services for humans" and "disservice" concepts from the new guidance document

- The new guidance should not include the concepts of “ecosystem services for humans” and “disservices,”. They limit protection only to species that provide services to humans, especially for intensive agriculture, and exclude others by deeming them a “disservice” to agricultural protection. They overlook the critical roles that all species play in maintaining ecological balance. This approach directly contradicts the EU Pesticide Regulation, which mandates the protection of biodiversity and ecosystems in their entirety (Regulation (EC) 1107/2009, Art. 4.3.e). Allowing these concepts in the new guidance would jeopardise biodiversity protection, threaten the resilience of ecosystems and the long-term sustainability of agricultural systems.

Address real-world exposure

- The assessment must be conducted at appropriate spatial and temporal scales: it must consider the cumulative effects of pesticide mixtures, repeated spraying, and exposure inside and outside of agricultural fields. On average, 10 pesticides are present in and around the field year-round.[5] The current one-chemical testing approach should be abandoned, for it is gravely unscientific.

Ensure scientific integrity

- The revision must be led by independent scientists with relevant experience and expertise in ecotoxicology, entomology, and biodiversity, with no ties or past collaborations with the pesticide industry.

Adopt a system approach

- Stop the slow and flawed pesticide assessment process. The Commission should consider implementing a system-based approach,[6] which provides a scientifically sound and applicable framework for protecting arthropods.

5. Honert, E., et al. (2025). Exposure of insects to current use pesticide residues in soil and vegetation along spatial and temporal distribution in agricultural sites. Nature Scientific Reports, 15(1), 1817. https://doi.org/10.1038/s41598-024-84811-4

6. See for instance the work of Axelman, J., et al. (2024). A systems-based analysis to rethink the European environmental risk assessment of regulated chemicals using pesticides as a pilot case. Science of The Total Environment, 948, 174526. https://doi.org/10.1016/j.scitotenv.2024.174526