Exciting Advances in Pesticide Research!

Pollinator Power Network Newsletter - Written by Liah Continentino

I am excited to talk about some interesting pollinator-focused initiatives! In the spirit of this month's theme, I will be sharing 4 interesting projects this week that are working to support pollinators in Europe.

Today we are going to talk about two new projects which are taking on a big task - understanding pesticide exposure risks and developing methods for assessing these risks for a diverse variety of pollinator species!

Many of you are familiar with the harm that pesticide exposure can cause to pollinators. **Pesticide exposure is one of the main drivers of pollinator decline** and is widely spoken about in the world of pollinator gardening and conservation.

What you may not know is how limited our understanding is regarding pesticide exposure, levels of chemical pollution, routes of exposure, and the toxicological and ecological impacts of these pollutants.

Our knowledge is often restricted to the effects of individual pesticides on pollinators, even though environments are frequently contaminated with multiple chemicals that may have synergistic effects. Additionally, most research focuses on honeybees, which do not necessarily share other species' biological and ecological traits and thus inadequately represent the diverse range of pollinators affected by pesticides

This lack of comprehensive understanding presents a significant hurdle for developing effective policies regarding pesticide use. By broadening our knowledge and improving risk assessments, policymakers, pesticide users, and the public can make more informed decisions, leading to much-needed changes.

Let's dive into two projects that are working to make these changes:

WildPosh:

WildPosh (*Pan-european assessment, monitoring, and mitigation of chemical stressors on the health of wild pollinators*), began in January 2024. This initiative seeks to address knowledge gaps and "significantly improve the evaluation of the risk to wild pollinators of pesticide exposure, and enhance the sustainable health of pollinators and pollination services in Europe".

Understanding risk to wild pollinators is vital to assessing impacts on biodiversity and ecosystem health. The WildPosh project also aims to bring diverse perspectives to their work by joining partners from 10 different European countries with expertise in various different fields of research and innovation.

WildPosh has outlined 5 specific objectives for their work:

1. Determine the real-world agrochemical exposure profile of wild pollinators at landscape level, within and among sites.
2. Characterize causal relationships between pesticides and pollinator health.
3. Build an open database on pollinator traits/distribution and chemicals to define exposure and toxicity scenarios.
4. Propose new tools for risk assessment on wild pollinators.
5. Drive policy and practice.

These objectives are predicted to be achieved by December 2027, contributing valuable scientific data, publications, and insights for sustainable policy and practice in pesticide use. This intensive focus and transdisciplinary approach will significantly enhance our ability to act in this field where timely action is key.

PollinERA

PollinERA, another European project launched in January 2024, focuses on filling the knowledge gaps and procedural limitations to current pesticide risk assessment so that meaningful improvements can be made. The European Green Deal, EU biodiversity strategy, EU zero pollution action plan, and the revised EU pollinators

initiative have all indicated a need to protect pollinators and reduce insect declines. However, our understanding of pesticide exposure, a leading cause of these declines, is primarily focused on one species - the honey bee.

PollinERA aims to move beyond assessing single pesticides in isolation on honey bees to an ecologically consistent assessment of effects on various insect pollinators. By shifting this focus, PollinERA aims to reverse pollinator population declines and reduce the harmful impacts of pesticides. Like WildPosh, PollinERA aims to achieve these goals by December 2027.

PollinERA has outlined 4 specific objectives to reach these goals:

1: Fill ecotoxicological data gaps to enable realistic prediction of the source and routes of exposure and the impact of pesticides on pollinators and their sensitivity to individual pesticides and mixtures.

2: Develop and test a co-monitoring scheme for pesticides and pollinators across European cropping systems and landscapes, developing risk indicators and exposure information.

3: Develop models for predicting pesticide toxicological effects on pollinators for chemicals and organisms, improve toxicokinetic/toxicodynamic (TKTD) and population models, and predict environment fate.

4: Develop a population-level systems-based approach to risk and policy assessment considering multiple stressors and long-term spatiotemporal dynamics at a landscape scale and generate an open database for pollinator/pesticide data and tools.

Overall, this project aims to not only fill data gaps, and assess and understand pesticide risks to wild pollinators, but *also* to develop models, risk assessment methods, and testing protocols that can be used by others. This groundbreaking work will expand the current risk assessment, policy evaluation, and monitoring

framework beyond honey bees to include a variety of wild pollinators such as moths, wild bees, butterflies, and hoverflies! **These changes will allow for a much deeper understanding of pesticide risks to biodiversity and enable impactful policy shifts.**

Hearing about initiatives like these gives me hope and inspires me to work towards a more sustainable future wherever I can. As these projects progress, I am excited to share their valuable findings with you so we can learn, and improve our practices together.