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PESTICIDE NEWS

An international perspective on the health & environmental effects of pesticides

"The most alarming of all man's assaults upon the environment is the contamination of air, earth, rivers, and sea with dangerous and even lethal materials."

Rachel Carson

We dedicate this issue to Rachel Carson on the 60th anniversary of her ground-breaking book '*Silent Spring*'.

MORE THAN ONE-THIRD OF EUROPEAN HOVERFLIES THREATENED WITH EXTINCTION

By Francis Gilbert, Co-Chair, IUCN Hoverfly Specialist Group

Thirty-seven percent of the 890 hoverfly species of Europe are threatened with extinction, according to the first-ever assessment, funded by the European Commission, of this essential pollinator group for the IUCN European Red List of Threatened Species. Intensive agriculture, harmful pesticides, unsustainable commercial forestry, urban development and climate change have all been identified as the top threats to hoverflies.

The assessment found that 314 out of the 890 species in Europe are Vulnerable, Endangered or Critically Endangered, which includes 174 species endemic to Europe. Intensive agriculture was identified as the most common threat to more than half (475) of all 890 species.

Adult hoverflies are the most important pollinators after bees. Their larvae are also hugely diverse, all of which can deliver ecosystem services. Some species have larvae that are important predators of aphid pests, controlling many without the need for pesticides. Some larvae are saprophages, feeding on the bacteria and fungi of decay, cleaning up polluted sites. Some have plant-feeding larvae and have been introduced to control weeds in the USA and New Zealand.

Pesticides are currently known to be detrimental to 55 species, 12 of which are threatened. Research on the field impacts of pesticides on hoverflies is still largely lacking, and many species that occur in and around agricultural landscapes are probably affected.

Hoverflies have long been part of the testing regime for pesticide toxicity in Europe, but this has focussed on mortality in unrealistic laboratory settings and have rarely included looking for any sub-lethal side-effects. Field-based studies are becoming more common, and there is a renewed appreciation of the effects of pesticides on the entire community of the natural enemies of pests. Adult hoverflies are exposed to a wide range of pesticides while visiting flowers, and we know far too little about their population-level impacts. At the moment there are no available studies of the combined long-term effects of low concentrations of combinations of pesticides on hoverflies.

A cause of great concern is a recent study that demonstrated the widespread contamination of nature conservation areas by multiple types of pesticides, transported inside the guts of insects that ingested them from nearby agricultural areas. The UK hoverfly recording scheme shows that more than half (53%) of UK species are declining, about one-third have not changed, and the rest (14%) are increasing. Across all species, however, the overall trend in abundance is downwards, on average by 45% since 1980.

Many threatened hoverflies occur outside protected areas and therefore depend on the conservation of areas of semi-natural habitat and their connectivity: they usually also require certain microhabitats within these areas to maintain stable populations. This means that the sympathetic wildlife-friendly management of the wider countryside is particularly important for hoverflies. Many existing protected areas are too small and have no buffer zones to protect them from pesticide drift from the surrounding agricultural lands. Moreover, hoverflies fly long distances and can pick up pesticides and transport them into reserves.

Two urgent habitat-related issues is the protection of old trees, which contain a variety of microhabitats where the larvae of a wide range of hoverfly species feed and the restoration of wetlands, the habitat of many species with aquatic saprophagous larvae. Incentives for using pesticides need to be phased out, and indeed the use of pesticides and toxic seed coatings prevented in all but a few areas, and only used when actually necessary. The application of these hazardous products needs to be restricted to a small proportion of the landscape, so that insect populations can recover properly from the devastating effects of their use.

Modern society has vastly improved its understanding of the value of the natural environment, but this is not yet reflected in the way that we treat and manage it. Once destroyed, ecosystems and their characteristic species and services are hard to restore.

Marmalade hoverfly by Thomasmales via Canva.com

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