New research has examined three different categories of Ecological Risk Assessment (ERA), each with different goals. The researchers find that overlaps between the three assessments could be combined to create a more comprehensive form of ERA, usable by regulators and environmental decision makers.

A study of wildflower planting within agri-environment schemes has demonstrated that the practice can support a diverse array of economically beneficial insect species, not just prominent pollinators such as wild bees and hoverflies. The study demonstrates the high conservation potential of wildflower planting within agricultural landscapes and the value of insects outside the traditional focus of conservation efforts.

Agri-environment schemes (AES) have been implemented across Europe as a way to restore and maintain biodiversity in agricultural landscapes. AES often target pollinators, such as wild bees and hoverflies, as they can improve yields of nearby pollinator-dependent crops.

Knowledge regarding the benefits to insect pollinators (and wild bees and hoverflies in particular) provided by AES is growing. However, there is limited information regarding how AES benefit other flower-visiting insects, which represent a large proportion of insect biodiversity and provide pollination services along with additional ecosystem services, such as the control of crop pests.

This study assessed flower visitor communities on 14 wildflower plantings in the district of Marburg-Biedenkopf, Hesse, central Germany. The district has seen the planting of over 400 wildflower patches between 2010 and 2013 as part of an AES aimed at promoting sustainable land use and restoring biodiversity. The researchers aimed to learn more about the diversity of insect species associated with planting wildflowers during the course of the flowering season, as well as wider landscape factors such as connectivity with other wildflower habitats and the surrounding arable land use.

The 14 wildflower plantings, which were selected to have varying levels of surrounding arable land and connected wildflower planting areas, were surveyed between the early to late flowering season from May to July 2014. Insect species were surveyed using transects, and insects visiting flowers were caught in nets for laboratory identification, to species or family level. The abundance and species richness of the flowering plant community was also recorded. The researchers separated the insect visitors into four groups: wild bees; hoverflies; honeybees from managed beehives; and all other insect flower visitors.

In total, 76 flowering plant species and 322 insect species were recorded across the 14 plantings. Across the four groups this comprised: 427 wild bees (representing 41 species); 470 hoverflies (39 species); 588 individual honeybees (1 species); and 1680 other visitors (241 species from nine different insect groups). This latter group made up over half of the total insects visits recorded and 74% of all species recorded.

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The results show that wildflower planting supports highly diverse communities of insect visitors, including many species that are outside the traditional focus of conservation efforts. Interestingly, the study also demonstrated that wildflower planting is attractive to different insect species, regardless of whether the abundance or richness of the planted area is low. However, the surrounding landscape was an important factor in the make-up of the flower-visiting communities and the composition of flower visitors also varied over the course of the flowering season: in the early flowering season, wildflower plantings that were accompanied by additional local plantings and within more variable landscapes supported the highest abundances of habitat specialists (e.g. bumblebee species), whereas isolated plantings were mainly visited by agricultural generalists (e.g. predatory hoverflies and pollen beetles). These differences diminished towards the end of the flowering season.

Bees and hoverflies have an important role in agricultural landscapes as pollinators. However, other species may provide similar or complementary ecosystems services. For example, certain species of flies other than hoverflies (Diptera), which made up 43% of the ‘other flower visitors’ in this study, can be important pollinators of wild and crop plants. Many of the other flower visitor species are also predators of crop pests and contribute to decomposition and nutrient cycling. However, it is important to note that wildflower planting also has the potential to support certain agricultural pest species, although this has been little studied.

Overall, the study indicates that increasing the availability of flowers in agricultural landscapes through species-rich wildflower plantings should support important insect species. The findings also suggest that future assessments on the value of wildflower plantings should consider the entire flower-visitor community, not just prominent species such as bees.