UNDERSTANDING THE STRUCTURE OF PLANT-POLLINATOR INTERACTION NETWORKS AS A TOOL FOR POLLINATOR CONSERVATION

Ignasi Bartomeus and Jose Lanuza

Background

Although a quick way to measure biodiversity conservation is to list the species present at a given site, protecting pollinator biodiversity also requires preserving the ways in which they interact with other species. Pollinators such as bees, hoverflies, and butterflies have intimate relationships with the flowers they visit. They obtain food in the form of pollen and nectar while transferring pollen to plants, enabling plant reproduction through mutualistic interactions. However, not all pollinators can visit all plant species. Surprisingly, we still have a limited understanding of who visits whom in the plant-pollinator world—and what consequences this has for pollinator conservation.

Objective

These two studies aimed to assemble the first plant-pollinator interaction network at the European level, depicting pollinator relationships with plants across the continent. Using this information, we mapped how interactions are organised and what implications they have for pollinator conservation.

Results

- This work represents the first centralised database of interactions between plants and pollinators at the EU level.

- The structure of plant-pollinator networks reveals a core of generalist species interacting among themselves, with specialist species attached to this core. This pattern reflects species abundance, with more abundant species forming the core. Such structures are particularly stable.

- Bees, hoverflies, and butterflies engage in different types of interaction patterns, indicating distinct roles in connecting the network.

- This information can guide restoration programs by identifying pollinator needs, such as selecting a balanced mix of plant species that promotes coexistence.

Sources

Lanuza, J., Bartomeus, I. et al. (2025). EuPPollNet: A European Database of Plant-Pollinator Networks. *Global Ecology and Biogeography*, 34, Article e70000. **https://doi.org/10.1111/geb.70000**.

Lanuza, J. B., Allen-Perkins, A., & Bartomeus, I. (2023). The non-random assembly of network motifs in plant–pollinator networks. *Journal of Animal Ecology*, 92(3), 760–773. **https://doi.org/10.1111/icad.12602**.
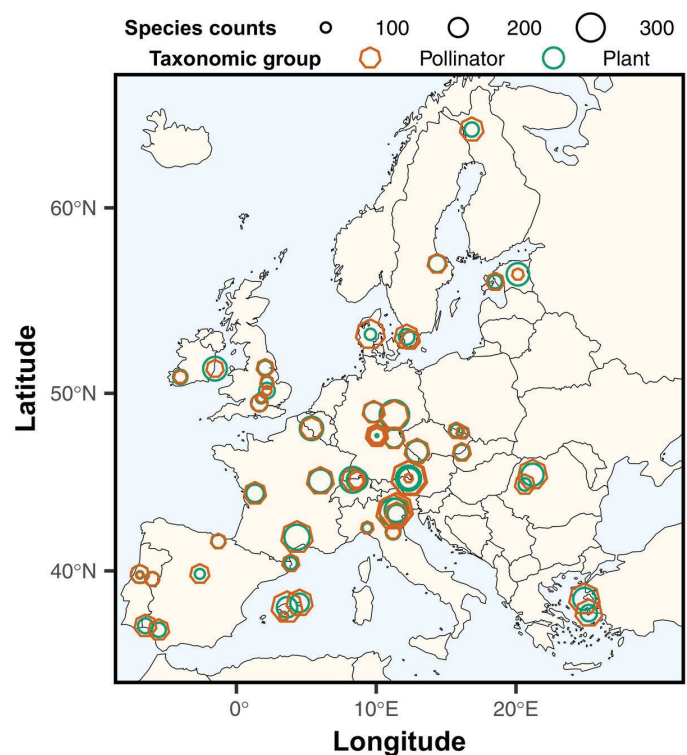
Locations of the studies in EuPPollNet across the European continent, showing the total number of pollinator (i.e. orange heptagon) and plant (i.e. green circles) species per study. The sizes of these shapes are proportional to the respective species counts. For visualisation purposes, we have selected only a single location per study.