Domestic gardens as locally selected habitats in favorable landscapes for pollinators

Marine Leve*[1,2], Carmen Bessa-Gomes[2], and Emmanuelle Baudry[2]

[1]Centre d'écologie et de sciences de la conservation (CESCO) – CNRS : UMR7204, Université Pierre et Marie Curie (UPMC) - Paris VI, Muséum National d'Histoire Naturelle (MNHN) – 55 rue Buffon 75005 PARIS, France

[2]Ecologie Systématique et Evolution (ESE) – Université Paris-Sud - Paris 11, AgroParisTech, Centre National de la Recherche Scientifique : UMR8079 – bat. 362 91405 ORSAY CEDEX, France

Abstract

Urban expansion is correlated to negative biodiversity trends. The amount of impervious surfaces, associated with urban areas is a determinant of pollinator species assemblages. While the increase in urbanization and impervious surfaces negatively impacts pollinators, cities also encompass urban green spaces, which have a significant capacity to support biodiversity. Among them, domestic gardens that represent a non-negligible fraction of green spaces have been shown to benefit pollinators. Domestic gardens may form patches in residential areas, although their value at a landscape scale is still unknown. Here we investigate the combined effects of impervious surfaces and domestic garden areas on pollinator richness. Due to the difficulty of accessing privately owned domestic gardens we chose to use citizen science data from a well-established French citizen science program known as the SPIPOLL. Using regression tree analysis on buffers located from 50m to 1000m around the data points, we show the importance of pollinators being in close proximity to domestic gardens as locally selected habitats that are embedded within a landscape scale, in which impervious surfaces represent unfavorable areas. We highlight the inter-connection between local and landscape scales, the potential for patches of domestic gardens in residential areas, and the need to consider gardeners' taxon-dependent management decisions within a landscape context.

*Speaker