# Abstract

Sexual reproduction of most plant species in the world depends on pollen transfer mediated by animal pollinators. However, pollen transfer is challenging and inefficient due to conflicting interests between plants and pollinators. Consequently, only a small fraction of produced pollen grains successfully reach stigmas, highlighting the pressure on plants to adopt strategies that increase the efficiency and specificity of pollen transfer. This thesis examines three important factors shaping pollen transfer: the generalization of plant-pollinator spectra, pollen presentation mechanisms, and pollinator behaviour.

The first chapter explores the generalization of plant-pollinator spectra, revealing that the majority of plant species in temperate Europe exhibit highly generalized pollinator spectra, with plant niche width and plant dominance being significant factors shaping these spectra. The second chapter delves into pollen presentation mechanisms, showing how pollen release matches the pollinator visitation activity. Diurnal dynamic in pollen availability on flowers and subsequent pollen transfer may then increase the specificity of pollen transfer in communities with a higher degree of generalization, highlighting the importance of timing in plant-pollinator interactions. Finally, the third chapter focuses on pollinator foraging behaviour, examining the impact of floral traits and pollinator experience on flower preference and constancy. Experimental studies with *Eristalis tenax*, L. Syrphidae hoverflies reveal intricate interactions between floral traits and experience, influencing foraging decisions and flower constancy.

By integrating diverse methodological approaches and experiments, this thesis provides insights into the intricate dynamics of pollen transfer. Understanding these drivers is crucial for comprehending the structure and resilience of plant-pollinator networks, with implications for conservation and ecosystem stability.



## Keywords

pollination; pollen transfer; generalization-specialization; pollen presentation; pollinator behaviour; flower constancy