Abstract

Associations between flowers and pollinators are responsible for reproduction of majority of plant species as well as food supply for substantial part of animal diversity on the Earth. Until recently, the studies on plant-pollinator relationship were focused predominantly on pollination of particular plant species, with only little or no accent on community perspective. In recent decades, however, pollination ecology shifted its focus rather to community context by introducing so called pollination networks. This approach allows us to view the ubiquity and complexity of the interactions between plants and their pollinators and it opened up many new opportunities to study the pollination from animal perspective or to access spatio-temporal variability in the interactions. However, we still have only limited insight into the processes driving the structure and dynamics of such networks.

The assembly of plants, pollinators and their interactions are driven by various ecological as well as evolutionary processes. From the ecological point of view, species co-occurrence in time and space may affect the interactions, or species flexibility for various community contexts providing different food sources may play role. In the evolutionary perspective, species may have various co-adaptations due to their evolutionary history and their foraging strategies may be constrained by the ecological strategies of their ancestors.

In this work, I attempt to view the pollinators from the ecological as well as evolutionary perspective. I show how the assembly of pollinators varies across time and space and how does the context of the surrounding habitat affect the interactions between plants and pollinators themselves. Then, I delve more deeply into ecological peculiarities of selected groups of pollinating Diptera (in particular Central European Syrphidae) and Hymenoptera (in particular selected genera of solitary bees). In the evolutionary perspective, I focus on hover flies (Diptera: Syrphidae), which are very important, yet understudied pollinators. I contribute to the knowledge on evolutionary history of hover flies by studying their fossil records (*paleontological approach*) as well as by phylogenetic analysis of one hover fly genus (*neontological approach*).

Keywords: pollinators, hover flies, bees, ecology, evolution