
Hoverflies (Diptera Syrphidae) in the Alpine National Parks of Italy

Daniele Sommaggio*¹

¹University of Bologna – Italy

Abstract

In 2019, the Italian ministry promoted a project aimed at increasing the knowledge of main pollinator taxa and at planning a monitoring scheme to evaluate the long term trend of pollinators. The project was carried out in the 25 national parks and focuses mainly on three taxa: butterflies (Lepidoptera: Papilionoidea), bees (Hymenoptera: Anthophila) and hoverflies (Diptera: Syrphidae). The University of Bologna has been involved in studying the hoverflies in the four Alpine National Parks: Dolomiti Bellunesi, Gran Paradiso, Stelvio and Val Grande. The specific objectives are different according to the peculiarities and needs of each park. All Parks are interested in increasing the knowledge about their hoverfly fauna. In the Dolomiti Bellunesi National Park in 2019 and 2020, Syrphidae were sampled using Malaise traps, pan traps and collections with entomological net. Overall, 185 species of hoverflies were recorded within this Park, which can be considered as an important hotspot of biodiversity. This checklist was used to apply Syrph the Net to the whole territory of the Park, focusing on the potential habitats with the greatest difficulties for nature conservation. Val Grande National Park is developing a project similar to that of the Belluno Dolomites, with field activities in 2021 and especially 2022. In addition in these two parks the altitudinal distribution of bees and hoverflies was studied using pan traps as sampling methods. In Dolomiti Bellunesi National Park altitude is the main variable explaining the distribution of bees and hoverflies, which showed different distribution patterns: hoverflies have a unimodal distribution (richness and abundance) with peak at middle altitude (1500 m), while bees have a monotonic decline (richness and abundance) with increasing altitude. To evaluate the efficiency of hoverfly species as pollinators, a project has been started, involving the collection and identification of the pollen transported by metagenomics; this research has been developed in Dolomiti Bellunesi and Val Grande National Parks. In the Gran Paradiso National Park, a research has been promoted with the aim to study the effect of low-impact grazing of asses on the fauna of invertebrates, and in particular on pollinators, since 2016. In each pasture, a plot of 40 x 40 m was delimited where asses were prevented from grazing (control). Invertebrates were sampled using emergence traps; in addition hoverflies were sampled using entomological nets along a transect. Invertebrate abundance was significantly higher in grazed plots than in ungrazed one; this trend was confirmed for detritivore and parasitoids. No family of insects was significantly more abundant in ungrazed than in grazed plots. Specimens belonging to 10 families (including Syrphidae) were identified to species level and no difference in species richness among plots were recorded. The application of PERMANOVA allowed to detect no difference between grazed and ungrazed plots for the studied taxa. Starting from 2022 in the Alpine National Parks, four transects have been identified where butterflies, bees and hoverflies will be identified and counted. Although the

*Speaker

sampling protocol is still being defined, these transects will represent permanent sampling points aimed at evaluating, in conditions of low anthropogenic impact, the long-term changes in the pollinator community.

Keywords: Alpine Parks, Syrph the Net, conservation, grazing