Pollination research in the flora and vegetation of northern Croatia with utility analysis for *Apis mellifera*

Zvjezdana Stančić[1], Željka Fiket[2]

[1]*University of Zagreb Faculty of Geotechnical Engineering, Hallerova aleja 7, Varaždin, Croatia (zvstan@gfv.hr)*
[2]*Ruđer Bošković Institute, Bijenička cesta 54, Zagreb, Croatia*

Summary

The proportions of insect, wind, self and water pollinated plant species as well as species useful for *Apis mellifera* in northern Croatia were determined. The study included 507 plant taxa belonging to 95 plant families and covering the flora and all vegetation (habitat) types in the study area of the Bedekovčina settlement. The flora and vegetation studies were carried out in the field, and the data on the pollination types of plant species and their usefulness for *A. mellifera* were taken from the literature and available databases. The results show that most plant species depend on insect pollination (73.6%), followed by self-pollination (30%), wind (25%) and water pollination (0.6%). However, different plant species have different pollination strategies, some have one, two, three and even four types of pollination: the largest group consists of pure insect pollination (43%), followed by both insect and self-pollination (27%), pure wind pollination (22%), insect and wind pollination (2.6%), etc. In total, 54% of the plant species useful for *A. mellifera* were found, of which 51% provide pollen, 47% nectar and 4% honeydew. The results suggest that *A. mellifera* could be a potential pollinator for about half of the flora. Of the traits analyzed, habitat types and plant family affiliation have the greatest influence on the distribution of pollination types. Most insect-pollinated plant taxa are found in grassland, forest and ruderal habitats, suggesting that these habitats are the most important for pollinators. Given the global decline of insects, the results provide a basis for conservation, selection of best management practices and beekeeping.

Keywords: pollination, flora, vegetation, *Apis mellifera*, Croatia