Pollination strategy of a food-deceptive orchid: a community approach

Thomas RUPP[1], Demetra ROKOSY[1], Stefan DÖTTERL[1], Jana JERSAKOVA[3,*]

[1] Department of Biosciences, University of Salzburg, Hellbrunnerstr. 34, 5020 Salzburg, Austria

[2] Department of Integrative Zoology, University of Vienna, Althanstr. 14, 1090 Vienna, Austria

[3] Department of Biology of Ecosystems, Faculty of Science, University of South Bohemia, Branišovská 1760, 37005 České Budějovice, Czech Republic

[*] **jersa@centrum.cz**

Traunsteinera globosa is a food-deceptive orchid assumed to mimic a guild of plants with locally differing model species. Its major pollinators are generalist syrphid and empidid flies. In previous studies, putative model plants were mainly selected by visual similarities to the orchid judged by the human eye, and quantitative analysis of visual and olfactory floral cues restricted to these species. Similarly, the pollinator spectrum was only investigated for *T. globosa* and these models. It remains unknown whether this orchid shares pollinators also with other co-flowering plants and if so, how similar their floral traits are to the orchid and the putative models. We analysed visual and olfactory flower cues of an alpine plant community containing *T. globosa*, observed the pollinator network, tested the importance of scent for pollinator behaviour in an experiment, and identified physiologically active scent compounds. Results show that besides the putative models another eight co-flowering plants shared pollinators with the orchid. Six of them were fly-blue as the orchid, two were fly-purple. All co-visited plants shared a number of physiologically active scent compounds with the orchid, but the overall scent blends differed among the species. The behavioural experiment showed that pollinating flies use the orchid's scent as an attractive cue. These results point to a more generalist pollination strategy of *T. globosa*, involving not only the putative models, but also other co-flowering plants.