

Several case studies at different levels (population, regional, comparative etc.) were carried out to evaluate the importance of different sources of variation and to follow microevolutionary traits in *Pilosella* (Asteraceae). The gradient of different spatial levels and comparative studies of closely related taxa group (characterised by partly different type of ongoing microevolution - genus *Picris*) revealed some common processes while at the same time highlighted the uniqueness of genus *Pilosella*. Microevolutionary potential was studied at the population level using morphometric approach (hybridization tendencies of highly complex hybrid swarm in Prague - Praha Vysočany). Cytogeography of *Pilosella officinarum* was then investigated at the regional scale (Central Europe). Tetraploid cytotype was detected almost exclusively in Bohemia region and further to the west whereas pentaploid and hexaploid cytotypes prevailed in Moravia and Slovakia and further to south-east. Cytogeography was followed by morphometric evaluation of three most abundant ploidy levels (4x, 5x and 6x) of *P. officinarum* combined with the analyses of reproduction mode. Results confirmed the possibility to distinguish the particular cytotypes (intermediate pentaploids partly overlapping with the tetra- and hexaploids). Different morphological traits of sexual vs. apomictic hexaploids were uncovered. Finally the microevolutionary processes of *Pilosella* were compared to those observed in *Picris hieracioides* group. The existence of two distinct morphological groups of *P. hieracioides* was confirmed by differences in their absolute genome size. Genome size and morphology of Balkan endemic *Picris hispidissima* was found to be significantly different compared to the closely related taxon to *P. hieracioides*. The comparative case studies of *Picris* revealed highly distinct microevolutionary pattern compared to genus *Pilosella*.