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Pollen as a microscopic key for understanding biodiversity – Case study on the Genus *Iris* L. (*Iridaceae*)

Presence of variety of plants is an essential component of biodiversity, which ensures the survival of the whole Earth. The research of plant evolution, phylogeny and richness is a permanent need for the human race. One of the incredibly informative and often neglected disciplines in biodiversity research is palynology, the study of pollen grains and spores. It could provide us evidence on plant history, evolution and phylogeny. The potential of palynology in researching the diversity of plants will be demonstrated by the case study on the large and complex genus *Iris* L., which consists of about 300 species, widespread in the northern hemisphere. The current classifications, based mainly on morphology and molecular phylogeny, suggest a division of the genus *Iris* into six or more subgenera and numerous sections and series. Irises grow on diverse natural habitats, especially in the southern and eastern parts of Europe, where on a small geographical range, a variety of climate and ecological conditions resulted in a big diversity of irises. The aim of this study was to investigate pollen features of the genus *Iris* and to contribute to the better knowledge of their species richness. The results showed that some palynological features could have taxonomical and evolutionary importance, and at least four pollen types could be recognized and taxonomically delimited to the series level. The taxonomic, phylogenetic and evolutionary implications have been evaluated, and the possible pathway of evolution of the genus *Iris* was suggested (Fig. 1) from the subgenus *Linniris* to the subgenus *Iris*. Furthermore, some hotspots of irises and the needs for the conservation of their diversity will be briefly suggested and discussed. To conclude, palynology as a tool for phylogenetic and evolutionary studies can give us a better insight in the evolution and diversity of plants and ensure a better knowledge for their conservation.

Biography

Bozena Mitic has her expertise in several fields of Botany. At the beginning of her research career, she had a PhD degree in Plant Taxonomy and Systematics. She was involved in some nomenclature investigations, but she has also participated in research on Croatian flora. In the past 10 years, her research activities were extended on invasive alien plants and palynology. Together with colleagues, she developed national standards and the preliminary list of invasive alien plants for Croatia. She permanently works on the mapping and distribution of invasive alien plants in Croatia, and currently, she is on the revision and updating of the list of alien plants in Croatia. She launched modern palynological researches in Croatia and introduced a course on Palynology at the University of Zagreb, which piqued considerable interest among students. Since 2004, she has collaborated with the palynological group at the University of Vienna (Institute of Botany).

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