

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

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Abstract

Presence of diversity of plants is an essential component of biodiversity, which make sure the survival of the whole Earth. The research of plant evolution, phylogeny and richness is a lasting need for the human race. One of the incredibly informative and often abandon disciplines in biodiversity research is palynology, the study of pollen grains and spores. It could supply us evidence on plant history, evolution and phylogeny. The prospective of palynology in researching the diversity of plants will be display by the case study on the large and complex genus *Iris* L., which made up of about 300 species, all around in the northern hemisphere. The current classifications, based specifically on morphology and molecular phylogeny, suggest a division of the genus *Iris* into six or more subgenera and countless sections and series. Irises grow on diverse natural habitats, especially in the southern and eastern segment of Europe, where on a small geographical range, a variation of climate and ecological conditions resulted in a great diversity of irises. The aim of this study was to look into pollen features of the genus *Iris* and to contribute to the preferable knowledge of their species richness. The results showed that few palynological features could have evolutionary and taxonomical significance, and at least four pollen types could be recognized and taxonomically delimited to the series amount. The taxonomic, phylogenetic and evolutionary implications have been estimated, and the possible pathway of evolution of the genus *Iris* was recommended (Fig. 1) from the subgenus *Limniris* to the subgenus *Iris*. Furthermore, some hotspots of irises and the require for the conservation of their diversity will be briefly recommended and discussed. To culminate, palynology as a tool for phylogenetic and evolutionary studies can give us a better insight in the evolution and diversity of plants and make sure a better knowledge for their conservation.

Biography Bozena Mitic has her expertise in various fields of Botany. At the beginning of her research career, she had a PhD degree in Plant Taxonomy and Systematics. She was involved in few nomenclature investigations, but she has also participated in research on Croatian flora. In the past 10 years, her research activities were expanded on invasive alien plants and palynology. Together with colleagues, she evolved national standards and the introductory list of invasive alien plants for Croatia. She indelibly works on the mapping and distribution of invasive alien plants in Croatia, and currently, she is on the reworking and updating of the list of alien plants in Croatia. She instigate modern palynological researches in Croatia and established a course on Palynology at the University of Zagreb, which piqued considerable interest between students. Since 2004, she has collaborated with the palynological group at the University of Vienna (Institute of Botany)

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