

Water Crowfoots (*Ranunculus* sect. *Batrachium*, Ranunculaceae) is a group of aquatic plants occurring in standing and running waters through Eurasia, North and South America, Africa and Australia. The greatest taxonomic diversity is recognised in the Northern Hemisphere. Approximately 30 *Batrachium* species occur worldwide. As the other aquatic plants, Water Crowfoots are characterised by great morphological variation, frequent hybridisation and polyploidization. All these reasons make taxonomic identification difficult. As a consequence, the knowledge on the taxonomic diversity of *Batrachium*, the distribution and phylogenetic relations within the group are deeply insufficient. On the other hand, it is a group of plants which play an important role in aquatic ecosystems. Water Crowfoots communities, which occur in rivers are protected under the Habitat Directive, as an habitat important for European Union. Moreover, some of the species, especially those sensitive for pollution and eutrophication are legally protected.

In this project we aim to clarify the taxonomic and phylogenetic relations in selected and taxonomically unsolved complexes of Water crowfoots occurring in Mediterranean and North America. Also, we will gather detail information on these taxa distribution and morphological and molecular characters. Present project is a next new one concerning taxonomy and phylogeny of Water Crowfoots, which have been leading in Institute of Botany, Jagiellonian University in Krakow.

The scientific aim will be realized through morphological and genetic studies on the target taxa. Molecular analysis will consist in the direct sequencing of the chosen DNA regions (ITS, *rpl32-trnL*, *psbE-petL* i *matK*) and genome fingerprinting AFLP. Results obtained during molecular study will be analyzed by statistic and bioinformatic software.

The result of our study will bring a new insight into taxonomic diversity within *Batrachium* worldwide. Taxonomic studies are fundamental starting point for further advanced investigations in the other scientific fields as species ecology or conservatory biology.