Water-crowfoots (*Ranunculus* sect. *Batrachium*) are among the most complicated groups of aquatic angiosperms. Processes such as polyploidization (there are five known ploidy levels) and hybridization play the main role in evolution of the subgenus, resulting into thereticulate evolution of the whole genus *Ranunculus*. Furthermore, newly established hybrids and polyploids can be fixed in nature via clonal growth or autogamy. Fenotypic plasticity and considerable morphological reduction contribute to the taxonomic complexity of the group and in combination with microevolutionary processes lead to the existence of cryptic variation.Therefore it can be said that the current taxonomic classification is dubious and requires a revision. The thesis also includes a brief introduction to the cryptic species complex *Ranunculus trichophyllus* agg. and a description of methods which will be applied in following master thesis.