Abstract

Arachnids (Arachnida) represent an ancient and specious group, diversified both ecologically and morphologically. Their taxonomy is primarily based on morphological characters; however, commonly present morphological stasis combined with our limited understanding of intraspecific variability, often complicates the species identification as well as delimitation of species boundaries. Implementation of other than traditional morphological approaches suggests that the described diversity is significantly underestimated compared to the real one. The present dissertation thesis evaluates variability of selected characteristics among different arachnid groups (Araneae, Opiliones, Scorpiones, Pseudoscorpiones) by implementing ethologic, cytogenetic and molecular phylogenetic approaches. Evolutionary frame work was used to i) compare courtship behavior variability within the wolf spider genus *Alopecosa*, ii) infer the karyotype differentiation in scorpions of the family Buthidae, and iii) evaluate the effect of dispersal capability on speciation in Cheliferidae pseudoscorpions. Likewise, interspecific variability of cytogenetic characteristics was described for entelegyne spiders and harvestmen from the family Phalangiidae. The results brought new insights into our understanding of the evolution and species diversity of each group and corroborate the necessity of integration of additional methods complementing the morphological approach in classification and species delimitation.