

## **Abstract**

Soricinae shrews are one of the most common and abundant mammalian group in Holarctic Region. The uniform phenotype and hidden way of life make the research on this group challenging. Basic rules that drive their phenotype and morphological variation still remain unclear. The aim of this dissertation is to clarify the selected aspects of morphological variation in three European Soricinae species. The first part of this thesis is aimed on age and sex skull variation in a single population of the common shrew (*Sorex araneus*). We found significant sexual dimorphism and differences between age groups. Based on this study we selected cranial variables suitable for following studies. The second part of the dissertation project was aimed on geographic variation of the common shrew in the area between the Baltic and the Adriatic sea. We found correlation between size of shrews and latitude, longitude as well as altitude. Size was also correlated with selected climatic variables. The third part of the project was focused on a description of Dehnel's phenomenon and its geographic pattern. We found that decrease and regrowth of the braincase is separately correlated with different climatic variables. Our results suggest that different evolutionary processes and pressures are involved with two phases of Dehnel's phenomenon. The intensity of Dehnel's phenomenon increase towards the north-east. We also presented new data about Dehnel's phenomenon in four european populations. The last part of the thesis is aimed on discrimination of two partly sympatric water shrews of genus *Neomys*. We described size and shape differences in mandible of *Neomys fodiens* and *Neomys milleri* from two areas – eastern Germany and southern part of the Balkan Peninsula. While *Neomys fodiens* did not show any difference between the two areas, *Neomys milleri* is getting smaller towards the north-west. In this study we also described differences between sympatric and allopatric populations of *Neomys* species. The aim of the presented thesis is to contribute to the knowledge of morphological variation in Soricinae shrews and to serve as a foundation for the future studies.

**Keywords** red-toothed shrews; *Sorex*; *Neomys*; geometric morphometrics.