

Abstract of the Ph.D. thesis

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Ground-dwelling squirrels are parafyletic group of rodents from the family Sciuridae (tribes Marmotini and Xerini). Ground-dwelling squirrels are semi-fossorial inhabitants of treeless biotopes. They share most aspects of general biology. They usually breed once a year, have exclusively diurnal activity and are omnivorous. On the contrary, ground-dwelling squirrels display different levels of sociality, which makes them an ideal model to study different ecological aspects connected with evolution of sociality.

The first part of the Ph.D. thesis is focused on the relationship between sociality and sexual size dimorphism and relative and absolute size of brain. At first, supposing that different levels of sociality are connected with differences in intensity of sexual selection acting on males, we tested association between sociality and sexual size dimorphism as well as association between sexual size dimorphism and body size – so called Rensch rule. Next, we tested correlation between sociality and relative brain size. In agreement with the Social brain hypothesis, we assumed that e.g. solitarily living species should have smaller relative brain size than species living in stable pairs. We found that the level of sociality had no impact on the degree of sexual size dimorphism and that the ground-dwelling squirrels did not follow Rensch rule. The main reason is probably generally low degree of sexual dimorphism in these rodents. We did not find association of sociality and relative brain size, but we observed significant correlation between sociality and body size and absolute brain size. From unknown reasons the evolution of sociality in this group is not connected with enlargement of relative brain size, but of the whole body and absolute brain size.

Topic of the second part of the Ph.D. thesis is conservation and ecology of the European ground squirrel. At present, relatively high number of ground squirrels ranks among endangered species. The main reason is loss of their habitats. The same reason caused dramatic decline of the European ground squirrel in the Czech Republic and we have currently prepared the action plan for the species conservation. The action plan is a conceptual document summarizing characteristics and threats and proposing conservation acts. The next included papers focused on the demography, distribution and habitat requirements. For instance, we precise knowledge of the current EGS distribution, established regular monitoring of its abundance and we improved knowledge of its habitat requirements. The last topic is repatriations of the EGS, specifically analysis of their methodology. We found that the method of releasing (usage of artificial burrows and enclosures), number of individuals released within one season, total number of released individuals and in a long term also management of the locality are the key factors affecting reintroduction success.