Summary

This thesis deals with relationships among social factors, behaviour, physiology and reproduction in spiny mouse (*Acomys cahirinus*). Spiny mice are social rodents with that should be kept in families consisting of an adult male, multiple females and their descendants which mimic their wild social system. In contrast to many other muroid rodents, spiny mice produce after an extended gestation period only small litters consisting of relatively large and well developed (precocoial) newborns.

The first part of the thesis is focused on effects of selected social parameters on glucocorticoid levels, which are widely used as a marker of stress. We focused on non-invasive monitoring of glucocorticoid metabolites (GCM) in faeces via enzyme immunoassay. For this purpose two specific antibodies were validated via an ACTH challenge test. Further, we constructed a special experimental apparatus which allowed us routine repeated collection of faecal samples in socially living rodents without noticeable disturbance to studied animals. Next, we monitored baseline concentrations of faecal GCM levels of individuals in family groups of commensal and non-commensal population. We found no effect of age (i.e., social dominance) and only a small effect of sex (in the commensal population only, with males exhibiting lower values than females) on faecal GCM levels, but considerable variations in faecal GCM between family groups were revealed.

Second part of my thesis is devoted to reproductive characteristics and their association with social parameters in spiny mice. We studied secondary sex ratio in four populations/species of spiny mice and found the overall sex ratio was close to one to one. We found significant effects of three factors concerning group composition, but these effects were not consistent across the studied species. The large dataset and comparative approach allowed us to evaluate a wider validity of the results and thus, we conclude that secondary sex ratio in spiny mice is surprisingly stable.

The same dataset was analysed to evaluate litter size in four populations/species of *Acomys*. The typical reproductive mode in most of the studied species/populations is twinning. We compared our data with those from other species obtained from the literature and we suggested a possible phylogenetic pattern of litter sizes in *Acomys*. Moreover, we detected the effect of domestication in laboratory colony of *A. dimidiatus*. Litter size in our original dataset increased with maternal body weight and number of immature females in the family group; other studied factors remained non-significant. It seems that previous reproductive success as a result of hospitable family settings enhances further reproduction in this social rodent.