Abstract

In this dissertation thesis, I focused mainly on the topic of endangered species conservation in three projects, which were realized in cooperation with Prague ZOO. The other two subprojects, which are part of this dissertation, deal with the topic of genetic diversity analysis in nature and were realized in cooperation with institutions in Indonesia and Armenia. In all these projects I used a similar laboratory and computational methodology, although each project addressed different problems. In the main and probably the most important project, I studied the skinks of genus *Tiliqua* living in the Moluccas, New Guinea (Irian Jaya) and adjacent islands. I analyzed mitochondrial and nuclear markers to reveal the phylogenetic and population relationships. In the second project, I focused on the study of *ex situ* population of *Mauremys annamensis* in European captive breeding. The goal was to determine the haplotype diversity and detect the F1 hybrids in population. In the third project, I examined the genetic variability of *Orlitia borneensis* in European zoological gardens for the purposes of *ex situ* breeding program organization. The fourth project is focused on examination of genetic variability of *Chilabothrus angulifer* population, which is kept in European breeding. I studied possible long-term survival of this population. In the last fifth project, I used the genetic methods to identify the species, examine the sequence and haplotype diversity of sympatric species from genus *Apodemus* (*Sylvaemus*) in Armenia.

In all projects, I mainly use the mtDNA, which was considered as a universal marker in the last millennium. In the projects was confirmed, that using of mtDNA is still useful, especially in the combination with other markers (in my works with nuclear genes sequences). Although I used similar molecular and analytical approaches, each of the sub-studies interprets the results in a significantly different way, considering the diversity of studied problems and genetic variability. Therefore, this thesis is an example of the use of different interpretation schemes.