

## Summary

Biodiversity can be described as species richness, phylogenetic diversity and functional diversity. Each of these metrics may respond differently to changes in the environment. One of the most significant of these changes is habitat fragmentation. Its effects are especially well visible in forest patches located in agricultural landscape, where forest fragmentation can influence the occurrence of species, and thus biodiversity. However, structural features of the landscape and habitats are not the only factors that influence species distribution. Animals may use social information, i.e. traces of the activity of other individuals or species, as well as their physical presence in a given place. We yet do not fully understand how social information can modify the impact of fragmentation on biodiversity and individual species.

The aim of this doctoral dissertation is an attempt to answer the question of how fragmentation of forest patches affects the measures of biodiversity of birds. Another goal of this dissertation is to determine the impact of social information on bird biodiversity metrics and the abundance of a selected bird species (song thrush *Turdus philomelos*), and to verify whether the social information is able to modify the impact of forest fragmentation on birds.

The doctoral dissertation is a collection of three original scientific manuscripts. In the first manuscript (**Article 1**) it is described how the fragmentation of forest patches affects various measures of bird biodiversity. The research has shown that three measures of bird diversity responded to fragmentation to a different extent with the species richness being most susceptible to forest fragmentation, and functional diversity the least. For example, forest area was positively correlated with species richness, negatively with phylogenetic diversity, and had no effect on functional diversity. These results may suggest that there is a significant redundancy of function within the bird community.

In the second manuscript (**Article 2**), I describe how the impact of fragmentation on bird biodiversity metrics can be modified by social information. Positive social information (songs of the song thrush) increased species and phylogenetic diversity in forest patches, but functional diversity showed no response to the experiment. Positive social information increased species turnover between years while negative social information (voice of the goshawk) decreased the turnover. The effect of the experiment was also maintained in the following year. Positive social information was able to reverse the effect of fragmentation on the diversity measures.

In the third paper (**Article 3**), I focus on the song thrush and test how social information influences its abundance in forest patches of varying fragmentation. The results have shown there was no simple effect of social information on the abundance of song thrush. Instead, the negative social information interacted with forest fragmentation. In the first year of the experiment, the number of the song thrushes was positively associated with the area of the forest patch. After the emission of negative social information, this relationship was reversed.

The results of this dissertation show that social information can be of practical importance in maintaining local populations and species richness in conditions of high fragmentation, potentially creating even a permanent network of new interspecies relationships.