

DESCRIPTION FOR THE GENERAL PUBLIC

There were many studies that addressed the relationship between the landscape structure, and animal occurrence and abundance in habitat patches. Amphibians have often been chosen as model group in these studies, because they usually inhabit easily distinguishable habitat patches (e.g. ponds) during a breeding season, and are considered to be the most endangered group of vertebrates. These studies often focused on the concept known as landscape connectivity - which can best be described as the degree to which selected landscape elements (fields, tree stands, balks, roads etc.) facilitate or hinder movements of animals between habitat patches. However, most of these studies do not take into account the influence of social information. Social information is a broad concept, which includes traces of the presence of animals such as their sounds, mating calls, signs of foraging, tracks or droppings. Since amphibians vocalize intensively during breeding season, and this sound is hearable across several hundred meters outside their breeding habitat patches, it may change how they perceive landscape and how do they find suitable habitat patches. In my research I will focus on the mating voices of two anuran species - Fire-bellied Toad (*Bombina bombina*) and Moor Frog (*Rana arvalis*) – that are known to produce very characteristic mating calls in order to attract mates during breeding season.

The main objective of this project is to check the importance of the social information on the distribution of amphibians in habitat patches. During the course of my work, I will test two hypotheses. The first one predicts that the presence of mating calls coming from the empty suitable pond has a positive effect on its colonization by amphibians. The second hypothesis states that social information can be used as one of the variables in statistical modeling amphibian presence/abundance in habitat patches that enhance predictive ability of statistical model.

Three main research tasks will be done in this project. The first would be an experimental test of the distance from which amphibians can hear mating calls in different types of landscape. I will also analyze species recordings and call loudness levels to determine that distance. The second would be to broadcast mating calls on artificially created ponds (that are characterized by a wide spectrum of connectivity of a surrounding landscapes) and observe whether this has a positive impact on the colonization rate by selected species. The third task will be using social information as a variable (e.g. indicating whether a pond is connected with others via male call hearing distance) in models that are to be used to predict amphibian presence, and see whether it increases models' predictive power.

Answers to all these questions posed in this research will help us to better understand the role of social information in the spatial ecology of amphibians. Because habitat loss and fragmentation is considered one of the most important drivers of the decline of this group of animals, understanding the factors affecting their distribution can be very valuable. It could also significantly support conservation efforts to develop more comprehensive protection actions for these animals