C.1. ABSTRACT FOR THE GENERAL PUBLIC (*up to 1 standard page, in Polish and in English, the language versions must be identical*)

Biodiversity is currently facing a profound crisis caused by rapid human-mediated climate and land-use changes. The magnitude of such changes is so large that many taxa are predicted to be driven to extinction by the end of this century. An understanding of the evolutionary and ecological consequences of environmental changes is crucial if we want to effectively protect the natural world. In particular, identification of the factors that influence connectivity between populations and determine levels of gene flow between them is critical to: 1) predict the response of species to environmental change and 2) design conservation strategies that allow the long-term maintenance of adaptive potential. Such information is urgently needed for taxa exhibiting low mobility and limited ecological versatility, such as amphibians, which experience catastrophic declines world-wide. Amphibians are the most threatened vertebrate group, with >30% species in risk of extinction. Although the causes of some recent extinctions remain uncertain, habitat loss and fragmentation stand out among the most important global threats. Landscape genomics combines tools from population genetics, spatial statistics and landscape ecology to test the effect of landscape characteristics on population connectivity and gene flow. Comparison between co-distributed species and replicated sampling within species are particularly valuable, because they enable development of robust and broadly applicable predictive models.

The aim of this project is to identify those landscape features that determine genetic connectivity between populations of newts. We will study two closely related, but ecologically distinct newt species - *Lissotriton montandoni* and *L. vulgaris* in the Carpathian region (Poland, Romania, Ukraine). This information will be used to predict species response to ongoing environmental changes and to inform conservation strategies that ensure the long-term maintenance of their adaptive potential. This project will allow us to better understand the evolutionary and ecological implications of landscape changes for newts and salamanders, informing their conservation and management. Furthermore, this work will allow us to evaluate various analytical methods and experimental designs, providing guidance for future landscape genomic studies.