

Within the last decades population numbers and geographical range of the European hamster, middle sized rodent found mainly in agricultural fields, have declined in many countries of our continent. In Poland, this species has disappeared from the majority of previously known locations. Causes of these negative changes are probably diverse. However, most of the research to date indicates that they are associated with broadly understood intensification of agriculture. Including the period of hibernation, European hamsters spend three quarters of their lifetime underground. In spite of that, research focused on the impact of soil conditions on the biology of this species has been thus far limited. In our research project we will attempt to answer the question, whether soil type and location, in which European hamsters build their burrows, influence their hibernation survival and fitness. First of the hypotheses states that the type of soil influences microclimate parameters such as temperature and humidity inside the burrows during hibernation. Second hypothesis implies that the structure of soil affects burrow robustness during ploughing in autumn. We will conduct field research to test these hypotheses. We have learned about habitat preferences of European hamsters towards soil types during initial field research preceding this project and through analysis of historical range shifts in Poland. We will establish research plots on agricultural fields with various soil types and hamster densities. Individuals inhabiting burrows located in the chosen research plots will be captured and marked. Temperature and humidity loggers will be installed inside the burrows for the time of hibernation to measure internal microclimatic conditions. Hamsters will be recaptured in spring. Their winter survival and weight loss will be measured. This will allow us to determine which soil types increase probability of successful hibernation. Better understanding of the impact that soil environment has on survival of individuals belonging to this species, will enable effective designing of conservation actions, for example by optimal selection of areas for the reintroduction of European hamsters or by focusing conservation efforts in areas with considerable participation of soils preferred by this species.