**Inter-population variation and natural selection on metabolic traits in the bank vole, *Myodes glareolus***

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Intraspecific studies, focusing on populations sharing a common ancestry, would provide the evidence for physiological adaptation in response to environmental conditions. The main aim of our study was investigate influence of isolation and contamination on physiological performance of wild bank vole populations. For this purpose we trapped voles from nine populations assigned to tree types: island, open clean, and heavy metal contaminated. All the places were located in northeastern and southern Poland. Body mass (pooled mean±SD; caught: 21.6±4.3 g, laboratory born: 21.5±2.3 g) and maximal metabolic rate (caught: 4.8±0.7 $mlO_2/h$, laboratory born: 4.9±0.5 $mlO_2/h$) differed between populations but can not be attributed to any type of populations ($p>0.403$). In one of isolated population we studied the association between body size, metabolic rates and reproductive success of bank voles and their survival, measured by repeated trappings across 2 years. Direction of the selection on metabolic traits varied between sexes and over time, but we can observe consistent presence of stabilizing surviving selection on maximal metabolic rate in males and positive correlation between overall reproductive success with basal but not with maximal metabolic rate. However, the generality of such correlations remain uncertain and need further studies.