

The current climate change has deep implications for ecosystems, including changes in the population size of many species. In the face of climate change, organisms may shift their 'schedule' of life events, and various of their morphological traits may also change.

Traits such as growth, body size and reproductive onset are strongly influenced by both demography and the environment, and may therefore be affected by climate change. Small rodents are known for their long-term abundance cycles and individuals often vary considerably between populations and at different times, but also among themselves within a population. There is a complex web of interactions between environment, life strategies, demography and population dynamics. However, we do not know exactly the mechanisms that drive this.

In this project, we aim to understand how climate change affects populations of a small herbivorous rodent, the northern water vole, living in the natural sedge meadows of the Biebrza National Park, Poland. We will use a unique, 26-year-long collection of detailed population data on these animals. We will investigate the relationships between different life history strategies of individuals, population demography and changes in vole numbers. Using a technique known as Bayesian modelling, we will estimate the characteristics of individuals and the population in which they live, using data from long-term monitoring of these animals. The results will improve our understanding of the mechanisms behind population change and add to our knowledge of how small herbivores respond to changing climatic factors.