Phylogeography – Session 1

Ecological divergence and species response to climate change: niche modelling in the bank vole

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The bank vole (*Myodes glareolus*) is a widespread rodent inhabiting the temperate zone of Eurasia. Its range extends from Ireland and the north of Spain on its westernmost limits to central Siberia in the east. This broad distribution is explained by a postglacial colonization from multiple last glacial maximum (LGM) refugia located primarily in the Carpathian Mountains and on the Mediterranean peninsulas. Previous phylogeographic studies defined at least six distinct genetic lineages for the bank vole across Eurasia, each of which likely originated in a different LGM refugium. Generally, ecological divergence plays an important role driving the origin and maintaining distinct genetic lineages within species and therefore is considered as one of the main mechanism of intraspecific variation. Ecological Niche Modelling (ENM) approaches have been used to assess current and past distribution ranges of species based on the environmental characteristics of locality records, and their integration with phylogenetic information can help us understanding the influence of environmental heterogeneity on the origin and maintenance of intraspecific variation. In this work we apply ENM to assess the environmental variables influencing the current and past distribution of the distinct lineages of the bank vole across Eurasia. We expect the variation in hydroclimatic variables (i.e. temperature and precipitation) to reveal differences in ecological niches among the lineages, and explain their persistence in different glacial refugia during the LGM as well as their relative success during postglacial colonization.

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