

Long-term population dynamics of the field vole from the Czech Republic

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DOI: 10.5073/jka.2011.432.047

Cyclic population dynamics of voles from central Europe have traditionally been documented using data collected in the common vole (*Microtus arvalis*) which is a more relevant vole to farming in this region. However, because this species does not occur in northern Europe, direct comparison of central European dynamic patterns with those in Fennoscandia has never been possible. However, this does not apply to the field vole (*Microtus agrestis*) whose distribution range covers much of Europe from central to northern regions, including Great Britain and Fennoscandia. Here we present long-term data on field vole dynamics from two mountain locations collected regularly twice a year by snap trapping over a period of 25 years from 1986 to 2010. The first time series data come from a study plot in the Ore Mountains (Erzgebirge) situated at the altitude of about 800 m a.s.l., the other one from that in the Giant Mountains (Riesengebirge) situated at the altitude of almost 1,100 m. There were two important features in their dynamic behaviour. First, both populations exhibit second-order dynamics with peaks about at intervals of 4 to 5 years. Second, in both of them there is a declining trend in mean density and cycle amplitude suggesting that cyclic behaviour in central European field voles is fading out in a way similar to voles in Fennoscandia. We tested for the effects of several climatic variables but the results are not consistent. These findings emphasize that population dynamics of central and northern European voles are influenced by the same mechanism which is able to operate on a large geographic scale.

Keywords: climate effects, *Microtus agrestis*, population cycles, time series analysis