

Size variation in the Edible Dormouse and its environmental correlates

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Abstract

Intraspecific variation in size along spatial and environmental gradients has been documented in many studies, and different hypotheses have been proposed to explain these patterns of geographic variation. We explored size variation in 4 island and 35 mainland samples of the Edible Dormouse (*Glis glis* Linnaeus, 1758) from the western Balkans in Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, and Serbia. Samples comprised 4 to 207 (mean \pm SD=19.0 \pm 32.9; total n=740) adult skulls (age>1 year) of both sexes. To remove phylogenetic effects, all samples were from a widespread European lineage. Condylobasal length of skull was used as a proxy for overall size. Dormice were the smallest along the southern margin of the Pannonia Plain, the largest were from beech forests of the Dinaric Alps, and intermediate in hilly parts of Serbia and on the Adriatic islands. The largest skulls (from Mt. Zelengora, Bosnia and Herzegovina) were on average 25% longer than the smallest, from the population occurring near Belgrade in northern Serbia. Size correlated with longitude ($R^2=0.262$; $p=0.0009$) and the 1st Climatic Principal Component ($R^2=0.687$; $p<0.0001$) derived from ordination of 19 climatic variables (40% of variance explained). Dormice tended to be small in a warm and dry climate, and larger in cold and humid areas.

Keywords

Glis glis, island effect, Bergmann's rule, ecogeographic rules, geographical variability, western Balkans

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Conflicts of interest