

WHICH FACTORS INFLUENCE FEEDING PREFERENCES OF THE COMMON VOLE?

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The common vole (*Microtus arvalis*) is one of the most common herbivores within Central European meadow habitats. In years with population peaks, it can become a serious pest to agricultural crops, thus detailed knowledge of its feeding biology is desirable. Additionally, the common vole is a rodent of great ecological function because of its aboveground and belowground activity within the ecosystem. It can influence the whole composition of plant community (disturbance-sensitive species could be suppressed which may allow disturbance-adapted species to thrive).

The main aim of our study was to evaluate feeding preferences of the common vole in an artificial plant ecosystem, and attempt to elucidate these preferences by selected characteristics of the plant species. Specifically we focused on the morphology of plants, abundance/competitive power and water content in tissues. As morphological characteristics we considered architecture of plants and hairiness and size/shape of leaves.

We grew a mixture of selected meadow plant species in 38 terraria. Each terrarium was halved with a glass partition, providing 76 separate parts. One (randomly selected) part served for vole grazing, the second as a control. We sowed 100 seeds of each species into each part, and when enough biomass had grown voles were allowed to graze for 42 hours. After the voles were removed, the biomass from both parts was cut, sorted into species and then dried and weighed. The feeding preferences were calculated as the difference between weights of species biomass in grazed and non-grazed plots (we used the electivity index of Cock). The plant species selected were: grasses, *Holcus lanatus*, *Alopecurus pratensis*; creeping plants, *Thymus pulegioides*, *Fragaria vesca*, *Prunella vulgaris*, *Veronica officinalis*; hemicryptophytes (species forming ground rosette of leaves), *Hypochaeris radicata*, *Leontodon autumnalis*, *Plantago lanceolata*, *Lychnis flos-cuculi*; a legume plant *Trifolium pratense*.

Mostly preferred species was *Trifolium pratense*, probably because of high content of proteins in its tissues (legumes have the ability to fix air nitrogen and are also rich on proteins). Other highly consumed species were *Plantago lanceolata*, *Leontodon autumnalis* and *Veronica officinalis*. The less preferred species were *Thymus pulegioides*, *Holcus lanatus* and *Fragaria vesca*. We believe the reason for voles refusing the *Thymus* was due to its characteristic scent (plants were young hence without woodiness yet).

The difference between male and female preferences was not statistically significant. The most favored type of architecture was hemicryptophytic. The multiple regression analysis showed that the most powerful factors were the entity of species - the specific combination of measured plant traits - and the content of water. The hairiness and size/shape of leaves were dismissed as having any impact. Competitive power had marginal effect.