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Effects of farming practices on spatial behaviour of common voles

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Abstract:

Abstract. This study aimed to reveal changes in spatial behaviour of common voles (*Microtus arvalis*) after alteration of their habitat by farming practices. Radio-collared common voles were tracked before and after mulching, mowing, harvesting wheat, and ploughing in the flood plain of the river Unstrut in central Germany. Voles undisturbed by agricultural practices were tracked on a mulchland, an abandoned pasture, and a cattle pasture. There was a large decrease in home-range size after harvesting wheat (96%, $P < 0.001$). Changes after mowing (-74%, $P = 0.06$) were almost significant whereas changes after mulching were not (+14%, $P = 0.60$). On the cattle pasture we found a decrease in home-range size (42%, $P = 0.03$) possibly due to increased spatial activity of cattle in autumn. There was a positive correlation of home-range size and vegetation height for plots with and without farming activity but no correlation with vegetation cover, population density, and breeding. Radio-collared common voles did not show evasive movements and farming practices did not cause a shift of centres of activity. Common voles clearly reacted to sudden changes in vegetation height, which may indicate an immediate response to predation risk.

Keywords:

Agriculture, Spatial activity, Home range, *Microtus arvalis*, Predation risk, Spatial dynamics