# Spatio-temporal variation of metals and organic contaminants in Europe's most common mammal, the bank vole (*Myodes glareolus*)

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Environmental contamination is of increasing concern for eco- and human health. Still, little is known about the spatial distribution, temporal changes and ecotoxicological fate of metals and organic contaminants in wildlife. Here, we used the bank vole (*Myodes glareolus*), Europe's most common mammal, as a model system to study the concentration of 69 elements and 50 organic compounds in voles sampled in spring and autumn 2017-2018 in five monitoring areas and representing three biogeographic regions. In addition, we compared measured concentrations with previous results from bank voles sampled within the same areas in spring and autumn 1995-1997 and autumn 2001. Our results show significant regional differences, however, without consistent patterns among contaminants and regions, except that the lowest concentrations of organic contaminants (e.g. PFAS, perfluorooctanesulfonic acid in general and PFOS, perfluorooctane sulfonate in particular) were generally found in the northern Swedish mountain area. Concentrations of metals and organic contaminants varied seasonally with most organic contaminants being higher in spring; likely induced by diet shifts. In addition, metal concentrations varied apart from organs (liver vs. kidney), between functional groups (juveniles vs. adults) as well as between males and females. Concentrations of chrome and nickel in kidney and liver decreased in the northernmost mountain area from 1995-1997 to 2017-2018 and concentrations of lead decreased in three of four areas between 2001 and 2017-2018. The chlorinated compound HCB (Hexachlorobenzene) showed in 2001 highest concentrations in the mountain areas, while it was close to detection limit in 2017-2018 and PFOS concentrations decreased in the mountain areas and in a south-central lowland forest landscape between 2001 and 2017-2018. Our results suggest that season, functional group and sex need to be considered when designing and interpreting results from monitoring programs targeting inorganic and organic contaminants in wildlife. These factors are also important for the interpretation of the fate of contaminants along the food chain.