

# Bioaccumulation of cadmium, lead and zinc in liver and kidney of red fox (*Vulpes vulpes*) from NW Spain: influence of gender and age

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Cd, Pb, and Zn were quantified in liver and kidney of red foxes (*Vulpes vulpes*) which were hunted during the 2003–2011 hunting seasons in Galicia (NW Spain). The effects of age and gender were evaluated to determine whether these variables should be included in future biomonitoring studies. The concentrations of hepatic and renal Cd (average 0.6 and 1.3  $\mu\text{g/g}$ ) and Pb (0.8 and 0.06  $\mu\text{g/g}$ , respectively) were similar to background levels, with no known toxicological relevance. Similarly, the average levels of Zn in liver and kidney (77 and 17  $\mu\text{g/g}$ ) were in the range of physiological levels for canids. Although no significant gender-dependent variations were observed, the effect of aging was evident: the levels of hepatic Pb and both hepatic and renal Cd were higher in adults than in juveniles. Age should be included as a parameter during future biomonitoring programs focusing on trace metal bioaccumulation in red foxes. © 2015 Taylor & Francis.

age

cadmium

gender

lead

red fox

zinc

Bioaccumulation

Biochemistry

Cadmium

Lead

Mammals

Trace elements

Zinc

age

Background level

Biomonitoring programs

Biomonitoring studies

gender

Physiological levels

Red foxes

Trace metal

Social sciences

adult

bioaccumulation

biomonitoring

cadmium

canid

concentration (composition)

ecotoxicology

juvenile

lead

sex-related difference

Galicia [Spain]

Spain

Canidae

Vulpes

Vulpes vulpes