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**Environmental factors influencing the distribution of “*Theileria annae*” in red foxes,
Vulpes vulpes in Romania**

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Abstract

Red foxes, *Vulpes vulpes* are among the most widely spread carnivores in the world, invading also urban areas and are often parasitized by various ticks and directly exposed to several vector-borne pathogens, including the commonly present “*Theileria annae*”. Considering the paucity of data on the possible vectors of this pathogen and the presence of the infection in various locations across the globe, the aim of our study was to understand the potential role of various environmental factors on the distribution of “*T. annae*” in red foxes from a well-defined region within the Carpathians, Romania. Between July 2016 and April 2017, a total of 347 blood samples originating from red foxes from 13 counties were tested using a PCR specifically designed for “*T. annae*”. In order to assess the potential distribution of “*T. annae*” based on niche modelling, we used presence-only data and 15 ecological variables. The probability of presence models was built using *MaxEnt* software. Of all sampled foxes, 20.1% (66 unique locations in 8 counties) were positive for “*T. annae*” DNA. There was no significant difference between the prevalence in males and females, nor between juveniles and adults. The sequences were all identical to each other and showed 100% identity to other sequences deposited in GenBank. The highest contribution to the spatial model was represented by the agricultural land coverage. This is the first study to demonstrate the presence of “*T. annae*” in foxes in

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