The 9th European Vertebrate Pest Management Conference

Abstracts

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O49. Negative relationship between abundances of two ticks: biotic interaction or niche segregation?

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Understanding species distributions is central to predicting the risk of tick-borne disease occurrence. Despite considerable advance over the last two decades, accounting for biotic interactions in geographic models still remains among the main challenges. Here we examined whether the negative relationship between abundances of two sympatric European ticks, *Dermacentor reticulatus* and *Ixodes ricinus*, can be explained by competitive interaction or ecological niche segregation. After accounting for possible sample bias, we applied the static regression model based on a modified Lotka-Volterra model for interspecific competition. The negative relationship between log-abundances of the tick species was not removed by 7 principal components derived from 25 spatial variables on temperature, precipitation, topography and soil moisture, leading to nonzero estimates of competition coefficients α_{12} and α_{21}. However, the analysis of abundance responses to habitat variables showed that *Dermacentor* preferred warmer and wetter sites with greater diurnal and seasonal variation in temperature but with less seasonality in precipitation than *Ixodes*. These findings confirmed that habitat characteristics contribute significantly to the inverse relationship between the tick abundances, while still leaving some room for the effects of biotic interaction.

O50. Identifying the hazards correlated with rodent and tick-borne diseases in Europe

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Wildlife zoonoses transmitted by rodents and ticks cannot be easily controlled with the use of chemical pesticides or large-scale culling, for ethical, economic, health and logistical reasons. Instead, reducing the exposure of humans and domestic animals to pathogens and their vectors in focal areas, during periods of the year when these hazards are present, is a much more realistic option. However, these recommendations are only possible if such hazards are predictable. Within the framework of the European project EDENext (www.edenext.eu) we established a multiannual monitoring survey in three European countries (Italy, Slovakia and Finland). Within our study sites, standardised collections of questing ticks and rodents were carried out for three years. Serological and molecular investigations were carried out on rodents and questing ticks to identify their infectious status and prevalence of several pathogens of interest for public health in Europe (Hantavirus, TBEV, Lyme spirochaetes). In this presentation, a summary of the preliminary findings and criteria for selection of early warning predictors will be presented and discussed.