

INFLUENCE OF LAND USE-RELATED FACTORS ON THE PREVALENCE OF CEFOXITIN-RESISTANT STAPHYLOCOCCACEAE IN WILD UNGULATES IN BRANDENBURG, GERMANY.

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INTRODUCTION

The use of antimicrobial substances and the resulting pollution of the environment with antimicrobials and/or with antimicrobial resistant bacteria is raising interest worldwide regarding the possible effects of human activities on ecosystems. Particular interest is paid to those activities that can potentially threaten the safety of feed or food products obtained from those ecosystems. Due to the high complexity of the processes involved, the generation of decisive data and information about the factors influencing the spread of antimicrobial resistant bacteria in wild game populations remains a fundamental challenge for researchers. In this matter, the use of publicly available data is an option that allows us to characterise the habitats of these animals in European agro-ecosystems. The aim of the preliminary study was to evaluate the spatial distribution of cefoxitin-resistant Staphylococcaceae in a wild ungulate population in Brandenburg, Germany, with a special focus on the possible influence of land use-related features.

METHODOLOGY

Data on the prevalence of cefoxitin-resistant Staphylococcaceae in fallow deer (n=39), red deer (n=6), roe deer (n=36) and wild boar (n=54) were used, which were sampled during 2 hunting seasons, between 2019 and 2021, from 10 different hunting districts of the federal state of Brandenburg, Germany. The centre of each hunting district was determined and assigned to a municipality or district based on the corresponding coordinates. To characterise the hunting districts, publicly available data on land features from the Berlin-Brandenburg Statistics Office was used with regard to settlement, agricultural, forest and water areas within the communities.

RESULTS

The average prevalence of cefoxitin-resistant Staphylococcaceae in the studied hunting districts varied between wild ruminants and wild boars (13 % vs. 3 %). Furthermore, a significant correlation was determined between the prevalence among wild ruminants and the extent of land use for agriculture (hectares) in the municipality in which the hunting district is located (RPearson = 0.72; p = 0.04).

DISCUSSION

Based on these first observations, it can be assumed that this kind of dataset on land use may represent an important option for characterising hunting districts in terms of human influence as well as in terms of forest and water coverage. Through this integrated approach, it was possible to preliminarily observe a potential relationship between the use of land for agriculture in the respective municipalities and the prevalence of ceftiofur-resistant *Staphylococcaceae* among the sampled wild ruminants. The suitability of the presented approach for the study of the spatial development of zoonotic health threats between and within natural and human-used environments will be further evaluated, refined and complemented.