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Searching for mosquito-borne pathogens in mosquitoes (Diptera: Culicidae) collected in northeastern Germany

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Globalization as well as climatic and environmental changes support the global spread of vectors and vector-borne diseases. Europe has recently been facing a rise in mosquito-borne diseases, following improving conditions for both mosquitoes and mosquito-borne pathogens. To monitor the circulation of mosquito-borne disease agents, zoos and wildlife parks have increasingly been recognized as appropriate early warning sites. Their structurally diverse habitats, the presence of numerous water containers, and a high density and variety of vertebrate blood host species, provide favourable conditions for both mosquito development and pathogen circulation. Therefore, BG sentinel traps were set up at eleven zoos and wildlife parks to study mosquito populations and associated pathogens in northeastern Germany in summer 2024. Among a total of around 4,600 collected mosquitoes, 14 species were identified, mainly from the *Culex pipiens* complex (ca. 3,700 individuals). Preliminary RT-PCR analyses of single mosquitoes or pools with up to ten specimens resulted in the detection of viruses in that species complex: Sindbis virus in a single mosquito from one location, West-Nile virus in two pools from one location and Usutu virus in three pools from three locations. To obtain information about virus overwintering in mosquitoes, over 34,000 mosquitoes were collected in 130 dungeons, bunkers and cellars in northeastern Germany in the winter 2024/2025. Mosquito identification revealed six taxa but virus screening is still pending.

Keywords

Culicidae, mosquito-borne pathogens, overwintering, zoos and wildlife parks

Registration ID

105

Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

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