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Ticks and Their Pathogens in Northern Germany: A Seasonal Investigation of Questing Activity and Pathogen Prevalence in Putzar.

Inhalt

Tick-borne pathogens pose risks to both human and animal health across the globe. These risks are worsening due to climate-related shifts in tick distribution and activity, yet local field data remain limited. This study investigated how temperature and relative humidity influence tick questing and pathogen prevalence in rural northern Germany. Ticks were collected biweekly from February to May 2025 in Putzar by flagging while recording climate data. Molecular screening used conventional PCR for *Borrelia* spp. and *Rickettsia* spp. nested PCR for *Anaplasma phagocytophilum*, and *Babesia* spp., followed by sequencing. Spearman correlation and negative binomial regression assessed the environmental effect on tick abundance. Of 85 ticks collected, *Dermacentor reticulatus* dominated (71.76 %). Peak questing occurred in March for *D. reticulatus* and April for *Ixodes ricinus*. Air temperature and humidity positively influenced questing activity, while ground temperature had a negative effect. All samples were negative for *Babesia* spp. and *A. phagocytophilum*. *Rickettsia* spp. was detected in 68.85% of *D. reticulatus* and *Borrelia* spp. in 60% of *I. ricinus*. Coinfection was observed in 5.12 %. Microclimate was the primary driver of tick questing in Putzar. High prevalence of *Rickettsia* spp. and *Borrelia* spp. poses a considerable threat to public and veterinary health. These findings support continued tick surveillance and awareness in northern Germany.

Keywords

Ticks, *Ixodes ricinus*, *Dermacentor reticulatus*, Tick borne Pathogens, *Rickettsia* spp., *Borrelia* spp., Microclimate, Zoonosis

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Yes, I am a Junior Scientist.

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