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Serological and molecular surveillance of West Nile virus, tick-borne encephalitis virus and hepatitis E virus in wild carnivores from northeastern Germany

Inhalt

Wildlife is considered a key driver of zoonotic disease emergence. Invasive carnivores such as raccoons or red foxes may facilitate disease transmission through close contact with humans. Wild carnivores are recognized as incidental hosts of vector-borne zoonotic flaviviruses, such as West Nile virus (WNV) and tick-borne encephalitis virus (TBEV), as well as the fecal-orally transmitted hepatitis E virus (HEV), but data on virus distribution in these animals in Germany remain scarce.

This study investigated the exposure of red foxes, badgers, raccoons and raccoon dogs to WNV, TBEV and HEV on the German Baltic Sea Island Rügen from 2023 to 2026. Blood collected from the body cavities of hunted animals was screened for virus-specific antibodies after centrifugation using a multiplex bead-based assay, with results verified by commercial ELISAs, Western Blots or virus neutralization tests. Organ or feces samples were tested for viral RNA.

No flavivirus RNA was detected, whereas HEV RNA was sporadically identified in red foxes and raccoon dogs. HEV- or flavivirus-specific antibodies were detected in all tested species, with seroprevalences below 10 %. These findings demonstrate exposure of wild carnivores to WNV, TBEV and HEV in northeastern Germany. The low serological and molecular detection rates suggest that wild carnivores are not involved in the transmission of WNV, TBEV or HEV but may serve as sentinels of virus circulation in wildlife populations.

Keywords

Wildlife; Surveillance; Carnivores; West Nile virus; Tick-borne encephalitis virus; Hepatitis E virus; Multiplex serology

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44

Professional Status of the Speaker

Postdoc

Junior Scientist Status

No, I am not a Junior Scientist.

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