Updated Outbreak Assessment

West Nile virus in Germany

30 September 2021

Disease Report

West Nile virus (WNV) first emerged in north-east Germany in August 2018 with several cases in birds and two outbreaks in horses in the September and October of 2018 (see previous outbreak assessments at https://www.gov.uk/government/publications/west-nile-virus-in-owls-in-germany). The virus appears to be successfully over-wintering in this region through WNV persistence in hibernating mosquitoes through the winter season (Ziegler et al. 2020) with more avian cases and equine outbreaks in late summer 2019 and 2020. The first avian case this year of WNV in north-east Germany was detected in mid-April, although not reported by OIE until mid-September; together with four more avian cases starting in July/August, and a single outbreak in horses in mid-August. Four of the avian cases reported this month were captive birds in zoos; the other one being wild birds, including a corvid and a hawk.
The first avian case of WNV this year was detected on 16 April 2021 in captive parrots in a zoo in Berlin (see above map), close to the locations of the avian cases and equine outbreaks of WNV in the three previous years (see previous outbreak assessments at https://www.gov.uk/government/publications/west-nile-virus-in-owls-in-germany). A further case occurred in an unidentified species of captive hawk at a zoo on 19 July 2021, with two more cases in captive birds in zoos (including an unidentified owl and flamingo species) in late August. Nearby, WNV was detected in one horse at a farm with 60 horses on 16 August 2021. As in previous years since 2018, WNV appears to have over-wintered, presumably in hibernating mosquitoes (Ziegler et al. 2020) in this region of Germany. One wild bird case involving an unidentified hawk and a crow species, was identified on 28 August 2021.

Situation Assessment

WNV is a zoonosis and one of the vector-borne viral diseases causing equine encephalitis. The virus circulates between wild birds transmitted by ornithophilic mosquitoes (the most common is *Culex pipiens*) in Southern and Eastern Europe, North America, East and West Africa. Horses and humans are rare accidental spill-over hosts, and can be infected through the bite of a bridging species of mosquito, such as *Culex modestus* and *Cx pipiens molestus*; or very rarely through surgical interventions, such as blood transfusion, organ transplant, or injecting blood products.

British mosquitoes are capable of transmitting WNV, and established populations of *Culex modestus* are documented in southern England (Phipps et al, 2018; Cull, et al., 2016). Mosquito activity declines from October, and hence WNV transmission is unlikely occur in autumn and winter. It is likely that WNV enters the UK through WNV-infected wild birds from Europe from time to time. The number of WNV transmission events within the UK may be restricted because there needs to be synchrony between WNV entering the UK in birds from northern Europe and a high UK mosquito abundance, for onward transmission to UK birds. For this reason, the risk of WNV incursion into the UK differs for each of the seasons (see our previous outbreak assessments for details for each season, https://www.gov.uk/government/publications/west-nile-virus-in-owls-in-germany).

Large numbers of thrushes (including Fieldfare (*Turdus pilaris*) and Redwing (*Turdus iliacus*)) migrate from Scandinavia to the UK in the autumn, together with other passerines from north-eastern Europe. Direct bird-to-bird transmission of WNV does not occur, and thus the probability of a WNV-infected wild bird in Germany directly infecting a migrant thrush on its way to the UK is negligible. Vector-borne transmission could occur, depending on mosquito activity in Germany at this time of year, and whether the migrating thrushes stop-off in northern Germany to be bitten by mosquitoes; but this would seem unlikely. Taking into account both the lack of synchrony, with migrant birds from Germany arriving in the UK in October when the UK mosquito abundance is falling, together with the large number of pathway steps required for infecting a horse in the UK (namely infection of migrant passerine in Germany, migration of passerine to UK, infection of UK mosquito),
and the relatively small number of WNV cases in birds in Germany, it is considered that
the risk of autochthonous infection of an equine in the UK through entry of WNV in wild
birds in the autumn is very low. Very few wild birds migrate from north-east or central
Europe to the UK in the summer months when both mosquito numbers peak and the WNV
vector transmission season has started (ECDC 2019).

**Conclusion**

The current risk (autumn 2021) of autochthonous WNV transmission to horses in the UK
as a result of the recurrence of WNV in birds and horses in north-east Germany is
considered to be very low. However, there is continued uncertainty around the current
WNV situation in Germany, and the sensitivity of wild bird surveillance across Europe as a
whole. For example, enzootic transmission of WNV was reported in the Netherlands for
the first time in August 2020 (Sikkema et al. 2020) with detection of the virus RNA in a
Common whitethroat (*Curruca communis*) and in two of 44 mosquito pools tested.
Sequence analysis from the mosquito pools suggested the virus originated from Germany,
Austria or the Czech Republic, consistent with a general north-westward expansion in
range of the virus. The detection in the whitethroat and the mosquito pools followed a
heatwave in the Netherlands (Sikkema et al. 2020), and the WNV occurrence in Germany
in 2018 was linked to a hot and rainless season in April/May 2018 (Ziegler et al. 2019). This
apparent expansion in range of the virus into north-western Europe may increase the
likelihood of more WNV-positive birds entering the UK during autumn as passage
migrants.

The majority of infected horses will not show any clinical signs, but some horses may
develop a fever; and rarely central nervous signs, such as tremors, staggering and
ultimately, death. WNV is a notifiable disease in horses and suspicion of disease must be
reported to APHA.

The movement of WNV-infected people or horses would not be a risk pathway for
establishing disease in the UK in terms of mosquito transmission, although it should be
emphasised that disease in humans can result from exposure to equine tissues at
necropsy (Venter et al. 2010). Similarly, it is noteworthy that the veterinarian who
performed the necropsy of a captive, WNV-infected great grey owl (*Strix nebulosa*) in
Germany in 2018, developed flu-like symptoms 3 days after and revealed one month after
the necropsy, specific WNV-IgM antibodies (see Ziegler et al. 2019).

We would like to remind veterinarians and operators of equine establishments of the
requirement to report suspect disease to APHA and that there is a “testing to exclude”
programme to rule out infection in horses showing clinical signs where there is a low
suspicion of WNV as a differential diagnosis. Veterinarians should discuss this option with
We will continue to monitor the situation.

**Authors**

Dr Paul Gale  
Tony Pacey  
Dr Lauren Perrin  
Alastair George

**References**

All disease reports are available from the OIE WAHIS database.

[https://veterinaryrecord.bmj.com/content/179/14/363 Accessed 30/08/2018](https://veterinaryrecord.bmj.com/content/179/14/363)


