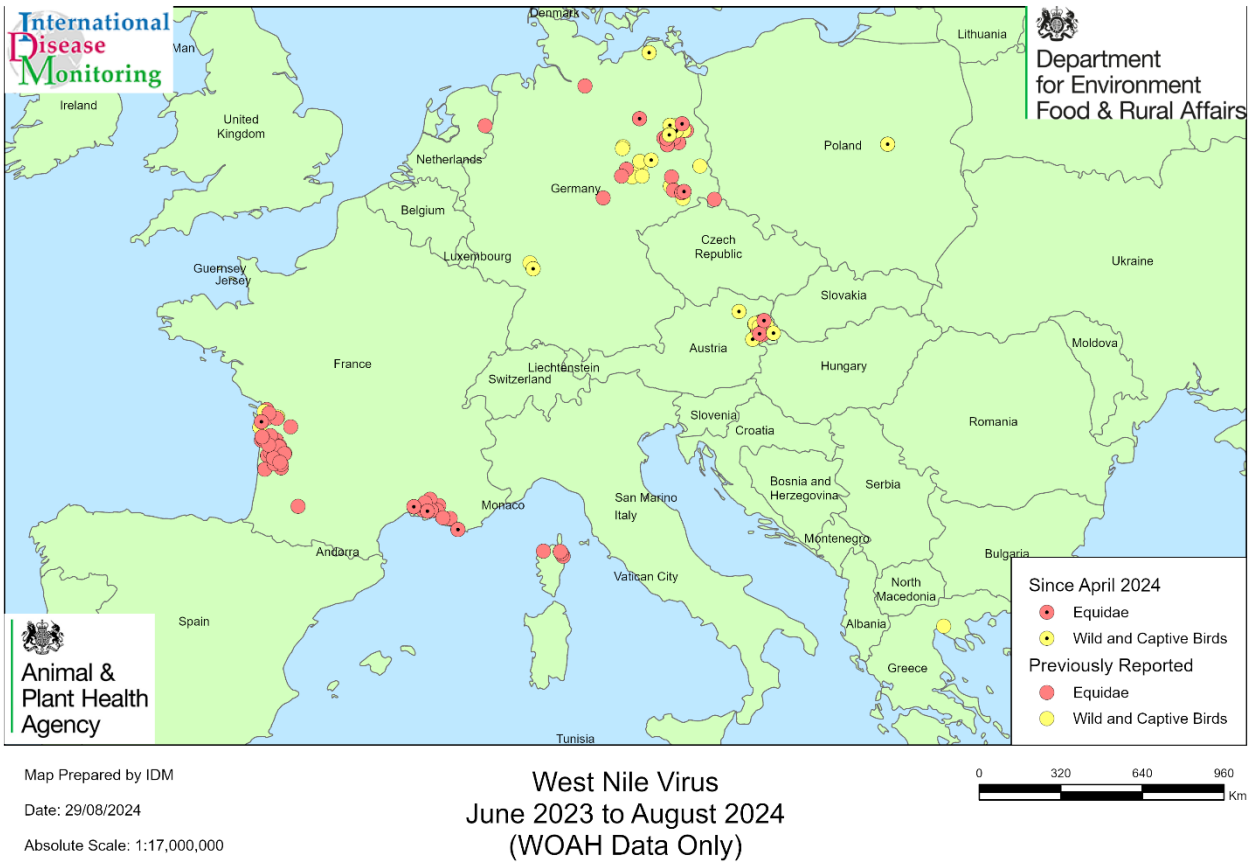
Department for Environment, Food and Rural Affairs
Animal and Plant Health Agency
Advice Services - International Disease Monitoring

Updated Outbreak Assessment #6

West Nile Virus in Europe

29 August 2024



Map Prepared by IDM

Date: 29/08/2024

Absolute Scale: 1:17,000,000

West Nile Virus
June 2023 to August 2024
(WOAH Data Only)

Disease Report

West Nile Virus (WNV) emerged for the first time in Germany in August 2018 and the virus appears to be maintaining itself within the region through overwintering in mosquitos (Ziegler et al. 2020), with outbreaks recurring in subsequent summers. The previous WNV outbreak assessment on 24 August 2023 is available to view along with previous outbreak assessments. In the summer of 2024, WNV has been reported in humans, birds and horses in new regions, including in western and northern Germany and central Poland.

In the 2024 season, from April 2024 to date, outbreaks of WNV have occurred in France, Germany, Austria and Poland. This year is the first time Poland has reported WNV, with the disease affecting 5 birds in a population of corvids in Warsaw at the end of July.

The earliest outbreak among both birds and horses was on 2 April 2024 in a horse in Nouvelle-Aquitaine, France. This location is known to have had cases of the WNV annually since 2022. In Greece, studies have found adult mosquitoes of *Culex sp.*, a species capable of transmitting WNV,during the winter period suggesting climate change and warmer winters have enabled an extended mosquito season (Balatsos et al.,2024).

Situation Assessment

West Nile Virus (WNV), is a vector -borne *Flavivirus* disease that causes encephalitis in species affected, predominately birds and equids. The virus circulates between Culex species of mosquitoes and both wild and captive birds. Humans and horses can be infected by being bitten by infected mosquitoes and are incidental dead-end hosts. As dead-end hosts, they show clinical signs of disease but do not transmit to others. The cycle of transmission occurs annually, usually from mid-June to mid-November (Sambri et al., 2013).

In the 2024 season, outbreaks have been reported in equids in France (4), Spain (6) and Italy (1) (ECDC 2024) and in Germany and Austria (WOAH). Outbreaks of WNV in wild and captive birds this season have occurred in Italy (8), Germany (2) (ECDC 2024), Austria, and Poland (WOAH).

In Germany, since the last report 37 outbreaks of WNV have been reported. A total of 14 outbreaks in equids and birds has been reported in 2024 alone. In equids, 14 outbreaks were reported at the end of the season of 2023 and 6 outbreaks have occurred in equids currently in the 2024 season. It is of note that 2 equine cases of the 14 reported between August 2023 and April 2024, one was located near to Hamburg and the other in north west Germany close to the border with the Netherlands outside of the associated area in the north east of Germany, where cases are regularly seen. There have been 7 reports in captive birds held at zoos since the last update and 10 outbreaks in wild birds. To date in 2024, there have been 3 reports in captive birds and 4 reports in wild birds. Predominately, cases continue to occur in northeast Germany with a cluster located in Berlin.

In Austria, 19 outbreaks have been confirmed since the last update. Of these 19 cases, 9 outbreaks have been confirmed in equids and 8 cases in wildlife, predominately corvids and one report in a captive bird. In early October 2023, they had one report of WNV in a wild Eurasian Eagle Owl (*Bubo Bubo)* Predominately, these cases have been located near to Bratislava.

In France, there are two regions were WNV has been regularly occurring in recent years, Nouvelle-Aquitaine and Provence-Alpes-Cote d'Azur. Since the last report in 2023, 51 outbreaks have been reported in equids in this area. In April 2024, 1 equine case was confirmed in Nouvelle-Aquitaine and 2 cases have been confirmed in horses in Provence-Alpes-Cote D'Azur in July 2024. In late 2023, two cases in wild birds were reported in Nouvelle-Aquitaine but to date no further cases have been reported in birds in 2024.

Greece also reported a case that occurred at the end of the last season in an unknown wild Pelican (*Pelecanidae)* in Central Macedonia.

It is possible that WNV enters the UK through WNV-Infected wild birds from Europe sporadically. In Autumn, large numbers of thrushes (including Fieldfare (*Turdus pilaris)* and Redwing (*Turdus iliacus))* migrate from Scandinavia to the UK, together with other passerines from north-eastern Europe. Direct bird-to-bird transmission of WNV does not occur, so the likelihood of a WNV-infected wild bird requires birds to stop off in northern Germany or western France and being bitten by infected mosquitoes to transmit the virus. 34 native species of mosquitos are present within the UK of which 9 are capable of transmitting WNV from wild birds (Vaux *et al.* 2014), and established populations of *Culex modestus* are documented in southern England (Phipps *et al.* 2018; Cull, *et al.,* 2016), but it should be noted that mosquito activity declines from October onwards. Currently, modelling suggests that UK temperatures are too low to enable replication of the virus, but global environmental changes are likely to change risk of prevalence in the future (Ewing et al., 2021).

Hence, the number of WNV transmission events within the UK may be restricted because there needs to be synchrony between WNV entering the UK in migratory birds and high UK mosquito abundance, for onward transmission to the UK birds and equines. This situation continues to be monitored by annual surveillance carried out by UK Health Security Agency (UKHSA). Populations of mosquitoes in wetland areas where migratory birds are likely to have large migration groups and local equids are present are the most likely to be at-risk of exposure to WNV infection if it were to be introduced into the area (Vaux *et al.* 2014).

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 summer is negligible.

Conclusion

The risk of autochthonous WNV transmission to horses in the UK as a result of the recurrence of WNV in birds and horses in Germany and France is currently (August 2024) considered to be **negligible**. However, there is uncertainty around the ongoing WNV situation in both countries, and the sensitivity of wild bird surveillance across Europe.

While passerines in Europe have been reported as infected with WNV, other species such as waders which arrive earlier in the autumn may need more consideration as potential routes of entry to the UK. However, 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).

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. All causes of equine viral encephalo-myelitis are notifiable 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).

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 APHA. (https://www.gov.uk/government/organisations/animal-and-plant-health-agency/about/access-and-opening).

We will continue to monitor the situation.

Authors

Dr Sonny Bacigalupo

Dr Paul Gale

Megan Arter-Hazzard

Dr Mary Nelson

References

All disease reports are available from the OIE WAHIS database.

Sambri, V., Capobianchi, M., Charrel, R., Fyodorova, M., Giabani, P., Gould, E., Niedrig, M., Papa, A., Pierro, A., Rossini, G., Varani, S., Vocale, C. and Landini, M.P. (2013). West Nile virus in Europe: emergence, epidemiology, diagnosis, treatment, and prevention. *Clinical Microbiology and Infection*, [online] 19(8), pp.699–704. doi:https://doi.org/10.1111/1469-0691.12211.

Monthly updates: 2024 West Nile virus transmission season (europa.eu)

Vaux, A.G., Gibson, G., Hernandez-Triana, L.M. *et al.* Enhanced West Nile virus surveillance in the North Kent marshes, UK. *Parasites Vectors* **8**, 91 (2015). https://doi.org/10.1186/s13071-015-0705-9

Ewing David A.,Purse Bethan V.,Cobbold Christina A. and White Steven M.2021A novel approach for predicting risk of vector-borne disease establishment in marginal temperate environments under climate change: West Nile virus in the UK*J. R. Soc. Interface.***18**20210049

Phipps, P., Johnson, N., McElhinney, L.M. & Roberts, H. (2018) West Nile virus season in Europe. Veterinary Record 183: 224.

Balatsos, G., Beleri, S., Tegos, N. *et al.* Overwintering West Nile virus in active *Culex pipiens* mosquito populations in Greece. *Parasites Vectors* **17**, 286 (2024). https://doi.org/10.1186/s13071-024-06367-6

Ziegler, U., Lühken, R., Keller, M., Cadar, D., van der Grinten, E., Michel, F., Albrecht, K., Eiden, M., Rinder, M., Lachmann, L., Höper, D., Vina-Rodriguez, a., Gaede, W., Pohl, A., Schmidt-Chanasit, J., Groschup, M. (2019) West Nile virus epizootic in Germany, 2018. Antiviral Research 162, 39–43.

Ziegler U, Santos PD, Groschup MH, Hattendorf C, Eiden M, Höper D, Eisermann P, Keller M, Michel F, Klopfleisch R, Müller K, Werner D, Kampen H, Beer M, Frank C, Lachmann R, Tews BA, Wylezich C, Rinder M, Lachmann L, Grünewald T, Szentiks CA, Sieg M, Schmidt-Chanasit J, Cadar D, Lühken R. (2020) West Nile Virus Epidemic in Germany Triggered by Epizootic Emergence, 2019. Viruses 12(4):448. https://doi.org/10.3390/v12040448.