

Usutu Virus

Agent

Usutu virus (USUV) is a flavivirus that has emerged in Europe where it poses a potential disease threat to both wild and captive birds. It is transmitted between birds (the primary hosts) by mosquitoes. Different strains of the virus have been found in different locations.

Usutu virus was detected in wild Eurasian blackbirds (*Turdus merula*) in Greater London in late summer 2020: this was the first time USUV has been found in Great Britain (GB).

USUV infection in avian species (captive or wild) is not a notifiable disease.

Disease transmission

USUV is spread to birds and other animals through being bitten by a virus-carrying mosquito (the 'vector').

Species affected

Hosts: The primary hosts for USUV are birds. Amongst wild birds there are marked differences in susceptibility between species, with Passeriformes (perching birds), Eurasian blackbirds in particular, and Strigiformes (owls) showing the highest levels of mortality.

In addition to birds, the virus has been known to infect mammals, including humans. These are known as incidental hosts (i.e. infection results from incidental exposure through a mosquito bite but mammals are not part of the virus' normal lifecycle).

Vectors: Whilst USUV has been found in multiple species of mosquito in Africa and mainland Europe, *Culex pipiens* s.l is considered the main vector in Europe and is present in GB.

Signs of disease

In mainland Europe, the most common sign of USUV infection in birds has been mortality events in the summer months, where sometimes large numbers of wild birds (typically blackbirds) and occasionally captive birds (e.g. Great grey owls (*Strix nebulosa*)) have been found dead without prior evidence of ill-health.

On rare occasions where sick blackbirds have been observed, they have shown signs such as lethargy, weakness, loss of coordination and seizures.

Distribution and origin

USUV was first discovered in South Africa in 1959 and was subsequently detected in several countries across Africa. It is suspected that migratory birds played an important role in introducing USUV to mainland Europe from Africa. There are multiple distinct lineages (strains) of USUV and several of these have been detected in Europe, suggesting that the virus has been introduced from Africa on multiple occasions.

The first report of the disease in wild birds in a European country was in Austria in 2001, although retrospective analysis subsequently revealed that the virus has been present in Italy since at least 1996, and USUV has since been detected in many additional countries in Europe. The precise mechanism for virus spread throughout mainland Europe is

unknown, but it is likely that mosquitoes and migratory birds have played a role in disseminating USUV between countries.

Since its initial detection, USUV appears to have become established (i.e. endemic) in some parts of mainland Europe and has been linked to avian mass mortality events, for example in Austria, Germany and the Netherlands, sometimes associated with blackbird population declines. In some areas it is believed that avian populations may be developing immunity to the virus.

Screening of wild bird tissues for flaviviruses was historically conducted in GB with samples testing negative until the first detection of USUV in blackbirds in late summer 2020. Analyses of disease surveillance and wild bird monitoring scheme data indicate that further blackbird mortality occurred leading to a regional decline of this species in the Greater London area. Since USUV has been detected in multiple countries in mainland Europe, this incursion of USUV into GB was considered highly likely to occur, most probably as a result of the movement of mosquitoes or migratory birds.

USUV has been detected each subsequent year in wild birds and mosquitoes in Greater London. Molecular work has confirmed a closely related strain of the virus each year, which indicates that USUV has overwintered and persisted in the UK. In recent years, USUV has been identified in both wild birds and mosquitoes from a wider range of counties in England but particularly the Southeast, where the virus is now considered endemic. The first detection of USUV in Scotland on the Isle of Arran occurred in summer 2025. Surveillance of wild birds and mosquito vectors is ongoing to learn more about the distribution and impact of USUV in the UK (see Further Reading).

At present USUV has not been detected in Asia, the Americas or Australasia.

Risk to human health

A small number of cases of human infection with USUV, usually neurological disease in immunocompromised individuals, have so far been reported in mainland Europe. The virus is presumed to have been transmitted to humans via the bite of an infected mosquito. Current evidence suggests that most USUV infections in humans are asymptomatic (i.e. do not cause disease) and the risk to human health is considered low. To date, there have been no reports of USUV associated disease in humans in the United Kingdom.

The Human Animal Infections & Risk Surveillance group (HAIRS) has concluded the risk to public health is low. The full risk assessment is available at https://www.gov.uk/government/publications/hairs-risk-assessment-usutu-virus. According to the Food Standards Agency there is no evidence from Europe that poultry present any risk to public health through the consumption of poultry products.

Standard hygiene precautions, such as not directly handling sick or dead wild birds are recommended as routine. For instance, use disposable gloves or pick a carcass up through an inverted plastic bag if handling is required.

Risk to domestic animal health

USUV is known to cause disease in captive birds, such as those in zoological collections, with Passeriformes (perching birds) and Strigiformes (owls) most susceptible, however a range of species can be affected.

Whilst it has been shown that it is possible to infect domestic chickens under certain experimental conditions, successful onward transmission was not seen; and in those infected, USUV did not cause significant disease in poultry. Exposure to USUV can lead to seroconversion (i.e. antibody production) and in some European countries, poultry are used as a sentinel species for flavivirus infections. Scanning surveillance for new disease threats in poultry and all other farmed species is a year-round activity that the Animal & Plant Health Agency (APHA) undertakes through its network of Veterinary Investigation Centres and associated facilities. The presence of USUV in GB wild birds is not thought to present a risk to GB poultry.

Studies in mainland Europe have detected USUV antibodies in low percentages of sampled horses, dogs, deer and wild boar. These findings suggest that various mammal species are susceptible to infection. While there is minimal evidence of clinical disease caused by USUV in such mammal species to date, neurological disease associated with USUV infection has recently been reported in a small number of harbour seals (*Phoca vitulina*) in Germany.

Diagnosis

Diagnosis cannot be made based on clinical signs (symptoms) of ill health in birds. Post-mortem examination and specialist laboratory testing are required to confirm the presence of the virus.

If you wish to report finding a dead garden bird, or signs of disease in garden birds, please visit www.gardenwildlifehealth.org. Alternatively, if you have further queries or have no internet access, please call the **Garden Wildlife Health** vets on **0207 449 6685**.

Further practical guidance is available in our FAQ section https://www.gardenwildlifehealth.org/what-if/

In Great Britain, samples from wild birds submitted to the GWH project and the Defra avian influenza surveillance scheme for examination during the season when mosquitoes are most active, April - November, are tested for flaviviruses (including USUV) by the APHA.

Prevention and control

At present, no vaccine is available for the prevention of USUV in birds or mammals.

The risk of people contracting USUV infection could be reduced by preventing exposure to mosquitoes (e.g. use of repellent, long sleeves, avoiding being outside at dusk and dawn when mosquito vectors are most active).

There are options for management of mosquitoes if particular species cause nuisance biting and pose a vector risk to humans. Management advice of aquatic habitats for Culex pipiens s.l. and Culiseta annulata control around the home and in urban areas can be found here:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/577340/Mosquito_control_factsheet.pdf

Further reading

Human Animal Infections and Risk Surveillance risk assessment: Usutu virus:
https://www.gov.uk/government/publications/hairs-risk-assessment-usutu-virus/hairs-risk-assessment-usutu-virus

Scientific publications

Folly AJ, Sewgobind S, Hernández-Triana LM, Mansfield KL, Lean FZ, Lawson B, Seilern-Moy K, Cunningham AA, Spiro S, Wrigglesworth E, Pearce-Kelly P (2022) Evidence for overwintering and autochthonous transmission of Usutu virus to wild birds following its redetection in the United Kingdom. *Transboundary and Emerging Diseases*. **69**(6) doi.org/10.1111/tbed.14738

Lawson B, Robinson RA, Briscoe AG, Cunningham AA, Fooks AR, Heaver JP, Hernández-Triana LM, John SK, Johnson N, Johnston C, Lean FZX, Macgregor SK, Masters NJ, McCracken F, McElhinney LM, Medlock JM, Pearce-Kelly P, Seilern-Moy K, Spiro S, Vaux AGC, Folly AJ (2022) Combining host and vector data informs emergence and potential impact of an Usutu virus outbreak in UK wild birds. *Scientific Reports* **12.** doi.org/10.1038/s41598-022-13258-2

Folly AJ, Lawson B, Fabian LZX, McCracken F, Spiro S, John SK, Joseph JP, Seilern-Moy K, Masters N, Hernández-Triana LM, Phipps PL, Nunez A, Fooks AR, Cunningham AA, Johnson N, McElhinney LM (2020) Detection of Usutu virus infection in wild birds in the United Kingdom, 2020. *Eurosurveillance* **25**(41). doi.org/10.2807/1560-7917.ES.2020.25.41.2001732

Clé M, Beck C, Salinas S, Lecollinet S, Gutierrez S, Van de Perre P, Baldet T, Foulongne V, Simonin Y (2019) Usutu virus: A new threat? *Epidemiology and Infection* **147**. doi.org/10.1017/S0950268819001213

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