



Usutu Virus

Agent

Usutu virus (USUV) is a flavivirus in the same virus 'family' as West Nile virus. USUV is considered to be an important emerging infectious disease, and poses a potential threat to both wild and captive birds. Its lifecycle involves transmission between birds (the primary hosts) and mosquitoes (the vectors that transmit the virus between hosts). There are multiple strains of the virus that have been found in different locations and cause varied severity of disease.

Usutu virus has not yet been detected in any species in Great Britain (GB). USUV infection in avian species (captive or wild) is not a notifiable disease.

Species affected

Hosts: The primary hosts for USUV are birds, including at least 30 European wild bird species that have been found with evidence of infection thus far. Amongst wild birds there are marked differences in susceptibility between species, with *Passeriformes* (perching birds), Eurasian blackbirds (*Turdus merula*) in particular, and *Strigiformes* (owls) showing the highest levels of mortality.

In addition to birds, the virus has been known to infect mammals, including bats and humans. These are known as incidental hosts, i.e. they are not the virus' main target, rather they accidentally become infected through being bitten by a virus-carrying mosquito.

Vectors: The virus has been found in multiple species of mosquito; only one species (*Culex pipiens*) present in Europe is currently known to be able to transmit the virus between hosts.

Signs of disease

In mainland Europe, the most common sign of USUV in birds has been seasonal mass mortality events in the summer months, where large numbers of wild (Eurasian blackbirds) and captive birds (Great grey owls (*Strix nebulosi*)) were found dead without prior evidence of ill-health.

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

Disease transmission

USUV is spread to birds and other animals through being bitten by a virus-carrying mosquito.

Distribution and origin

USUV was first discovered in South Africa in 1959. It is not known whether the virus originated in Africa, or if it was introduced there from elsewhere. The virus recently emerged in continental Europe. It is suspected that migratory birds, such as the garden warbler (*Sylvia borin*), house martin (*Delichon urbica*) and pied flycatcher (*Ficedula hypoleuca*), played an important role in introducing USUV to mainland Europe from Africa.

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. Several other European countries have since confirmed infections in birds, bats or mosquitoes, including Belgium, Germany, Spain, Switzerland and

Hungary. The precise mechanism for virus spread throughout mainland Europe is unknown; however it is likely that mosquitoes and Eurasian blackbirds, which are known to migrate throughout the continent, have played a role in disseminating USUV between countries.

The most recent detection of large-scale mortality of wild birds caused by USUV was in the Netherlands in 2016, where multiple mass mortality events involving over 1800 blackbirds across eight provinces were reported.

A study conducted in GB from 2005-2011 found that all 201 birds tested were negative for USUV. Screening of wild bird tissues for flaviviruses has been conducted each subsequent year in GB, and no evidence of USUV has been detected. Whilst the wild bird and mosquito species that can transmit USUV are present in GB, available evidence indicates the virus is not currently present but we are likely vulnerable to its incursion (i.e. arrival or introduction). At present USUV has not been detected in Asia, North/South America or the Australian continent.

Risk to human health

USUV has, on rare occasions, caused neurological disease in humans. Only five cases of USUV causing disease in humans have been reported in mainland Europe, three of which were in immunocompromised patients. Several of these patients were believed to be infected by mosquito transmission, infection via blood transfusion was implicated in one person, and the means of infection was unclear in the remaining patients.

Further study is required into the potential risks posed by USUV to human health; however the recommendations with regards to the handling of wild birds remain unchanged. Standard hygiene precautions, such as not handling sick and dead wild birds are recommended as routine.

Risk to domestic animal health

It is unknown whether USUV infection can cause disease in companion animal or livestock species. No cases have been confirmed to date.

Diagnosis

Diagnosis cannot be made based on clinical signs (symptoms) of ill health in birds or mammals. Post-mortem examination and specialist laboratory testing is 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**.

Prevention and control

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

Ongoing surveillance for evidence of infected birds is being undertaken in several countries throughout Europe. In Great Britain, samples from all wild birds submitted to the GWH project for examination during the season when mosquitoes are most active, April - September, are tested for flaviviruses (including USUV) by the Animal & Plant Health Agency. This helps provide an early warning system for possible detection of USUV in the future.

Further reading and scientific publications

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Cadar, D., 2014. Usutu Virus in Bats, Germany, 2013-Volume **20**, Number 10—October 2014-*Emerging Infectious Disease journal-CDC*. doi: [org/10.3201/eid2010.140909](https://doi.org/10.3201/eid2010.140909)

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