

EXOTIC Flaviviruses (Usutu and Bagaza) affecting wild birds

Fact sheet

Introductory statement

Usutu and Bagaza viruses are Flavivirus arboviruses, which have emerged in recent years as a cause of disease in wild birds outside Australia. Usutu and Bagaza viruses have not been reported in Australia.

Usutu virus (USUV) is a Flavivirus in the Japanese encephalitis antigenic group and is closely related to Murray Valley encephalitis virus and West Nile virus. It is an emerging disease of concern because of its pathogenicity to humans and its similarity in ecology to other zoonotic arboviruses.

USUV was first isolated in South Africa in 1959. Birds are the vertebrate host and the virus is transmitted by biting mosquitoes (*Culex*, *Aedes* and other bird-feeding species). Humans, horses and rodents may be incidental hosts. USUV has recently been isolated from bats in Germany (Cadar et al. 2014). The virus has been found in a wide range of wild bird species, in many cases without evidence of disease. It is highly pathogenic for some species of birds, including *Passeriformes*, especially the genus *Turdus* (true thrushes; 82 species found throughout the world, including some species in Australia) and birds of prey (Hubálek et al. 2014).

Clinical signs in birds include lethargy, inability to fly, incoordination and death. Mortality rates in blackbirds (*T. merula*) may reach 100%. Pathology includes encephalitis, carditis, hepatomegaly and splenomegaly.

USUV emerged as a significant cause of avian mortality in Austria in 2001, killing hundreds of wild and aviary birds and spread to other countries of Europe. The virus is also found in Africa. Human disease (neurological) associated with USUV has been reported rarely, primarily in immunosuppressed individuals.

Bagaza virus (BAGV) (synonymous with Israel turkey meningoencephalitis virus, and also called avian meningoencephalomyelitis virus) is a Flavivirus from the Ntaya antigenic group. BAGV was first seen in adult turkeys in Israel in 1959. Birds are the vertebrate host and the virus is spread by biting mosquitoes (*Culex* and

Aedes spp.), and possibly midges (*Culicoides* spp.). In 2010, disease and mass mortalities were seen in wild game birds in Spain, primarily in *Galliformes* [including red-legged partridge (*Alectoris rufa*) and common pheasant (*Phasianus colchicus*)], and wood pigeons (*Columba palumbus*). Domestic chickens, ducks and pigeons are resistant to disease.

Clinical signs in partridges include incoordination, disorientation, ataxia and death. Mortality rates are reported to be about 40% in partridge and 10% in pheasants. Signs in turkeys include progressive paralysis with mortality rates around 50%. Pathology includes (meningo)encephalitis, carditis and severe haemosiderosis in liver and spleen. Disease in humans has not been reported (Gamino et al. 2012).

Investigation aims to determine how BAGV was introduced into Europe and to better understand the possible role of wild birds in the epidemiology of BAGV (García-Bocanegra et al. 2013).

If you suspect a case of Usutu or Bagaza virus in Australian birds, you should immediately call the free **Emergency Animal Disease Watch Hotline (1800 675 888)**.

References and other information

Cadar, D, Becker, N, de Mendonca Campos, R, Börstler, J, Jöst, H, Schmidt-Chanasit, J (2014) Usutu virus in bats, Germany, 2013. *Emerging Infectious Diseases* **20**, 1771.

Gamino, V, Gutiérrez-Guzmán, A-V, Fernández-de-Mera, IG, Ortiz, J-A, Durán-Martín, M, de la Fuente, J, Gortázar, C, Höfle, U (2012) Natural Bagaza virus infection in game birds in southern Spain. *Veterinary Research* **43**, 65.

García-Bocanegra, I, Zorrilla, I, Rodríguez, E, Rayas, E, Camacho, L, Redondo, I, Gómez-Guillamón, F (2013) Monitoring of the Bagaza virus epidemic in wild bird species in Spain, 2010. *Transboundary and Emerging Diseases* **60**, 120-126.

Hubálek, Z, Rudolf, I, Nowotny, N (2014) Arboviruses Pathogenic for Domestic and Wild Animals. *Advances in Virus Research* **89**, 201-275.

Hubalek et al. 2014 (above) provides a useful summary of information on arboviruses generally.

Wildlife considerations as part of an animal disease response are addressed in the WARS AUSVETPLAN: <http://www.animalhealthaustralia.com.au/wp-content/uploads/2011/04/WARS3.3-18-FINAL21Jun11.pdf>.

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To provide feedback on this fact sheet

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