

Arboviruses associated with Australian wildlife

Fact Sheet

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Key points

- Arbovirus is a term to describe viruses that are transmitted by an arthropod (insect) vector.
- At least 75 arboviruses have been reported in Australia, most of them transmitted by the bites of mosquitoes.
- In Australia, 13 arboviruses are considered zoonotic (a disease transmitted from animals to humans – in this case via a biting insect); see Table 1.
- Some Australian arboviruses have native wildlife species as reservoir hosts (Table 1) and some Australian arboviruses can cause disease in wildlife species (Table 2).
- Arboviruses affecting only domestic animals are not addressed in this Fact Sheet.
- If you suspect you, or someone in your care, has an arboviral infection, seek medical advice without delay. Many arboviral disease in humans are nationally notifiable, or notifiable in certain states and territories.
- Prevention of arbovirus infection focuses on avoidance of insect bites, particularly mosquitoes. See further information at www.qld.gov.au/_data/assets/pdf_file/0027/347373/Protect-yourself-from-mosquito-bites-Fact-Sheet.pdf and www.health.nsw.gov.au/Infectious/factsheets/Factsheets/mosquitoes-health-hazard.pdf, for example.
- For more information on the zoonotic impacts of arboviruses in Australia, see www.healthdirect.gov.au/mosquito-borne-diseases and <https://media.healthdirect.org.au/publications/Mosquito-guide-infographic.pdf>.

Table 1: Zoonotic arboviruses found in Australia which have Australian wildlife as reservoirs

a WHA Fact Sheet is available on this virus

See also Abdad 2011 [1] for more information about mosquito borne viruses and non-human vertebrate hosts in Australia

Virus	Virus family (genus)	Disease in humans	Reservoirs in wildlife	Geographic distribution in Australia	Vectors	Domestic species affected	References
Japanese encephalitis virus (JEV) [#]	<i>Flaviviridae</i> (<i>Flavivirus</i>)	Encephalitis	Birds (herons). Flying-foxes also suggested as reservoirs	Mainland Australia	<i>Cx. annulirostris</i>	Pigs, horses	See <i>Japanese encephalitis virus Fact Sheet</i>
Murray Valley encephalitis virus (MVEV) [#]	<i>Flaviviridae</i> (<i>Flavivirus</i>)		Birds, mainly waterbirds (herons and cormorants). Macropods, horses, bats possible reservoirs.	Endemic in northern Australia, spillover to southern states	<i>Cx. annulirostris</i> , <i>Cx. sitiens</i> and other Culicine mosquitoes	Horses	See <i>Murray Valley encephalitis Fact Sheet</i>
West Nile virus-Kunjin (WNV _{KUN}) [#]	<i>Flaviviridae</i> (<i>Flavivirus</i>)	Fever, malaise, myalgia, joint pain	Birds (herons and other wading birds)	All of Australia	Mainly <i>Cx. annulirostris</i> mosquitoes	Horses, cats, rabbits	See <i>West Nile (Kunjin) virus Fact Sheet</i>
Dengue virus	<i>Flaviviridae</i> (<i>Orthoflavivirus</i>)	Severe flu-like illness	Nil, humans are the only vertebrate hosts	Not endemic. Occasional incursion or importation	<i>Aedes aegypti</i> and <i>Ae. albopictus</i>	None	Mackenzie et al. 1998 [2], HealthDirect 2023 [3]
Kokobera (KOKV) and related viruses including Stratford virus (STRV) and Edge Hill virus	<i>Flaviviridae</i> (<i>Orthoflavivirus</i>)	Occasionally fever, malaise, acute arthritis	Uncertain. Possibly macropods and/ or horses.	WA, NT, NSW, Qld	<i>Cx. annulirostris</i>	Horses (unconfirmed)	Doherty et al. 1964 [4], Doherty et al. 1971 [5], Russell 1995 [6], Qld Govt 2017 [7]

Ross River virus#	<i>Togaviridae</i> (<i>Alphavirus</i>)	Arthralgia, fatigue, malaise, rash and headache	Macropods. Birds and rodents possible reservoirs. A wide range of mammals, birds and some reptiles may be infected, mostly with no clinical disease.	All of Australia	<i>Aedes</i> and <i>Culex</i> mosquitoes	Horses	See <i>Ross River virus Fact Sheet</i>
Barmah Forest virus	<i>Togaviridae</i> (<i>Alphavirus</i>)	Arthritis, myalgia, and fatigue	Unknown. Possibly macropods, some consider birds or bats possible reservoirs.	All of Australia	<i>Aedes</i> and <i>Culex</i> mosquitoes	None known	Jacups et al. 2008 [8], Boyd et al. 2001 [9], Kay et al. 2007 [10]
Sindbis virus (SINV)	<i>Togaviridae</i> (<i>Alphavirus</i>)	Arthritis, rash and fatigue. Human disease rarely reported in Australia	Poorly understood in Australia. Chuditch, feral rabbits, horses, emus, other birds are possible reservoirs.	Mainland Australia	<i>Culex annulirostris</i> and <i>Aedes</i> mosquitoes	None known	Johansen et al. 2009 [11], Johansen et al. 2005 [12]
Gan Gan (GGV) and Trubanaman viruses (TRUV)	<i>Bunyaviridae</i> (<i>Orthobunyavirus</i>)	Mild disease, fever, rash, joint pain	Uncertain. Macropods, rats, sheep, horses, cattle possible reservoirs (GGV). Macropods, rabbits, pigs, foxes, horses possible reservoirs (TRUV).	Qld, NSW, WA (GGV) Qld, NT, Vic, NSW, WA (TRUV)	<i>Culex</i> , <i>Aedes</i> and <i>Anopheles</i> spp. mosquitoes	None known	Johansen et al. 2005 [12], Vale et al. 1991 [13]

Table 2: Arboviruses causing disease in wildlife and feral species

* a WHA Fact Sheet is available on this virus

not traditionally considered an arbovirus but biting insects often involved in transmission of the disease

Virus	Virus family (genus)	Wildlife species affected	Disease signs	Vectors	Reservoir	Reference
Eubenangee virus*	<i>Reoviridae</i> (<i>Orbivirus</i>)	Tammar wallabies	Tammar wallaby sudden death syndrome	Believed to be mosquitoes	Unknown	See <i>Orbiviruses in macropods Fact Sheet</i> Rose et al. 2012 [14]
Wallal (and Warrego) viruses*	<i>Reoviridae</i> (<i>Orbivirus</i>)	Kangaroos and wallaroos	Choroid blindness	Midges (<i>Culicoides australpalpis</i> , <i>C. dycei</i> and <i>C. marksi</i>)	Unknown	See <i>Orbiviruses in macropods Fact Sheet</i> Hooper et al. 1999 [15], Durham et al. 1996 [16], Reddacliff et al. 1999 [17]
Other orbiviruses*	<i>Reoviridae</i> (<i>Orbivirus</i>)	Kangaroos, wallaroos and wallabies	Oedema, conjunctivitis, lethargy	Unknown	Unknown	See <i>Orbiviruses in macropods Fact Sheet</i> Weir et al. 2005 [18], Melville 2000 [19]
Rabbit haemorrhagic disease (calicivirus)**	<i>Caliciviridae</i> (<i>Lagovirus</i>)	Rabbits and hares	Sudden death, fever, lethargy, hepatitis.	Generally close contact. Flies, rabbit fleas and mosquitoes.	Rabbits	See <i>Rabbit haemorrhagic disease Fact Sheet</i>
Myxomatosis**	<i>Poxviridae</i> (<i>Leporipoxvirus</i>)	Rabbits	Swollen eyes and genitalia. Lethargy and respiratory signs	Mosquitoes, rabbit fleas, also direct contact.	Cottontail rabbits (not present in Australia)	See <i>Myxomatosis Fact Sheet</i>
Other pox viruses**	<i>Poxviridae</i>	Many different warm blooded species	Crusty lesions on exposed skin	Range of arthropod vectors, also through close contact		See: <i>Poxvirus and Australian birds Fact Sheet</i> and <i>Poxvirus and Australian mammals Fact Sheet</i>

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Email: admin@wildlifehealthaustralia.com.au

Or call +61 2 9960 6333
