Infectious diseases of biosecurity concern in Australian wildlife
Fact sheet

Introductory statement

This fact sheet summarises information on infectious diseases in Australian wildlife that carry biosecurity concerns. While we do our best to keep our fact sheets up to date, due to the rapidly evolving nature of wildlife health information, some information in this table may not be current.

The focus of information in this fact sheet is on issues relevant to biosecurity and risk management:

- the known wildlife taxonomic range of the disease
- whether the disease is known to be zoonotic
- the main pathways for transmission
- whether the disease is seen primarily in free-ranging wildlife, in captive wildlife, or in both
- the main biosecurity practices recommended to manage the disease risk.

This fact sheet does not address all diseases of wildlife in Australia. Diseases have been included in this fact sheet if they have significant impact on free-ranging or captive wildlife, significant zoonotic impacts, or where the impacts are not well understood. This list should not be considered comprehensive and it is suggested it be used for reference purposes only.

Further information on many of these diseases can be found in specific WHA Fact sheets (as indicated in the table).

Table 1: Infectious diseases of concern in Australian wildlife

DH = definitive host; AH=aberrant host; IH=intermediate host; PPE=personal protective equipment'; *=WHA Fact Sheet available

Pathogen	Wildlife taxonomic range	Zoonosis	Transmission pathway or main route of infection	Primarily captive or in-care wildlife?	Main biosecurity practices
Viruses					
Australian bat lyssavirus*	Bats; infection found in all four mainland species of flying-fox (*Pteropu*s spp.) and yellow-bellied sheath-tailed bat; serological evidence in other bat species; assume all Australian bat species are potential hosts.	Yes	Bite or scratch from an infected bat, or saliva contamination of mucous membranes/ broken skin.	No	Safe handling (only rabies-vaccinated people, experienced in handling bats and wearing appropriate PPE should handle, rescue or examine a bat); first aid and medical assessment in the event of a bat bite or scratch or other significant contact; post exposure prophylaxis as needed.
Bellinger River turtle virus	Bellinger River turtle	No	Currently unknown.	No	Suggest isolation and safe disposal of water and waste products.
Hendra virus*	Flying-fox; Black (*Pteropu*s *alecto*) and spectacled (*P. conspicillatus*) flying-foxes are believed to be the reservoir hosts. A novel variant (HeV-g2) has been found in grey-headed flying-foxes.	Yes	Contact, aerosol. Via urine to horses; all body substances in a horse may be infectious to others notably humans.	No	Vaccination of horses; limiting exposure of horses and their feed to flying-fox contamination; appropriate PPE particularly when dealing with sick horses; other hygiene practices
Herpesviruses (various)**	Various - mammals, birds, cetaceans. Generally, host-species specific but spillover can result in dramatic disease.	No	Close contact (most likely), aerosol over short distances possibly; latent infections common.	Probably, disease more often reported in captivity.	Isolation; minimise stressors; avoid abnormal mixing of species.
Morbilliviruses (marine mammal)*	Cetaceans and pinnipeds.	No	Aerosol during close contact (most likely).	No	Isolation, avoid mixing host species.

Pathogen	Wildlife taxonomic range	Zoonosis	Transmission pathway or main route of infection	Primarily captive or in-care wildlife?	Main biosecurity practices
Murray Valley encephalitis virus*	Birds, mainly waterbirds.	Yes	Vector, mosquito bite.	No	Avoid mosquito bites. Environmental mosquito control.
Nidovirus (reptile)*	Shingleback lizards, possibly other skink species.	No	Currently unknown.	Wild skinks in care.	Hygiene, isolation recommended.
Orbiviruses (macropod)*	Tammar wallabies (Tammar wallaby sudden death syndrome – Eubangee serogroup viruses); large macropod species (Wallal and Warrego viruses).	No	Vector; bites of Culicoides and similar spp. midges (presumed).	No	Vector control recommended, especially after rain, where possible.
Poxviruses (avian, reptile and marsupial)*	Wide range of host species (viruses are generally taxa- or species-specific).	No	Arthropod vector or close contact (needs a wound or puncture of the skin).	No	Vector control; isolation; environmental hygiene; minimise stressors.
Psittacine beak and feather disease virus*	Psittacine and non-psittacine birds.	No	Indirect contact (extremely robust virus).	No	Isolation; strict hygiene and disinfection; testing of individual birds.
Ranavirus (amphibian)*	Amphibians.	No	Direct and indirect contact, including contaminated water bodies.	No	Isolation; hygiene and disinfection; fomite control.
Ross River virus*	Wide range of native and introduced mammals, birds and some reptiles may be infected, mostly with no clinical disease.	Yes	Mosquito vector.	No	Avoid mosquito bites. Environmental mosquito control.
Snake viruses (Sunshine, inclusion body disease virus)**	Snakes, especially pythons.	No	Likely faecal-oral and aerosols.	Yes	Isolation, hygiene, serial testing, mite control.
Bacteria					

Pathogen	Wildlife taxonomic range	Zoonosis	Transmission pathway or main route of infection	Primarily captive or in-care wildlife?	Main biosecurity practices
Brucella suis (Brucellosis)*	Feral pigs.	Yes	Direct contact; aerosol; fomites.	No	Hygiene; PPE; keep dogs away from pig carcasses
Campylobacter spp.	Birds, possibly others.	Yes	Contact, ingestion (food, water).	Probably	Hygiene, appropriate disposal of faeces
Chlamydia psittaci (avian)*	Birds.	Yes	Contact, aerosol, inhalation (potential for bird-horse and then horse-human transmission).	Yes	Hygiene; PPE (respirator and gloves); isolation; ventilation controls, practices that minimise aerosols and dust (e.g. wet cleaning methods, low pressure hosing).
Chlamydia spp. (mammalian)*	Koalas, other marsupials.	No	Direct (venereal) contact.	No	Separation, testing; treatment.
Coxiella burnetii (Q fever)*	Macropods, bandicoots.	Yes	Contact, aerosol, inhalation, ingestion, fomites.	No	Q fever vaccination (in humans); ventilation controls, dust management, respirator; treatable with antibiotics.
Cryptosporidia spp.*	Reptiles, marsupials, possibly others.	Yes	Ingestion, faecal-oral.	Probably	Hand and environmental hygiene.
*Escherichia albertii**	Birds.		Ingestion, faecal oral.	No	Hygiene, including hand and environmental (bird feeder) hygiene.
Leptospira spp.**	Rodents, possums, platypuses, feral pigs.	Yes	Contact with urine, aerosol, ingestion (food and water).	No	Hygiene, including hand and environmental cleaning; PPE to protect exposed skin, mucous membranes (eyes, nose and mouth), open wounds; rodent control.
Mycobacteria species*	Marsupials, dasyurids, birds, reptiles, pinnipeds.	Maybe	Inhalation, contact, ingestion.	Yes	Environmental management, hygiene including hand hygiene; ventilation controls and respirator for *M. avium.*

Pathogen	Wildlife taxonomic range	Zoonosis	Transmission pathway or main route of infection	Primarily captive or in-care wildlife?	Main biosecurity practices
*Mycobacterium ulcerans**	Cases in a range of marsupial species. A possible role for common ringtail possums as reservoir hosts.	Humans affected, unknown source.	Transmission routes unknown, possibly insect bite or wound contamination.	No	Unknown.
Salmonella spp.*	Reptiles, macropods, birds (DT160).	Yes	Ingestion, faecal-oral (food and water), contact.	Yes	Hand, food and environmental hygiene.
Tularaemia (*Francisella tularensis*)*	Unknown possibly common ringtail possums.	Yes	Bites and scratches (Australian context).	No	Hygiene, safe animal handing including PPE.
Fungi					
Chytrid fungus (*Batrachochytrium dendrobatidis*; Bd)*	Frogs.	No	Environmental contamination.	No	Isolation; hygiene including water hygiene.
Ringworm (*Microsporum* spp*., Trichophyton* spp.)	All mammals, especially orphaned macropods.	Yes	Contact; fomites.	Yes	Hand, equipment and environmental hygiene; isolation; treatment.
Pathogenic skin fungi of reptiles (previously CAN-V)*	Lizards, snakes, crocodiles; possibly all reptile species.	No	Direct and indirect contact.	Yes	Environmental hygiene.
Cryptococcosis*	Koala, other marsupials, pigeons, psittacines, reptiles.	No	Environmental presence; aerosol most likely (not contagious).	Yes	Hygiene, including hand and environment; PPE; isolation and testing if captive.
Macrorhabdus fungus*	Birds.	No	Faecal-oral, parent feeding of nestlings.	Yes	Hygiene, hand-raising chicks, testing and treatment if captive.

Pathogen	Wildlife taxonomic range	Zoonosis	Transmission pathway or main route of infection	Primarily captive or in-care wildlife?	Main biosecurity practices
*Mucor amphibiorum**	Platypus (in Tasmania).	No	Probably via infection of skin wounds. Source unknown.	No	General hygiene, otherwise unknown.
Protozoa					
*Toxoplasma gondii**	All mammals.	Yes	Ingestion following environmental contamination.	Possibly	Hand and food hygiene; cat control; hygienic disposal of cat faeces; cook meat adequately before human consumption.
Trichomona spp.*	Birds.	No	Direct and indirect contact (food).	No	Environmental hygiene including feeding areas.
Haemosporidia spp.*	Birds.	No	Insect vector.	No	Vector control if possible. Care with host or vector translocations.
Coccidiosis (marsupial)*	Primarily hand-raised macropods.	No	Environmental contamination, ingestion.	Yes, juveniles	Hygiene, separation, prophylactic treatment.
Giardia spp.	Mammals, reptiles, birds.	Potentially	Contact, ingestion (faecal-oral; food and water).	No	Hand and food hygiene, treatment of drinking water; appropriate disposal of faeces (human and animal).
Trypanosoma spp.*	Unknown, probably a wide range of mammals.	No	Unknown invertebrate vectors.	No	Manage exposure to vectors, if known.
Internal parasites					
Angiostrongylus spp.*	Rodents (DH), wide range of other mammals (aberrant IH).	Yes, from rodent and invertebrates	Faecal-oral, environmental contamination.	Probably	Hygiene, control rodent and invertebrate hosts.
Echinococcus granulosus (hydatid disease)*	Dingoes (DH); macropods (IH).	Yes	Ingestion.	No	Hand hygiene, treatment of dogs.

Pathogen	Wildlife taxonomic range	Zoonosis	Transmission pathway or main route of infection	Primarily captive or in-care wildlife?	Main biosecurity practices
External parasites					
Sarcoptes scabei (sarcoptic mange)*	Wombats, koalas, (introduced carnivores).	Yes (low risk)	Direct and indirect contact.	No	Isolation of infected hosts, treatment, hygiene including environmental, equipment and hand.
Snake mite (*Ophionyssus natricis)**	All reptiles, particularly snakes.	No	Direct and environmental contamination with all life stages.	Yes	Environmental, equipment and hand hygiene; isolation & treatment of infected individuals and environments.

Acknowledgements

This table was developed to support the National Wildlife Biosecurity Guidelines and many people had input into the process. We are extremely grateful for everyone's assistance. Without their ongoing help, these fact sheets would not be possible.

Updated: October 2021

To provide feedback on this fact sheet

We are interested in hearing from anyone with information on these conditions in Australia, including laboratory reports, historical datasets or survey results that could be added to the National Wildlife Health Information System. If you can help, please contact us at admin@wildlifehealthaustralia.com.au.

Wildlife Health Australia would be very grateful for any feedback on this fact sheet. Please provide detailed comments or suggestions to admin@wildlifehealthaustralia.com.au. We would also like to hear from you if you have a particular area of expertise and would like to produce a fact sheet (or sheets) for the network (or update current sheets). A small amount of funding is available to facilitate this.

Disclaimer

Wildlife Health AUSTRALIA

Find out more at **www.wildlifehealthaustralia.com.au**

Email **admin@wildlifehealthaustralia.com.au**

Or call **+61 2 9960 6333**