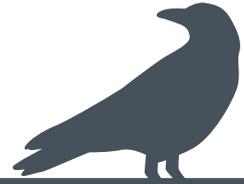


Wildlife Health Australia



Keren Cox-Witton, Silvia Ban and Tiggy Grillo, Wildlife Health Australia; and **Iain East**, Australian Government Department of Agriculture and Water Resources

Wildlife Health Australia (WHA)²⁰ is the peak body for wildlife health in Australia. WHA was established as the Australian Wildlife Health Network in 2002 as an Australian Government initiative to coordinate wildlife health surveillance information across Australia, to support Australia's animal health industries, human health, biodiversity, trade and tourism. WHA collates information from multiple sources into a national database – the Wildlife Health Information System (eWHIS)²¹ – including submissions by WHA subscribers, state and territory WHA coordinators, researchers, and university, zoo and sentinel clinic veterinarians. During the quarter, 159 wildlife disease investigation events were reported into eWHIS (Table 1) and samples were collected from 1370 wild birds for avian influenza surveillance. This report details some of the disease and mortality events in free-living wildlife recorded in eWHIS this quarter. WHA thanks all those who submitted information for this report.

Wild bird mortality events – Newcastle disease and avian influenza exclusion

WHA received 42 reports of wild bird mortality or morbidity investigations from around Australia during the quarter;

investigations may involve a single animal or multiple animals (e.g. mass mortality event). A breakdown of the bird orders represented is presented in Table 2. Reports and samples from sick and dead birds are received from members of the public,

private practitioners, universities, zoo wildlife clinics and wildlife sanctuaries. Avian influenza (AI) was excluded by polymerase chain reaction (PCR) testing for influenza A in 11 of the events as part of Australia's general (sick and dead bird) AI surveillance



Wattlebird (Photo: Max Maddock)

²⁰ www.wildlifehealthaustralia.com.au/Home.aspx

²¹ www.wildlifehealthaustralia.com.au/ProgramsProjects/eWHISWildlifeHealthInformationSystem.aspx

Table 1 Number of disease investigations reported into eWHIS, April to June 2017^a

Bats ^b	Birds ^{c,d}	Feral animals	Frogs	Marsupials
65	42	6	1	45

- a Disease investigations may involve a single animal or multiple animals (e.g. mass mortality event).
b The majority of bat disease investigations are single bats submitted for Australian bat lyssavirus testing.
c Additional sampling for targeted avian influenza surveillance is presented separately.
d Includes native and feral bird species.

Table 2 Wild bird disease investigations reported into eWHIS, April to June 2017

Bird order	Common name for bird order ^a	Events reported ^b
Anseriformes	Magpie geese, ducks, geese and swans	1
Columbiformes	Doves and pigeons	4
Falconiformes	Falcons	1
Gruiformes	Rails, gallinules, coots and cranes	1
Passeriformes	Passerines or perching birds	8
Pelecaniformes	Ibis, herons and pelicans	2
Psittaciformes	Parrots and cockatoos	26

- a Common names adapted from: del Hoyo & Collar 2014. *HBW and BirdLife International Illustrated Checklist of the Birds of the World. Volume 1 – Non-passerines*. Lynx Editions, Barcelona. (Courtesy of the Australian Government Department of the Environment and Energy.)
b Disease investigations may involve a single or multiple bird orders (e.g. mass mortality event). This quarter one wild bird event involved multiple bird orders, which were Falconiformes and Passeriformes.

program. AI exclusion testing was not warranted in the remaining 31 events, based on clinical signs, history, prevailing environmental conditions or other diagnoses. In addition, avian paramyxovirus was excluded in 10 events by PCR testing specific for Newcastle disease (ND) virus and/or pigeon paramyxovirus 1 (PPMV-1).

Detection of pigeon paramyxovirus 1 in a feral pigeon

In May, a feral pigeon (*Columba livia*) found on the ground in Melbourne by a member of the public was submitted to Lort Smith Animal Hospital, presenting with a head tilt, circling, thin body condition and green faeces. The bird was euthanased and submitted to AgriBio Veterinary Diagnostic Services, Bundoora, for investigation. No gross or microscopic evidence of current active infection with PPMV were reported but tissues were positive for PPMV-1 on PCR testing. Pigeon rotavirus and AI were both excluded via PCR testing.

Avian influenza and avian paramyxovirus 1 surveillance

Australia's National Avian Influenza Wild Bird (and Avian Paramyxovirus 1) Surveillance Program comprises two components (with a focus on exclusion testing for AI virus subtypes H5 and H7):

1. Pathogen-specific, risk-based surveillance by sampling of apparently healthy, live and hunter-killed wild birds
2. General surveillance by investigating significant unexplained morbidity and mortality events in wild birds, including captive and wild birds within zoo grounds.

Samples from sick or dead birds were discussed earlier. Sources for targeted wild bird surveillance data include state and territory government laboratories, universities and samples collected through the Northern Australia Quarantine Strategy (NAQS).

During the quarter, pathogen-specific, risk-based surveillance

occurred at sites in New South Wales, North Territory, Queensland, Tasmania and Western Australia. Cloacal and faecal environmental swabs were collected from 1471 waterbirds, with 1471 tested for AI and 1271 for APVM-1. Results are pending.

Non-enterotoxigenic *Vibrio cholerae* strain in ringtail possums

Six subadult ringtail possums (*Pseudocheirus peregrinus*) died in care in Victoria over a period of a week in February 2017. A necropsy of one animal found hepatocellular necrosis with intralesional bacteria. There was heavy growth of *Vibrio cholerae* on culture of a liver swab.

Another possum from the same group in care presented a week later with diarrhoea, dehydration and depression and was euthanased. In addition to hepatocellular necrosis, this animal had severe necrotising typhlocolitis. *V. cholerae* was cultured from the liver and large intestine, and was further

identified by PCR testing as a non-enterotoxigenic strain (not the notifiable²² O1 or O139 strains that cause human cholera).

A variety of non-O1/O139 strains of *V. cholerae* are present in the aquatic environment in Australia and overseas. These strains do not produce cholera toxin but can still be pathogenic to humans, particularly if immunocompromised.^{23,24}

Salmonella enterica subsp. diarizonae infection in western ringtail possum

A wild western ringtail possum (*Pseudocheirus peregrinus occidentalis*) presented in May 2017 to a veterinary clinic in south-west Western Australia with neurological signs, including a head tilt and ataxia. There were no abnormal findings on X-ray, and Toxoplasma serology was negative. After failing to respond to antibiotic, anti-inflammatory and supportive treatment, the possum was euthanased. Histopathology revealed a severe chronic granulomatous, lymphocytic and suppurative encephalitis. *Salmonella enterica* subsp. *diarizonae* was cultured from fresh frozen brain.

This *Salmonella* subspecies is known to infect wild and captive reptiles in Australia²⁵ and is considered a zoonotic risk for people in contact with pet reptiles.²⁶ It is usually associated

with cold-blooded species²⁷ although it has been occasionally identified in Australian native mammals, such as the quokka (*Setonix brachyurus*) in Western Australia and an eastern grey kangaroo (*Macropus giganteus giganteus*) in Queensland.^{28,29}

Australian bat lyssavirus

Reports to WHA for the quarter included 65 bats tested for Australian bat lyssavirus (ABLV) from the Australian Capital Territory, New South Wales, Northern Territory, Queensland, South Australia and Victoria.

Bat submissions were made for a variety of reasons:

- 24 cases involved contact with the potential for ABLV transmission to humans; of these
 - 8 were also associated with trauma (e.g. barbed wire fence or netting entanglement)
 - 4 involved contact with a pet dog or cat
 - 2 displayed neurological signs
 - 1 displayed other (non- neurological) signs
 - 1 was found dead
 - the remainder had no further history reported
- 22 cases involved contact with a pet dog (18) or cat (4)
- 7 bats displayed neurological signs (e.g. aggression, seizures, twitching, head tilt)
- 6 cases were associated with trauma (e.g. netting entanglement, fractures)
- 2 bats displayed other (non- neurological) signs
- 1 bat was associated with a mass mortality event in juveniles

- 1 bat was found dead
- 2 bats had no further history reported at this time.

During the quarter, three flying-foxes from Queensland were confirmed positive for ABLV by PCR testing for pteropid ABLV ribonucleic acid (RNA). An adult male little red flying-fox (*Pteropus scapulatus*) was submitted for testing due to contact with a pet dog. Histopathology found moderate nonsuppurative meningoencephalitis. An adult male spectacled flying-fox (*P. conspicillatus*) presented with neurological signs, including unusual hanging posture, difficulty managing food in the mouth and tongue protrusion. Histopathology was not conducted in this case. An adult male grey-headed flying-fox (*P. poliocephalus*) initially had a swollen left foot. The animal later developed severe aggression, deterioration of mentation and stupor, and inability to eat and drink, and was euthanased. On necropsy, the animal had reduced muscle mass. Histopathology revealed mild nonsuppurative encephalitis with Negri-like bodies in neurons of the medulla and basal ganglia, and aspiration pneumonia. In two of these cases (spectacled and grey-headed flying-foxes) there had been potentially infectious human contact and an experienced public health official provided appropriate counselling and information.

More information on ABLV testing of bats in Australia is available in *ABLV Bat Stats*.³⁰ ABLV is a nationally notifiable disease in Australia. Cases of suspect ABLV infection or exposure should be reported to the Emergency Animal Disease Watch Hotline on 1800 675 888.

22 www.health.gov.au/casedefinitions

23 Islam A, Labbate M, Djordjevic SP, Alam M, Darling A, Melvold J, Holmes AJ, Johura FT, Cravioto A, Charles IG & Stokes HW 2013. Indigenous *Vibrio cholerae* strains from a non-endemic region are pathogenic. *Open Biology* 3: 120181.

24 Trubiano JA, Lee JY, Valcanis M, Gregory J, Sutton BA & Holmes NE 2011. Non-O1, non-O139 *Vibrio cholerae* bacteraemia in an Australian population. *Internal Medicine Journal* 44(5): 508-511.

25 Scheelings TF, Lightfoot D & Holz P 2011. Prevalence of *Salmonella* in Australian reptiles. *Journal of Wildlife Diseases* 47(1): 1-11.

26 Schröter M, Roggentin P, Hofmann J, Speicher A, Laufs R & Mack D 2004. Pet snakes as a reservoir for *Salmonella enterica* subsp. *diarizonae* (Serogroup IIIb): a prospective study. *Applied and Environmental Microbiology* 70(1): 613-615.

27 Brenner FW, Villar RG, Angulo FJ, Tauxe R & Swaminathan B 2000. *Salmonella* nomenclature. *Journal of clinical microbiology* 38(7): 2465-2467.

28 Martínez-Pérez P 2016. Health and disease status in a threatened marsupial, the quokka (*Setonix brachyurus*). PhD thesis, Murdoch University.

29 Thomas AD, Forbes-Faulkner JC, Speare R & Murray C 2001. Salmonellosis in wildlife from Queensland. *Journal of Wildlife Diseases* 37(2): 229-238.

30 www.wildlifehealthaustralia.com.au/ProgramsProjects/BatHealthFocusGroup.aspx