Wildlife Health Australia

Tiggy Grillo, Keren Cox-Witton and Sam Gilchrist, Wildlife Health Australia; and Iain East, Department of Agriculture

Wildlife Health Australia (WHA)[3] is the peak body for wildlife health in Australia. WHA was established as the Australian Wildlife Health Network (AWHN) 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)[4]—including submissions by WHA subscribers, state and territory WHA coordinators, researchers, and zoo and sentinel clinic veterinarians. In April–June 2015, 176 wildlife disease investigation events were reported into eWHIS (Table 1). 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 84 reports of wild bird mortality or morbidity from around Australia in April–June 2015. A breakdown of the bird orders 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 14 of the events as part of Australia's general (sick and dead bird) AI surveillance program. AI exclusion testing was not warranted in the remaining 70 events based on clinical signs, history, prevailing environmental conditions or other diagnoses. In addition, avian paramyxovirus was excluded in 9 events by PCR testing specific for Newcastle disease (ND) virus and/or pigeon paramyxovirus 1 (PPMV-1).

Avian influenza surveillance

Australia's National Avian Influenza Wild Bird (NAIWB) Surveillance Program comprises two sampling components:

- pathogen-specific, risk-based surveillance by sampling of apparently healthy, live and hunter-killed wild birds
- general surveillance by investigating significant unexplained morbidity and mortality events in wild birds, including captive and wild birds in zoo grounds (with a focus on exclusion testing for AI virus subtypes H5 and H7).

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

During the quarter, targeted surveillance of healthy, live wild birds occurred at sites in New South Wales, Queensland, South Australia, Tasmania and Western Australia. Cloacal, oropharyngeal and/or faecal environmental swabs were collected from 1874 waterbirds and waders. No highly pathogenic AI viruses were identified. A number of positive swabs to low pathogenicity AI are undergoing further testing.

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Table 1 Number of disease investigations reported into eWHIS, April–June 2015[a]

Bats[b]	Birds	Marsupials	Feral animals	Snakes and lizards	Monotremes	Marine mammals
55	84	24	6	1	2	4

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.

Table 2 Wild bird disease investigations reported into eWHIS, April–June 2015

Bird order	Common name for bird order[5]	Events reported[a]
Anseriformes	Magpie geese, ducks, geese and swans	9
Columbiformes	Doves and pigeons	2
Falconiformes	Falcons	3
Gruiformes	Rails, gallinules, coots and cranes	2
Passeriformes	Passerines or perching birds	5
Pelecaniformes	Pelicans	7
Procellariiformes	Fulmars, petrels, prions and shearwaters	2
Psittaciformes	Parrots and cockatoos	51
Sphenisciformes	Penguins	2
Strigiformes	Typical owls and barn owls	1

a Disease investigations may involve a single or multiple bird orders (e.g. mass mortality event).

3 www.wildlifehealthaustralia.com.au

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

5 Common names adapted from: del Hoyo and 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 Department of the Environment).

Rainbow lorikeet paralysis (clenched claw) syndrome

During the quarter, 21 events involving individual rainbow lorikeets (*Trichoglossus haematodus*) were recorded in eWHIS. A clinical diagnosis, by a veterinarian, of beak and feather diseases was reported for 19 events, after birds were presented with ill-thrift, weakness, trauma and/or feather abnormalities.

During the same period, investigations were finalised into the earlier presentation of more than 30 rainbow lorikeets to Australia Zoo's wildlife hospital with variable degrees of paresis or paralysis. The birds were submitted from locations between the Sunshine Coast and Brisbane, Queensland, during January and February 2015. Examples of clinical signs included an inability to fly and/or stand upright, changes in vocalisation and/or paralysis of the third eyelid. Only a few birds recovered after a number of months in care with supportive treatment. In most cases, treatment was largely unrewarding and many of the birds were euthanased due to associated emaciation.

Six birds were submitted to Queensland's Biosecurity Sciences Laboratory for investigation. Queensland Health Forensic and Scientific Services analyses of ante-mortem blood samples from three birds were negative for ethanol, which can be associated with consumption of fermented berries. At necropsy, all birds were noted to be in poor condition. Histopathology of spinal cord sections revealed evidence of Wallerian degeneration in the white matter tracts of three of the four examined birds, accompanied by nonsuppurative encephalomyelitis in one bird and poliomyelitis in another. AI and ND viruses were excluded by PCR testing in two birds. Three birds investigated for decreased brain cholinesterase (ChE) levels, to assess organophosphorus and carbamate pesticide exposure, returned likely normal levels in two birds (39 and 25 µmol/min/g). The third bird had possibly reduced ChE (16 µmol/min/g) but this bird had poliomyelitis and was not considered a useful candidate for pesticide screening. Kidney lead assays from three birds all returned negative or negligible lead levels.

Photo: Dollar Photo Club

Further investigation included virus isolation attempts from brain and spinal cord of two birds, which were both negative. A PCR test, using a degenerative set of primers designed to detect all known avian bornaviruses, was performed at the University of Sydney. Tested samples included brain swabs and combined brain–spinal cord cell cultures from two birds; all samples were negative.

These cases appear to be broadly consistent with what has previously been described as rainbow lorikeet paralysis (clenched claw) syndrome[6]. Lorikeet paralysis syndrome has been recognised in Eastern Australia since the 1970s. The aetiology of this syndrome is not known[6] despite a number of suggested but unproven theories, including viral infection, thiamine deficiency and cadmium/lead poisoning. Multiple aetiologies are likely, given the wide range of clinical presentations and laboratory findings that are associated with this syndrome.

Low numbers of affected birds are known to recover completely from the usual presentation of bilateral flexed hocks and clenched feet and an inability to perch[6]. Some birds can continue to live and adapt by resting on their hocks[7]. In the absence of a defined aetiology, this event illustrates the current suite of exclusion testing available for the investigation of lorikeet paralysis syndrome.

Australian bat lyssavirus

Reports to WHA for the April–June 2015 quarter included 55 bats tested for Australian bat lyssavirus (ABLV) from Australian Capital Territory, New South Wales, Northern Territory, Queensland, South Australia, Victoria and Western Australia.

Bat submissions were made for a variety of reasons:

- 17 cases involved contact or suspected contact with the potential for ABLV transmission to humans; of these
  - 6 were associated with trauma (e.g. car, fence or netting entanglement)
  - 3 involved contact with a pet dog or cat
  - 1 displayed neurological signs
  - 1 displayed weakness or depression
  - the remainder had no further history reported
- 16 cases involved contact with a pet dog (14 bats) or cat (2 bats)
- 8 bats displayed neurological signs, including abnormal behaviour, aggression, tremors, repetitive movements, seizures, hypersensitivity, abnormal vocalisation, star-gazing and paralysis
- 6 bats displayed other clinical signs (respiratory signs, weakness, depression, sudden death in care)
- 3 cases were associated with trauma (e.g. barbed wire entanglement)
- 1 bat was found dead
- 4 bats had no further history reported at this time.

During the quarter, three flying foxes were confirmed positive for ABLV by PCR testing for pteropid ABLV ribonucleic acid (RNA); of these, one black flying fox (*Pteropus alecto*) was from north-east Queensland and one grey-headed flying fox (*P. poliocephalus*) and one unspecified flying fox (*Pteropus* sp.) were from coastal New South Wales.

The black flying fox was a juvenile found in a yard not hanging as expected and was later found to have neurological signs (tremor, hypersensitivity to touch and abnormal vocalisation) and was euthanased. There was possible contact reported with a pet dog in this case.

The grey-headed flying fox was found unwell and on its own. It was euthanased after it did not respond to treatment.

The third flying fox, which had been rescued by a member of the public, was found to be injured and died overnight. In this case, potentially dangerous human contact was reported and an experienced public health official provided appropriate counselling and information.

Necropsy and histopathology findings of these flying foxes variously included mild to moderate nonsuppurative meningoencephalitis with neuronal necrosis and Negri bodies, sialoadenitis, alveolar pneumonia and excessive parasitism with Nycteribiidae flies (*Cyclopodia albertisii*).

More information on ABLV testing of bats in Australia is available in *ABLV Bat Stats*[7].

6 Wildlife Health Australia. *Rainbow lorikeet paralysis (clenched claw) syndrome fact sheet*. December 2014 www.wildlifehealthaustralia.com.au/Portals/0/Documents/FactSheets/Lorikeet%20Paralysis%2019%20Dec%202014%20(1.0).pdf

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