Wildlife Health Australia

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Wildlife Health Australia (WHA)[4] 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)[5] — including submissions by WHA subscribers, state and territory WHA coordinators, researchers, and zoo and sentinel clinic veterinarians. During the quarter, 179 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.

4 www.wildlifehealthaustralia.com.au

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

Table 2 Wild bird disease investigations reported into eWHIS, October–December 2015

Bird order	Common name for bird order[a]	Events reported[b]
Anseriformes	Magpie geese, ducks, geese and swans	8
Charadriiformes	Shorebirds	4
Columbiformes	Doves and pigeons	2
Coraciiformes	Bee-eaters and kingfishers	1
Falconiformes	Falcons	1
Gruiformes	Rails, gallinules, coots and cranes	2
Passeriformes	Passerines or perching birds	2
Pelecaniformes	Ibis, herons and pelicans	11
Podicipediformes	Grebes	1
Psittaciformes	Parrots and cockatoos	11
Sphenisciformes	Penguins	2

a 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 Government Department of the Environment).

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

Wild bird mortality events — Newcastle disease and avian influenza exclusion

WHA received 41 reports of wild bird mortality or morbidity investigations from around Australia in October–December 2015. 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 nine 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 32 events, based on clinical signs, history, prevailing environmental conditions or other diagnoses. In addition, avian paramyxovirus was excluded in 6 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; and general surveillance by investigating significant unexplained morbidity and mortality events in wild birds, including captive and wild birds within 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, pathogen-specific, risk-based surveillance occurred at sites in Victoria, Northern Territory and Western Australia with faecal environmental swabs collected from 751 waterbirds. Results are pending.

Chronic phalaris toxicity in Bennett's wallabies

During the six months preceding October 2015, it is estimated that up to 100 Bennett's wallabies (*Macropus rufogriseus rufogriseus*) died on a single property located just north of Hobart, Tasmania. Wallabies observed just prior to death appeared disorientated and some were also in poor body condition.

Gross necropsy findings of a single adult female wallaby were consistent with chronic weight loss. Histopathological examination revealed widespread

Table 1 Number of disease investigations reported into eWHIS, October–December 2015[a]

Bats[b]	Birds	Marsupials	Feral animals	Snakes and lizards	Freshwater turtles	Monotremes	Marine mammals	Marine turtles
106	41	15	10	1	2	1	0	3

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.

dissemination of intracytoplasmic brown granules in neuronal bodies in the cerebrum, thalamus and brain stem and limited distribution of intracytoplasmic brown granules in renal tubular epithelium (kidney) and myocardial cells (heart). The significant histological findings throughout the brain are suggestive of chronic phalaris toxicosis (phalaris staggers). The property where affected wallabies were found had a mix of scrub and improved pasture, including phalaris (*Phalaris aquatica*).

Phalaris can be found throughout agricultural areas of Tasmania and is occasionally associated with toxicity in livestock[6]. The toxicity is attributed to the presence of certain alkaloids in the leaves and although toxicity in Australian livestock is consistently reported, Alden et al stated that the epidemiology of the disease remained unclear[7].

Chronic phalaris toxicity has previously been reported in eastern grey kangaroos (*M. giganteus*) in Victoria[8,9] and red kangaroos (*M. rufus*) and wallabies grazing phalaris-dominant swards in captivity (Munday, pers comm, 2009)[10]. Affected macropods display a variety of neurological signs, including ataxia, muscle tremors, a wide-based stance and sporadic collapse. Often, these clinical signs are exacerbated when the animals are approached.

There are many challenges when investigating the epidemiology of suspected plant poisonings in free-ranging wildlife. In contrast to the domestic livestock setting, precise spatial and temporal details of the interaction between wildlife and potentially toxic plants are not often available to sample. In addition, many free-ranging animals have developed mechanisms to cope with plant toxins, such as avoidance, dilution, degradation or detoxification[11]. If defense mechanisms fail or there is ecological disturbance, such as loss of preferred or suitable forage, weed overgrowth or some underlying health issue, ingestion of toxic plants may be detrimental leading to wildlife morbidity or mortality[12,13]. Other documented plant poisonings in Australian wildlife include hepatotoxicity and secondary photosensitisation in red kangaroos following ingestion of lantana (*Lantana camara*)[14], suspected pyrrolizidine alkaloid hepatotoxicosis in southern hairy-nosed wombats (*Lasiorhinus latifrons*) associated with consumption of potato weed (*Heliotropium europaeum*)[15] and crystal-associated hepatopathy consistent with intoxication by steroidal saponins in eastern grey kangaroos (AHSQ Vol. 19 Issue 2).

Australian bat lyssavirus

Reports to WHA for the October–December quarter included 123 bats tested for Australian bat lyssavirus (ABLV) from New South Wales, Northern Territory, Queensland, Victoria and Western Australia.

Bat submissions were made for a variety of reasons:

- 38 cases involved contact or suspected contact with the potential for ABLV transmission to humans; of these
  - 8 were also associated with trauma
  - 10 displayed neurological signs and 2 displayed other clinical signs
  - 3 also involved contact with a pet dog or cat
  - the remainder had no further history reported
- 46 cases involved contact with a pet dog (34 bats) or cat (12 bats)
- 10 bats displayed neurological signs
- 9 bats presented with other clinical signs
- 6 cases were associated with trauma (e.g. barbed wire or netting entanglement)
- 6 bats were found dead
- 8 bats had no further history reported at this time.

During the quarter, 13 flying foxes were confirmed positive for ABLV by PCR testing for pteropid ABLV ribonucleic acid (RNA); of these, eight grey-headed flying foxes (*Pteropus poliocephalus*) were from various locations in New South Wales and two little red flying foxes (*P. scapulatus*), two black flying foxes (*P. alecto*) and one spectacled flying fox (*P. conspicillatus*) were from south-east, central and far north Queensland.

The ABLV-positive flying foxes presented with a variety of neurological and other clinical signs, including aggression, abnormal behaviour, agitation, paresis, vocalising, biting, twitching, drooling, inability to fly, respiratory distress, aspiration, unresponsiveness and emaciation. In those flying foxes where histology was conducted, changes included nonsuppurative meningitis and/or meningoencephalitis (mild to severe) with occasional Negri-like bodies in neurons. In one case, no histological abnormalities were detected in the brain. Potentially dangerous human contact was reported in seven of these cases and an experienced public health official provided appropriate counselling and information.

Among the ABLV-positive flying foxes were three 3–4-week-old juvenile grey-headed flying foxes rescued from amongst numerous dead juvenile flying foxes at a New South Wales Central Coast flying fox roost in November. A large number of people, including many who were not vaccinated, had contact with the infected bats; all were provided with appropriate follow-up by an experienced public health official. This event was a useful reminder that all bats, including very young juveniles, can be infected with ABLV. Central Coast Local Health District circulated a media release about the event[16], warning the community not to handle bats and to call on the expertise of a vaccinated wildlife carer if an injured or trapped bat is found. NSW Department of Primary Industries circulated a Chief Veterinary Officer Bulletin to wildlife carers[17].

More information on ABLV testing of bats in Australia is available in *ABLV Bat Stats*[18].

6 Lane P, Morris D, Bridle K and Eyles A (2015). *Common grasses of Tasmania*. Cradle Coast NRM, NRM North, NRM South and the University of Tasmania.

7 Alden R, Hackney B, Weston LA and Quinn JC. (2014). Phalaris Toxicoses in Australian Livestock Production Systems: Prevalence, Aetiology and Toxicology. *Journal of Toxins* 1(1): 7.

8 AHSQ Vol. 6 Issue 4

9 Bacci B, Whiteley PL, Barrow M, Phillips PH, Dalziel J and El-Hage CM (2014). Chronic phalaris toxicity in eastern grey kangaroos (Macropus giganteus). *Australian Veterinary Journal* 92(12): 504–508.

10 Munday (pers comm) cited by Ladds P. (2009). In: *Pathology of Australian Native Wildlife*. CSIRO Publishing.

11 Fowler ME (1983). Plant poisoning in free-living wild animals: a review. *Journal of Wildlife Disease* 19(1): 34–43.

12 Fowler (1983)

13 Woolford L, Fletcher MT and Boardman WSJ. Suspected pyrrolizidine alkaloid hepatotoxicosis in wild southern hairy-nosed wombats (Lasiorhinus latifrons) (2014). *Journal of Agricultural and Food Chemistry* 62(30): 7413–7418.

14 Woolford et al (2014)

15 Johnson JH and Jensen JM (1998). Hepatotoxicity and secondary photosensitization in a red kangaroo (Megaleia rufus) due to ingestion of Lantana camara. *Journal of Zoo and Wildlife Medicine* 29(2): 203–207.

16 www.cclhd.health.nsw.gov.au/News/media/20151201%20Health%20alert%20-%20Australian%20Bat%20Lyssavirus.pdf

17 www.vpb.nsw.gov.au/sites/default/files/images/NEWS_20151218_DPI_CVO Bulletin bat lyssavirus infection in juvenile bats.pdf

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