Australian Wildlife Health Network

Tiggy Grillo, Projects Coordinator, Australian Wildlife Health Network, and Lyndel Post, Office of the Chief Veterinary Officer, Australian Government Department of Agriculture, Fisheries and Forestry

The Australian Wildlife Health Network (AWHN)[2] is an Australian Government initiative that coordinates wildlife health surveillance information across Australia, with emphasis on supporting Australia's livestock health, trade, human health and biodiversity. In doing so, the AWHN collates information from a number of sources into a national database — the wildlife health information system (eWHIS)[3] — including submissions by AWHN subscribers, state and territory wildlife coordinators, researchers and zoo veterinarians. This report details some of the wildlife disease and mortality events recorded in eWHIS for the January–March quarter. The AWHN would like to thank all those who submitted information for this report.

Highlights

96 wild bird mortality or morbidity investigations were reported

40 bats were tested for Australian bat lyssavirus

Wild bird mortality events — Newcastle disease and avian influenza exclusions

Ninety-six wild bird mortality or morbidity event investigations were reported to the AWHN from across Australia during January, February and March of this year. Samples from sick and dead birds included submissions from members of the public, private practitioners, universities, zoo wildlife clinics and wildlife sanctuaries.

Avian influenza (AI) was excluded by PCR for influenza A in 42 of the events as part of Australia's passive (sick or dead bird) AI surveillance program. AI exclusion testing was not warranted in the remaining 54 events based on clinical signs, history, prevailing environmental conditions or other diagnoses. In addition, avian paramyxovirus (APMV) was excluded by PCR specific for Newcastle disease virus and/or pigeon paramyxovirus 1 (APMV-1) in 29 events, including 6 in native columbid (pigeon or dove) species, 7 in introduced (feral) free-ranging species or rock dove (*Columba livia*) and 2 involving an unspecified pigeon species.

APMV-1 in pigeons (see AHSQ Vol. 16 Issue 3) was first detected in Victoria in August 2011, and the first confirmed report in a free-ranging bird (the common, introduced feral rock dove [*C. livia*; also referred to as the feral pigeon]) in Melbourne, Victoria, was reported in AHSQ Vol. 16 Issue 4. During the current quarter, APMV-1 was confirmed as the cause of mortality and morbidity in 11 events in free-ranging birds from numerous locations across Melbourne. Feral rock doves were involved in 9 of these confirmed events and suspected in a further 36 events. Given the temporal sequence and close proximity to known infected premises, it is likely that the source of infection in free-ranging feral pigeons was domestic pigeons. One event represents a westward extension in the known range of APMV-1 disease in feral rock doves (see the Victoria state report, page 18).

APMV-1 was also confirmed in two new free-living species during this period. In one event, two sick collared sparrowhawks (*Accipiter cirrocephalus*) were submitted by a park ranger who had been monitoring a family of sparrowhawks in a central Melbourne park. Only one of the two birds submitted for necropsy had histopathological lesions and molecular evidence (by PCR) of infection with APMV-1. This was the first native species confirmed to be infected with APMV-1 in Australia. APMV-1–infected feral pigeons had previously been confirmed in the immediate area. Based on similar reports from countries where pigeon paramyxovirus is endemic,[4] it is likely that infection in the sparrowhawk resulted from high virus challenge associated with recent predation on diseased pigeons. The risk to raptor species was further assessed using bird sighting data (courtesy of Birdlife Australia) and known diet preference. Native raptor species in the Melbourne area considered to be susceptible to infection (should they feed on infected pigeons) include the brown goshawk (*A. fasciatus*), and the Australian hobby (*Falco longipennis*) and peregrine (*F. peregrinus*) falcons.

A spotted turtle dove (*Streptopelia chinensis*), an introduced feral species, was the second confirmed case of APMV-1 in a new species. This bird had been in close contact with a group of semi-feral rock doves that have been previously diagnosed with APMV-1. Australian native columbid species most likely to be at risk of infection in Melbourne, based on bird sighting data and likely interaction with *C. livia*, are the crested pigeon (*Ocyphaps lophotes*) and common bronzewing (*Phaps chalcoptera*; data courtesy of Birdlife Australia). Australian native columbids, which have Gondwanan and Asian faunal elements, show exceptional genetic, phenotypic and ecological diversity, as well as a high level of endemism, compared with Australian feral species and columbid species found in North America and Eurasia. As such, it is hard to predict the potential susceptibility of native columbids to infection by, or their potential for transmission of, APVM-I. All cases of mortality or morbidity

2 www.wildlifehealth.org.au

3 www.wildlifehealth.org.au/AWHN/Subscribers/SubscribeLogin.aspx

4 Forbes NA, Simpson GN (1997). A review of viruses affecting raptors. *Veterinary Record* 141:123126.

in native avian species continue to be investigated as part of APMV-1 investigations in Victoria.

Necrotic enteritis in free-living rainbow lorikeets

Since the start of March 2012, necrotic enteritis is believed to have caused mortality and morbidity in free-living rainbow lorikeets (*Trichoglossus haematodus*) at 14 sites in the northern and eastern suburbs of Melbourne, Victoria. At one site, more than 32 deaths were recorded. A number of these events occurred where the birds were being fed by members of the public.

Clinical signs included diarrhoea, vomiting, regurgitation and lethargy; dead birds were also found. Necropsies of six birds at the University of Melbourne and two at the Department of Primary Industry (DPI) Attwood Veterinary Laboratory revealed distended intestines with watery or dark red–brown content and often focal airsacculitis. Multifocal mucosal to transmural necrosis of the mid to lower intestine, with intralesional stout gram-positive cocci, was a consistent histopathological finding and is consistent with *Clostridium* sp. AI and Newcastle disease viruses (by PCR), psitticosis (by histopathology), and salmonellosis and yersiniosis (by bacterial culture) were excluded. To date, attempts to isolate a *Clostridium* species from fresh intestine have been unsuccessful; however, the investigation is ongoing.

The history, clinical presentation and pathology of these cases are consistent with previous reports of necrotic enteritis in sick or dead lorikeets. Over a 10-year period, McOrist and Reece (1992)[5] examined 58 sick or dead, free-living lorikeets (*Trichoglossus* spp.) from Victoria and New South Wales. Species affected included rainbow, red-collared (*T. haematodus rubritorquis*) and scaly-breasted (*T. chlorolepidotus*) lorikeets, with up to 95% of a flock affected. Birds may be seasonally affected with necrotic enteritis; sick lorikeets were most often observed in July and August.[6] Necrotic enteritis is believed to result from intestinal overgrowth of *Clostridium perfringens* associated with carbohydrate overload, precipitated by inappropriate hand and supplementary feeding.[5] Poor hygiene is also believed to be a precipitating factor. It is recommended that free-living lorikeets are not fed by members of the public.[7]

Wildlife Health Surveillance Victoria acted as a central reporting point for this disease event and had a coordinating role for public awareness. Laboratory investigations by the University of Melbourne and the DPI Attwood Veterinary Laboratory were partly funded through the National Significant Disease Investigation Program. This collaborative approach enabled a comprehensive investigation to be undertaken. Advice was provided to the public about the risks of hand and supplementary feeding, and precautions to be taken when disposing of dead birds.

Avian influenza wild bird surveillance

... swabs were collected from 2181 waterbirds ... No highly pathogenic AI viruses were identified.

As part of Australia's avian influenza (AI) surveillance program, a combination of live (healthy and sick) and dead (including hunter-killed) wild birds are targeted. Samples from sick or dead birds are discussed above. Sources for active wild bird surveillance data include state and territory government laboratories, universities, and samples collected through the Northern Australia Quarantine Strategy program.

During the quarter, surveillance of targeted, healthy, live wild birds occurred at sites in New South Wales, Victoria, Queensland, Tasmania and Western Australia. Fresh faecal environmental, cloacal or oropharyngeal swabs were collected from 2181 waterbirds (ducks and waders). No highly pathogenic AI viruses were identified. A number of positive swabs to low-pathogenic AI are undergoing further tests. However, surveillance activities this quarter continue to find evidence of a wide range of subtypes of low-pathogenic AI viruses, including low-pathogenic H5, H8 and H12.

Through the National Avian Influenza Wild Bird Surveillance program, all influenza A subtypes (H1–H16) except H14 have been identified from Australian wild birds. Low-pathogenic H5 has been detected every year in wild birds, and in most jurisdictions (except the Northern Territory and Queensland). The program identifies the H5 subtype as a risk to the Australian poultry industry. Poultry producers should therefore remain alert and review biosecurity arrangements at their premises to ensure that effective measures to reduce risk are in place.

5 McOrist S, Reece RL (1992). Clostridial enteritis in free-living lorikeets (*Trichoglossus* spp.). *Avian Pathology* 21:35033507.

6 Rose K (2005). *Common diseases of urban wildlife: birds*, Australian Registry of Wildlife Health, Sydney. www.arwh.org/sites/default/files/files-uploads/Common%20Diseases%20of%20Birds_no_images.pdf

7 NSW Office of Environment and Heritage (2011). *The dangers of feeding lorikeets*. www.environment.nsw.gov.au/animals/TheDangersOfFeedingLorikeets.htm

Australian bat lyssavirus

Reports to the AWHN for the January–March quarter included 40 bats tested for Australian bat lyssavirus (ABLV) from New South Wales, Queensland, Victoria and South Australia. Bat submissions were made for a variety of reasons: 19 cases involved contact with the potential for ABLV transmission to humans, 2 of which also involved trauma, and one involved a bat displaying unusual and aggressive behaviour and other neurological signs; 7 bats presented based on pet contact (dog or cat); 2 bats were reported to display unusual, aggressive or agitated behaviour or other neurological signs; 5 bats presented with other (non-neurological) clinical signs; 5 bats were submitted following trauma only; and 2 bats were found dead. None of the bats submitted this quarter tested positive for ABLV.

In Queensland, two bats negative for ABLV presented with neurological signs. One was a grey-headed flying fox (*Pteropus poliocephalus*) found lying on its back on the ground at Gympie. The animal had small superficial wounds over its head, but X-rays showed no fractures, and wing membranes were undamaged. The bat was euthanased. Mild to moderate trauma, including fracture of an orbit, was evident on necropsy. This animal also had severe multifocal hepatic necrosis associated with numerous protozoal organisms, tentatively identified as *Hepatocystis* sp. merocysts based on histology. This parasite occurs occasionally as an incidental finding in flying fox tissues, but in this case it was considered to be the primary cause of the clinical syndrome. eWHIS contains two previous reports with a note of incidental findings of *Hepatocystis* sp. merocysts — both from wild juvenile black flying foxes (*P. alecto*). In the first case, from south-east Queensland in 2001, merocysts were observed in the kidney. In the second case, from central Queensland during the period June–July 2007, merocysts were observed in the liver and lung. *Hepatocystis* spp. are haemosporidian protozoa (Apicomplexa: Plasmodiidae). In addition to the above reports, *Hepatocystis* spp. have been documented in the bare-backed fruit bat (*Dobsonia moluccensis*) and spectacled flying fox (*Pteropus conspicillatus*) in Australia.[8]

The second case was a juvenile black flying fox that developed tremors and ataxia while in care as an orphan. This animal was found to have cerebellar hypoplasia on necropsy and histology, as well as myositis of unknown cause.

Photo by CSIRO

8 O'Donoghue PJ, Adlard RD (2000). Catalogue of protozoan parasites recorded in Australia. *Memoirs of the Queensland Museum* 45:1–163.