Wildlife Health Australia

Tiggy Grillo, National Coordinator, Wildlife Health Australia; Keren Cox-Witton, Senior Project Officer, Wildlife Health Australia; and Rachel Wicks, Epidemiology and One Health, Australian Government Department of Agriculture

Wildlife Health Australia (WHA; formerly the Australian Wildlife Health Network)[2] is the peak body for wildlife health in Australia. WHA is an Australian Government initiative that coordinates wildlife health surveillance information across Australia, to support Australia's animal health industries, human health, biodiversity, trade and tourism. WHA collates information from a number of sources into a national database — the Wildlife Health Information System (eWHIS)[3] — including submissions by WHA subscribers, state and territory WHA coordinators, researchers and zoo veterinarians. This report details some of the wildlife disease and mortality events in free-living wildlife recorded in eWHIS for the April–June quarter. WHA would like to thank all those who submitted information for this report.

Wild bird mortality events — Newcastle disease and avian influenza exclusions

WHA received 77 reports of wild bird mortality or morbidity from across Australia from April to June 2014. 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 PCR for influenza A in 19 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 58 events, based on clinical signs, history, prevailing environmental conditions or other diagnoses. In addition, avian paramyxovirus was excluded in 19 events by PCR specific for Newcastle disease virus and/or pigeon paramyxovirus 1.

Avian influenza surveillance

Australia's National Avian Influenza Wild Bird Surveillance Program comprises two sampling components: targeted surveillance by sampling 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 influenza 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 program.

During the quarter, targeted surveillance of healthy, live wild birds occurred at sites in New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia. Cloacal, oropharyngeal and/or faecal environmental swabs were collected from 1853 waterbirds. No highly pathogenic AI viruses were identified. A number of positive swabs to low pathogenicity AI are undergoing further testing.

Eastern grey kangaroo mortality in New South Wales — plant toxicity

Between 7 April and 20 May 2014, approximately 85 eastern grey kangaroos (*Macropus giganteus*) presented with blindness in the Wagga Wagga region of New South Wales. Most of the kangaroos subsequently died or were humanely euthanased in accordance with legislative requirements.

The New South Wales Department of Primary Industries (NSW DPI) and the New South Wales Office of Environment and Heritage were initially alerted by reports from WIRES (Wildlife Information, Rescue and Education Service) volunteers. Reports included juvenile and adult eastern grey kangaroos presenting with blindness or stressed/erratic behaviour, or found dead following stress-related myopathy and/or misadventure (e.g. hit by cars, caught in a fence). One swamp wallaby was also observed with similar clinical signs but could not be recovered for investigation. There were no further reports of other wildlife, livestock or domestic species affected.

Twelve kangaroos were submitted to Charles Sturt University Veterinary School for diagnostic investigation, which included necropsy, histopathology, biochemistry and haematology. Consistent changes in affected animals included elevated liver enzymes, jaundice, ventral corneal oedema, anterior uveitis and keratitis, necrotising dermatitis, and hepatitis with intralesional saponin crystals. The crystal-associated hepatopathy is consistent with intoxication by steroidal saponins, suggesting that affected animals had ingested a toxic plant or weed. Bacterial, fungal and protozoal aetiologies were excluded. Additional testing at the NSW DPI Elizabeth Macarthur Agricultural Institute was negative for viral agents, including Wallal virus. New South Wales Health detected no significant toxins in water samples collected from local dams and stock troughs. Caltrop (*Tribulus terrestris*) and *Panicum* sp. were found where affected kangaroos were grazing.

Steroidal saponins are known toxic constituents of several poisonous plants and weeds. In Australia, plants containing steroidal saponins include native perennial

2 www.wildlifehealthaustralia.com.au
3 www.wildlifehealthaustralia.com.au/ProgramsProjects/eWHISWildlifeHealthInformationSystem.aspx

grasses such as hairy panic (*Panicum effusum*) and sweet grass (*P. gilvum*), and introduced species such as witchgrass (*P. capillare*) and caltrop. These toxic plants are a recognised source of hepatogenous photosensitisation for grazing livestock, specifically sheep (see AHSQ Vol. 18 Issue 1, p. 13; Vol. 17 Issue 1, p. 21; Vol 15 Issue 1, p. 20). Charles Sturt University is investigating to confirm this event as saponin-induced photosensitisation in native wildlife species, determine the plant species involved, and better understand the link between ingestion of a toxic plant and the presenting signs seen in these eastern grey kangaroos. Further analysis of the pasture surveys conducted during the event will also aim to determine the relative quantities of the toxic species in relation to natural feed grazed by kangaroos, such as ryegrass and native grasses.

Australian bat lyssavirus

Reports to WHA for the April–June quarter included 92 bats tested for Australian bat lyssavirus (ABLV) from New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia. Bat submissions were made for a variety of reasons:

- 23 cases involved contact or suspected contact with the potential for ABLV transmission to humans; of these
  - 4 were also associated with trauma (e.g. barbed wire entanglement)
  - 4 displayed neurological signs or aggressive behaviour
  - 3 also involved contact with a pet dog, which in some cases had interacted with the owners
  - the remainder had no further history reported
- 36 cases involved contact with a pet dog (30 bats), cat (5 bats) or other animal (1 bat)
- 17 bats displayed neurological signs, including self-mutilation, aggression, screaming, convulsions, paralysis, paresis, inability to swallow, dilated pupils, stargazing, ataxia, head tremor and/or opisthotonus
- 8 cases were associated with trauma
- 2 bats presented with weakness or depression
- 1 bat was found dead
- 5 bats had no further history reported.

In addition to the bats described above, 28 insectivorous bats submitted by Queensland bat carers tested negative for ABLV this quarter, as part of an ongoing surveillance project conducted by the Queensland Centre for Emerging Infectious Diseases.

During the quarter, 10 flying foxes were confirmed positive for ABLV by PCR for pteropid ABLV RNA; of these, 5 little red flying foxes (*Pteropus scapulatus*), 1 black flying fox (*P. alecto*) and 1 grey-headed flying fox (*P. poliocephalus*) were from south-eastern and northern Queensland; 1 grey-headed flying fox was from Sydney; 1 unspecified flying fox (*Pteropus* sp.) was from south-western New South Wales; and 1 black flying fox was from northern Western Australia. The New South Wales cases are discussed on page 12.

Eight of the 10 flying foxes presented with neurological signs; 1 also had trauma from barbed wire. Potentially dangerous human contact was reported in 5 of the 10 cases, and appropriate counselling and information were provided by an experienced public health official. ABLV-positive cases of particular interest are described below.

One lactating female little red flying fox was found on the ground convulsing violently and foaming from the mouth. At necropsy, the bat was found to be in poor nutritional condition. Histological findings included mild nonsuppurative meningoencephalitis; mild, diffuse pulmonary emphysema; and granulomas of unknown cause in the liver (considered an incidental finding). The attached pup appeared normal, but 5 days later developed lethargy and then became comatose; it was euthanased. There were no significant gross or histopathology findings in the pup, which tested negative for ABLV.

An adult male little red flying fox was found with neurological signs. It had hindlimb weakness that progressed to an inability to move, salivation and a glassy-eyed appearance. No gross abnormalities were detected at necropsy. Brain histopathology revealed moderately severe nonsuppurative encephalitis with neuronal necrosis. Another adult male little red flying fox was found on the ground clinging to a palm frond. It was very aggressive and stargazing, with no evidence of trauma. No gross abnormalities were detected at necropsy apart from dark-red, wet lungs. Histopathology showed nonsuppurative meningoencephalitis and severe nonsuppurative meningomyelitis. In both bats, sections of lung revealed granulomatous protozoal pneumonia associated with haemosporidian schizonts. There were similar findings in three other bats that tested negative for ABLV this quarter and in one that tested negative in March. Investigation to identify this parasite is ongoing.

More information on ABLV testing of bats in Australia is available in *ABLV Bat Stats*.[4]

4 www.wildlifehealthaustralia.org.au/ProgramsProjects/BatHealthFocusGroup.aspx