

Wild Bird News

National Avian Influenza Wild Bird Surveillance Newsletter - December 2022

Avian Influenza Virus

To date, 16 haemagglutinin (HA; H1-H16) and 9 neuraminidase (NA; N1-N9) subtypes are recognised in birds. **Waterfowl and shorebirds are the main natural reservoirs and rarely show signs of disease.** Avian Influenza Virus (AIV) can cause significant infectious disease in domestic poultry and can also infect and/or cause disease in a range of other species including other captive birds, wild birds, and humans^{1,2}.

Of global concern is the capacity of AIV subtypes H5 and H7 to mutate from Low Pathogenicity (LPAI) into **High Pathogenicity (HPAI)** forms which can cause significant losses in both poultry and wildlife, and potentially human health issues.

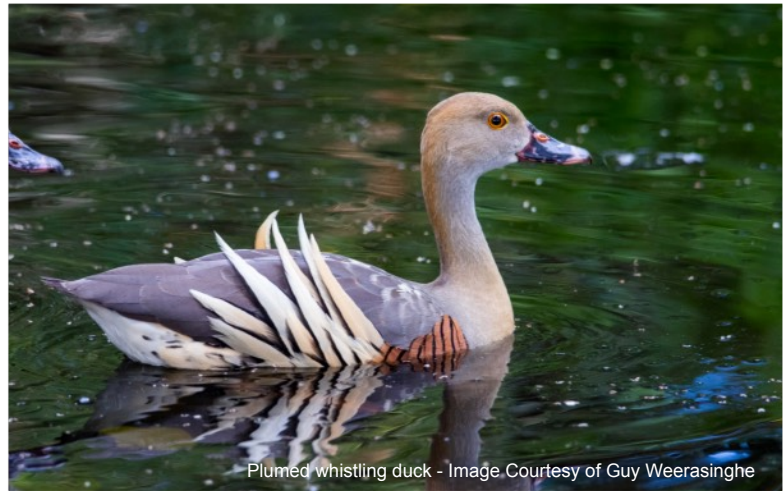
AIV in Australia

HPAI H5 viruses have not been detected in Australia. As of December 2022, there have been eight outbreaks due to HPAI H7 viruses in commercial Australian poultry operations between 1976 and 2020 in the states of Victoria, Queensland and New South Wales^{3,4,5,6,7,8,9}.

Mortality due to AIVs have not been reported in feral or native free-ranging birds¹⁰. However, **LPAI viruses have been detected in wild birds in Australia.**

Given Australia's geographic and ecological isolation, **it is important that assumptions about AIV epidemiology in Australia are not based entirely on studies from Asia, Europe or North America**^{11,12}.

More info: [WHA FACT SHEET](#)



Plumed whistling duck - Image Courtesy of Guy Weerasinghe

National Avian Influenza Wild Bird Surveillance Activities

In 2006, the National Avian Influenza Wild Bird (NAIWB) Steering Group was formed with the aim of facilitating nationwide coordination and cooperation for surveillance efforts related to avian influenza in wild birds. Assisting the NAIWB Steering Group, Wildlife Health Australia takes on the role of overseeing the wild bird surveillance program. The NAIWB surveillance initiatives encompass the entire country and activities are funded by the Australian Department of Agriculture, Fisheries and Forestry (DAFF). Substantial in-kind support is provided by local governmental bodies, researchers, and various representative institutions.

Surveillance activities include two sampling components: The targeted surveillance element, in which faecal environmental swabs, as well as cloaca and/or oropharyngeal swabs, are collected from wild birds that are apparently healthy, as well as from hunter-shot wild birds of known avian influenza virus (AIV) reservoir species such as waterfowl and shorebirds. These samples undergo testing to identify the presence of AIVs. The collection of samples is done by diverse initiatives, including programs run by state and territorial government agencies, university research projects, and the Northern Australia Quarantine Strategy.

The second component is the general surveillance, which focus on investigating wild birds' significant morbidity and mortality events, including avian populations within zoos (e.g. collection birds or free-ranging wild birds). Reports and samples from sick or deceased

birds are submitted by members of the public, private veterinary practitioners, universities, zoo wildlife clinics, and wildlife sanctuaries.

Global High Pathogenicity Avian Influenza

Informational documents developed by the National Avian Influenza Wild Birds Steering Group in 2022

Between 2021 and 2022, the H5N1 clade 2.3.4.4b of highly pathogenic avian influenza (HPAI) has been responsible for ongoing outbreaks among wild birds across substantial portions of America, Europe, Asia, and Africa. These outbreaks have led to fatalities across a diverse array of species, encompassing both isolated bird deaths and instances of mass mortality. While earlier studies concluded that the likelihood of HPAI strains entering Australia via migratory birds was minimal, the current global circumstances have likely increased the risk level for Australia. The return of migratory birds from the northern hemisphere to Australia during spring months introduces a heightened probability of HPAI virus introduction in comparison to previous years.



Curlew - Image Courtesy of Guy Weerasinghe

Following the NAIWB Steering Group Technical Issue Update on Global High Pathogenicity Avian Influenza Events in February 2022, Wildlife Health Australia created additional outreach materials* in consultation with DAFF and key experts to raise awareness amongst the following groups about the increased risk to Australia of HPAI H5N1 clade 2.3.4.4b viruses:

- People who encounter sick or dead wild birds
- Veterinarians and other animal health professionals
- Bird banders, wildlife rangers and researchers

WHA, in collaboration with members of the NAIWB Steering Group, presented on Bird flu and the future risk to Australian wild birds at Australasian Shorebird Conference, 30 October 2022.

Other WHA resources on avian influenza virus include:

- WHA fact sheet: [Avian influenza in wild birds in Australia](#)
- [National Wildlife Biosecurity Guidelines](#)
- Australia's [Wild Bird Avian Influenza Surveillance Program](#)

Further information can be found at:

- Australian Department of Agriculture, Fisheries and Forestry: [information on avian influenza \(bird flu\)](#) and [information for bird owners](#).
- Australian Department of Health and Aged Care:
 - ✦ [Avian influenza in humans](#)
 - ✦ [Australian Health Management Plan for Pandemic Influenza](#)
 - ✦ [The Communicable Diseases Network Australia \(CDNA\) National Guidelines for Public Health Units on Avian Influenza](#)

Data provided in this document should be considered preliminary and may be changed.

* Outreach material revised and updated in 2023.

- Centers for Disease Control and Prevention: [Information on Bird Flu](#)
- World Organisation for Animal Health & IUCN SSC Wildlife Health Specialist Group: [Avian influenza and Wildlife: Risk management for people working with wild birds](#)

The NAIWB Steering Group recommended additional activities and with funds provided by the Office of Australian Chief Veterinary Officer, the following projects have commenced to:

- Evaluate the high pathogenicity avian influenza risk to Australia.
- Re-evaluate natural incursion pathways.
- Assess the efficacy of the wild bird surveillance program, and
- Assess our capacity to respond rapidly should an incursion occur.



Beach stone-curlew - Image Courtesy of Guy Weerasinghe

AVIAN INFLUENZA IS A NATIONAL NOTIFIABLE DISEASE AND REQUIRES REPORTING TO THE CHIEF VETERINARY OFFICER (CVO) AT THE APPROPRIATE AUSTRALIAN STATE OR TERRITORY

If you would like information about Avian Influenza testing and sample collection, please seek advice from your local [WHA Coordinator](#) or call the [Emergency Animal Disease Hotline](#) (1800 675 888).



Targeted surveillance update - Jul to Dec 2022

Between July and December 2022, AIV-specific, risk-based surveillance occurred at sites in New South Wales, Northern Territory, Queensland, South Australia, Tasmania, Victoria and Western Australia with cloacal and faecal environmental swabs collected from 3458 apparently healthy and hunter-shot waterbirds. Samples were tested using RT-PCR for AIV M (matrix) gene detection. Influenza A reactors (positives) to the influenza A matrix gene PCR were tested using specific qRT-PCRs for influenza A H5 and H7. Samples for which H5/H7 subtypes were detected by RT-PCR were dispatched to the CSIRO Australian Centre for Disease Preparedness (ACDP) for confirmatory and further testing.

Targeted surveillance - Influenza A virus detections (Jul - Dec 2022)

State / Territory	# Individual Swabs Collected ^a	# Positives ^b	H5 LPAI	H5 HPAI	H7 LPAI	H7 HPAI	Other LPAI HA Subtypes ^c
NSW	591	9	0	0	1	0	H4, H6, H8, H10
NT	214	4	0	0	0	0	H1, H9
Qld	1065	3	0	0	0	0	H6
SA	741	10	0	0	0	0	H2, H4, H6, H9, H11
Tas	210	4	0	0	0	0	H6
Vic	318	37	5	0	0	0	H3, H4, H8, H10, H11
WA	319	2	0	0	0	0	H8
Total	3458	69	5	0	1	0	

^a Swabs include faecal environmental swabs.

^b A number of swabs were tested as a pooled sample (up to 3 swabs in one pool). A positive pool represents one AIV positive. A sample is considered AIV positive if either: a) Positive at original lab; b) Indeterminate at original lab and subsequently tested positive; c) Indeterminate at original lab and subtyped at any lab.

^c When positive AIV samples (not identified as H5 or H7) are submitted for subtyping and successful.

Between July and December 2022, no HPAI viruses were identified, but targeted surveillance continues^{12,13} to find evidence of a wide range of low pathogenicity virus subtypes, including LPAI H5 and H7.

There were no detections of H5 lineage 2.3.4.4.

Molecular analysis of AIVs detected through the targeted surveillance activities contribute to: tracking Australian virus evolution and dynamics, maintaining currency of diagnostic tests, maintaining a virus sequence library allowing comparison of Australian and overseas strains. This information informs risk to industry and response to detections in poultry.

From July to December 2022, species targeted for sampling were from the order Anseriformes and Charadriiformes.

Other bird orders may have been present during sample collections. All samples collected during this period were faecal environmental swabs.

In addition to sampling above, the long standing NAIWB Steering Group members Michelle Wille and Marcel Klaassen have taken a representative sample of the key migrant birds coming to Australia from East Asia and further afield between September and December 2022.

Samples collected in collaboration with the Northern Australia Quarantine Strategy, the Australasian Wader Studies Group, the Victorian Wader Study Group and the Victorian Ornithological Research Group have found '**No evidence for HPAI 2.3.4.4b incursion into Australia in 2022**'.¹⁵

General surveillance - Jul to Dec 2022

Wild bird morbidity and mortality investigation are reported into the Australia's wildlife health information system (eWHIS) via a network of state / territory WHA coordinators (appointed by their respective Chief Veterinary Officer), and WHA environment representatives, the Northern Australia Quarantine Strategy (NAQS), veterinarians at zoo-based wildlife hospitals and sentinel wildlife clinics, university clinics and pathology departments, researchers, other wildlife health professionals and WHA members. General surveillance summary tables (below) are drawn from data entered into eWHIS.

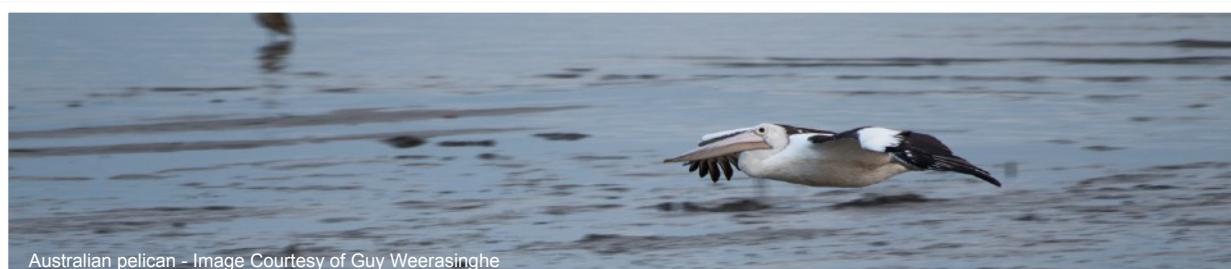
WHA received 55 reports of wild bird mortality or morbidity investigations from around Australia from July to December 2022, which were tested for AIV by PCR for influenza A. Investigations may involve a single animal or multiple animals (e.g. mass mortality event). Reports and samples from sick and dead birds are received from members of the public, private practitioners, universities, zoo wildlife clinics and wildlife sanctuaries.

General surveillance - mortality and morbidity events in which birds were tested for Influenza A viruses (Jul - Dec 2022)

Bird Order	Common Names for Bird Order ¹⁵	Number of Events AIV Tested via PCR ^a	Number of Events AIV Positive
Accipitriformes	Osprey, hawks and eagles	4	0
Anseriformes	Magpie Goose, ducks, geese and swans	4	0
Caprimulgiformes	Frogmouth and nightjars	2	0
Charadriiformes	Shorebirds	4	0
Columbiformes	Doves and pigeons	9	0
Galliformes	Brush turkeys and quails	2	0
Passeriformes	Passerines or perching birds	9	0
Pelecaniformes	Ibis, herons and pelicans	4	0
Procellariiformes	Petrels and shearwaters	6	0
Psittaciformes	Parrots and cockatoos	8	0
Sphenisciformes	Penguins	1	0
Suliformes	Gannets and cormorants	7	0

^a Disease investigations may involve a single or multiple bird orders (e.g. mass mortality event). The number of events where AIV was tested via PCR against each bird order do not equal the total number of investigations due to multi-species events. During the semester, three wild bird events involved multiple bird orders tested for AIV. One event involved Pelecaniformes and Suliformes, the second involved Charadriiformes, Columbiformes, Pelecaniformes and Suliformes and the third involved Anseriformes and Charadriiformes.

Avian influenza was not confirmed as the cause of any wild bird morbidity or mortality event between July and December 2022 reported to eWHIS.



Australian pelican - Image Courtesy of Guy Weerasinghe

Disclaimer

This document was developed and approved by the National Wild Bird Avian Influenza (NAIWB) Steering Group for information purposes only. NAIWB Steering Group was established to ensure national coordination and collaboration of wild bird avian influenza surveillance activities. Wildlife Health Australia provides support to the NAIWB Steering Group and collates avian influenza surveillance data from wild birds sampled across Australia. Information contained in it is drawn from a variety of sources external to Wildlife Health Australia. Data is provided on an “as is” basis and may be changed periodically; these changes may or may not be incorporated in any new version of the publication. Although reasonable care was taken in its preparation, Wildlife Health Australia does not guarantee or warrant the accuracy, reliability, completeness, or currency of the information or its usefulness in achieving any purpose. To the fullest extent permitted by law, Wildlife Health Australia will not be liable for any loss, damage, cost or expense incurred in or arising by reason of any person relying on information in this document. You may download, display, print and reproduce this material in unaltered form only for personal, non-commercial use or use within your organisation, provided due acknowledgement is made of its source. For any other use of the material contained in this document (including, but not limited to any text, illustration, table, or any other material), written permission must be obtained with Wildlife Health Australia and the NAIWB Steering Group.

References

- 1 Olsen B et al. 2006. Global Patterns of Influenza A Virus in Wild Birds. *Science* 312, 384-388.
- 2 Feare CJ. 2010. Role of wild birds in the spread of highly pathogenic Avian Influenza Virus H5N1 and implications for global surveillance. *Avian Diseases* 54, 201-212.
- 3 Barr DA et al. 1986. Avian Influenza on a multi-age chicken farm. *Australian Veterinary Journal* 63, 195-196.
- 4 Selleck PW et al. 1997. Identification and Characterisation of an H7N3 influenza A virus from an outbreak of virulent avian influenza in Victoria. *Australian Veterinary Journal* 75, 289-292.
- 5 Selleck PW et al. 2003. An outbreak of highly pathogenic avian influenza in Australia in 1997 caused by H7N4 virus. *Avian Diseases* 47(s3), 806-811.
- 6 Turner AJ. 1976. The isolation of fowl plague virus in Victoria. *Australian Veterinary Journal* 52, 384.
- 7 Westbury HA. 1997. History of highly pathogenic avian influenza in Australia. In: Swayne DE and Slemons RD editors. *Proceedings of the 4th International Symposium on Avian Influenza*, May 29–31, Athens, Georgia. Symposium on Avian Influenza, US Animal Health Association: Richmond, VA, 22–30.
- 8 World Organisation for Animal Health (OIE). 2021. The World Animal Health Information System. <https://wahis.oie.int/#/home>. Accessed September 2021.
- 9 Scott A et al. 2020. An overview of avian influenza in the context of the Australian commercial poultry industry. *One Health*, 10, p.100139.
- 10 Arzey G. 2004 The role of wild aquatic birds in the epidemiology of avian influenza in Australia. *Australian Veterinary Journal* 82, 377-378.
- 11 Klaassen M et al. 2011. Identifying crucial gaps in our current knowledge of the life-history of Avian Influenza Viruses – an Australian perspective. *Emu* 111, 103–112.
- 12 Grillo et al. 2015. Avian influenza in Australia: a summary of 5 years of wild bird surveillance. *Australian Veterinary Journal*. 93 (11): 387–393.
- 13 Haynes et al. 2009 Australian surveillance for avian influenza viruses in wild birds (July 2005 to June 2007). *Australian Veterinary Journal*. 87 (7): 266-272
- 14 Wille, M. and Klaassen, M., 2023. No evidence for HPAI H5N1 2.3. 4.4 b incursion into Australia in 2022. *Influenza and Other Respiratory Viruses*, 17(3).
- 15 del Hoyo, J and Collar, NJ. 2014. *HBW and BirdLife International Illustrated Checklist of the Birds of the World. Volume 1: Non-passerines*. Lynx Edicions and BirdLife International, Barcelona, Spain and Cambridge, UK.