



# OFFLU AVIAN INFLUENZA REPORT

FEBRUARY 2020 TO SEPTEMBER 2020

## SCOPE

In this document we present a summary of H5, H7 and H9 avian influenza A virus events reported from February 2020 to September 2020

## **Avian influenza A viruses**

The H5/H7/H9 epidemiologic summary was generated using data from the Food and Agriculture Organization of the United Nations (FAO) EMPRES Global Animal Disease Information System (EMPRES-i). EMPRES-i is an information system designed to facilitate the compilation of animal disease data from different sources, such as the World Organisation for Animal Health (OIE), government Ministries of Agriculture and veterinary services and partner Non-Governmental Organizations (NGOs). Only data for confirmed reports in environmental samples, wild birds, captive wild birds and domestic birds were used; suspect cases were excluded, which, for this reporting period included H5 HPAI from South Africa, as results were based solely on serology. Sequence data and viruses were shared by the OFFLU network and OIE/FAO partner countries and we are very grateful for their collaboration. We acknowledge and thank the OIE Reference laboratory and diagnostic laboratory teams at APHA, IZSve, AAHL, FLI and NVSL for their expertise in data analyses and compiling the report. The Cambodian samples were received courtesy of Institut Pasteur du Cambodge (Erik Karlsson) and sample batches were sequenced by CSIRO ACDP, Geelong as well as the WHO H5 Reference Lab at the WHO Collaborating Centre for Reference & Research on Influenza in Melbourne. WHOCCRRI has kindly passed their zoonotic data on to include in the OFFLU package.

Avian influenza A virus haemagglutination inhibition (HI) assay antigenic data in this reporting period was generated by IZSve using WHO-CC and OFFLU-provided ferret-origin reagents and harmonised protocols.

### **Avian influenza A virus vaccination**

In some countries, including Viet Nam, Indonesia, Bangladesh, and Egypt, H5 and others vaccination is employed as part of overall control efforts to endemic viruses. Currently, in China, vaccination of poultry is mandatory in all provinces (including chickens, ducks, geese, quails, pigeons and other rare birds in captivity). From September 2017, a government sponsored campaign using a bivalent H5/H7 vaccine (H5 2.3.4.4 Re-8 based on A/chicken/Guizhou/4/13(H5N1); H7N9 Re-1)

have been implemented. Although the backbone HA sequence for the H7 component of the bivalent vaccine is based on A/pigeon/Shanghai/S1069/2013(H7N9), the HA sequence was modified to reflect changes in more contemporary viruses in order to improve the antigenicity and titre of the vaccine strain. Institutions in China also produce various other H5 and H9 vaccines. Current understanding is that RE-13 is the H5 vaccine representative and RE-2 is the H7 component.

Despite the risk of potential incursion of Asian lineage H7N9, H7 vaccination is currently banned in Viet Nam, Lao PDR, Myanmar or Cambodia. Active surveillance for reportable H5 and H7 viruses occurs in poultry along the border in these countries.

# Global H5, H7 and H9 avian influenza events in animals

## Epidemiology

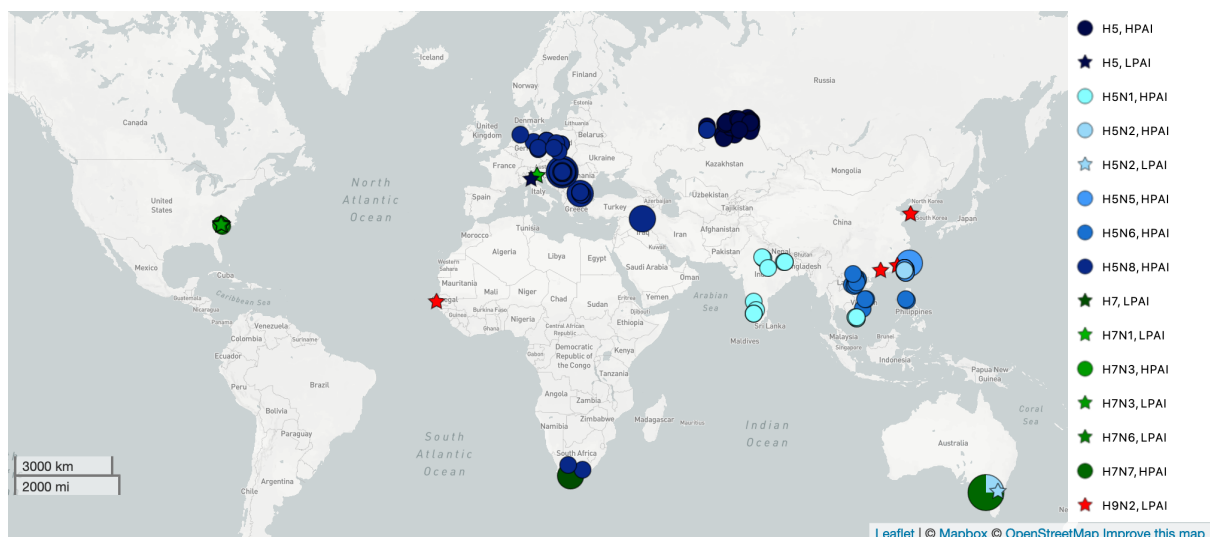
The majority of H5 events were due to the Goose/Guangdong (GsGD) H5 clades of HPAI. Several countries reported H5 LPAI in domestic birds. H7 LPAI was reported in wild and domestic birds in Europe and North America and H7 LPAI and HPAI was reported in Australia.

While it is not officially reportable, H9 viruses can significantly impact poultry. A highly poultry-adapted Asian lineage H9N2 continues to cause production losses in many countries in Africa, Asia, and in the Middle East. The majority of the poultry-adapted H9N2 virus reports for this period were submitted directly from partner laboratories rather than through official channels.

## Regional geographic summary and context

Figure 1: H5, H7 and H9 events for the current reporting period – 1 March 2020 to 17 September 2020. Points are colored by subtype. Shape denotes low pathogenic (star) or highly pathogenic (circle) avian influenza A viruses.

Note: geographic centroid coordinates were used for reports where no precise geolocation was available.



## Europe:

- **HPAI H5N8 clade 2.3.4.4b**
  - HPAI H5N8 in Poland, Bulgaria, then Germany in domestic birds in February and March.
  - HPAI H5N8 in a wild buzzard in Germany in late March
  - HPAI H5N8 also in Hungary in March through April, into May in domestic birds
  - HPAI H5N8 few detections in domestic birds in Hungary and Bulgaria in early June
  - HPAI H5N8 in domestic birds one detection in Russia in late July
  - HPAI H5 in Russia through August into September in domestic birds and a wild mute swan
    - In September in Russia subtyped HPAI H5N8

## Asia:

- Kazakhstan HPAI H5 in Kazakhstan in a wild duck in early September, then domestic birds into mid September
- Iraq **HPAI H5N8** in May in domestic birds
- India **HPAI H5N1 clade 2.3.2.1a** in March; domestic birds, and wild house crow (may have eaten domestic birds)
- China, Taiwan, Viet Nam, Philippines
- **HPAI H5N1 clade 2.3.2.1c** in Viet Nam only; in April, July, and Aug in domestic birds
- **HPAI H5N6 clade 2.3.4.4g** in Viet Nam; from February to September in domestic birds
  - **Clade?** Two detections in the Philippines (March, July)
- **LPAI H9N2** was detected in China in Mar-May, species not identified
- **HPAI H5N2 clade 2.3.4.4c** in Taiwan only; in Feb/Mar and Aug in domestic birds
- **HPAI H5N5 clade 2.3.4.4c** in Taiwan only; from March to August in domestic birds. Reported epidemiology of avian influenza in Taiwan underwent dramatic change in the subtypes of avian influenza viruses detected. H5N2 and H5N5 subtypes of the clade 2.3.4.4c. The number of notified cases has increased this summer, and whole genome sequencing is still in progress.

## Africa

- Senegal
  - **LPAI H9N2** in domestic bird in September

## Americas (US)

- **LPAI H7N3** in Turkey in March and **HPAI H7N3** in turkey in April

## Oceania (Australia)

- **HPAI H7N7** in Jul/Aug (one location) in domestic birds

- **LPAI H5N2** same location as HPAI H7N& (poultry free-range layer) and one additional location close by; in domestic birds
- **LPAI H7N6** separate location; domestic birds

- H5N1 (2.3.2.1c) and H5N6 (2.3.4.4h) HPAI from Cambodia 2018-2019.
- H9N2 LPAIv from Cambodia 2019 of Y280-like lineage.

Sequence data for 50 H5, 13 H7, and 29 H9 were contributed to OFFLU by animal health laboratories in countries representing Europe, Asia, Africa, Oceania, and the Americas to which was added sequences from Genbank and GISAID.

## A(H5), A(H7), A(H9) activity

Since February 2020, A(H5) viruses of the A/goose/Guangdong/1/96 lineage have been detected in both humans and birds as summarised in Table 1.

Additional summarised outbreak report data from EMPRES-i for H5 LPAI, H7 and H9 for this reporting period.

<b>Table 1. H5, H7 and H9 activity reported to international agencies since February 2020</b>		
<i>Country, area or territory</i>	<i>Host</i>	<i>Genetic clade</i>
Bangladesh	Poultry	2.3.2.1a (H5N1), 2.3.4.4h (H5N6)
Bulgaria	Poultry	2.3.4.4b (H5N8)
Cambodia	Poultry Poultry	2.3.4.4h (H5N6) 2.3.2.1c (H5N1)
China	Poultry	2.3.4.4h (H5N6)
Czech Republic	Poultry	2.3.4.4b (H5N8)
Egypt	Poultry	2.3.4.4b (H5N8)
Germany	Wild bird Poultry	2.3.4.4b (H5N8) 2.3.4.4b (H5N8)
Hungary	Poultry	2.3.4.4b (H5N8)
Kazakhstan	Wild bird Poultry	Unknown (H5)
India	Wild bird Poultry	2.3.2.1a (H5N1) 2.3.2.1a (H5N1)
Iraq	Poultry	Unknown (H5N8)
Poland	Poultry Poultry	Unknown (H5N6) Unknown (H5N8)
Republic of the Philippines	Poultry	Unknown (H5N6)
Romania	Poultry	2.3.4.4b (H5N8)
Russian Federation	Poultry	2.3.4.4b (H5N8)
Taiwan	Poultry Poultry	2.3.4.4c (H5N2) 2.3.4.4c (H5N5)
Viet Nam	Poultry	2.3.2.1c (H5N1); 2.3.4.4g (H5N6); 2.3.4.4h (H5N6)
Australia Italy Taiwan	Poultry	H5 LPAI
United States	Poultry	H7N3 HPAI

Australia	Poultry	H7N7 HPAI
Australia Italy United States	Poultry	H7 LPAI
China Pakistan Senegal	Poultry	H9N2 LPAI