SCIENTIFIC REPORT

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Avian influenza overview February – May 2021

European Food Safety Authority,
European Centre for Disease Prevention and Control and
European Union Reference Laboratory for Avian Influenza

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Abstract

The 2020-2021 epidemic with a total of 3,555 reported HPAI detections and around 22,400,000 affected poultry birds in 28 European Countries appears to be one of the largest and most devastating HPAI epidemics ever occurred in Europe. Between 24 February and 14 May 2021, 1,672 highly pathogenic avian influenza (HPAI) virus detections were reported in 24 EU/EEA countries and the UK in poultry (n=580), and in wild (n=1,051) and captive birds (n=41). The majority of the detections in poultry were reported by Poland that accounted for 297 outbreaks occurring in a densely populated poultry area over a short period of time, followed by Germany with 168 outbreaks. Germany accounted for 603 detections in wild birds, followed by Denmark and Poland with 167 and 56 detections, respectively. A second peak of HPAI-associated wild bird mortality was observed from February to April 2021 in north-west Europe. The observed longer persistence of HPAI in wild birds compared to previous years may result in a continuation of the risk for juveniles of wild birds and mammals, as well as for virus entry into poultry farms. Therefore, enhanced awareness among farmers to continue applying stringent biosecurity measures and to monitor and report increases in daily mortality and drops in production parameters, are recommended. Sixteen different genotypes were identified to date in Europe and Russia, suggesting a high propensity of these viruses to reassort. The viruses characterized to date retain a preference for avian-type receptors; however, transmission events to mammals and the identification of sporadic mutations of mammal adaptation, indicate ongoing evolution processes and possible increased ability of viruses within this clade to further adapt and transmit to mammals including humans. Since the last report, two human infections due to A(H5N6) HPAI were reported from China and Laos and 10 human cases due to A(H9N2) low pathogenic avian influenza (LPAI) virus identified in China and Cambodia. The risk of infection for the general population in the EU/EEA is assessed as *very low* and for occupationally exposed people *low*. People exposed during avian influenza outbreaks should adhere to protection measures, strictly wear personal protective equipment and get tested immediately when developing respiratory symptoms or conjunctivitis within 10 days after exposure.

Keywords: avian influenza, HPAI/LPAI, monitoring, poultry, captive birds, wild birds, humans
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1. Introduction

This scientific report provides an overview of highly pathogenic avian influenza (HPAI) virus detections in poultry, captive and wild birds and noteworthy outbreaks of low pathogenic avian influenza (LPAI) virus in poultry and captive birds, and human cases due to avian influenza virus, reported in and outside Europe between 24 February and 14 May 2021, 1 p.m. (CET). Notification of LPAI outbreaks is no longer compulsory as of 21 April 2021 due to the entry into force Regulation (EU) 2016/429 on transmissible animal diseases ('Animal Health Law')[1], therefore only LPAI outbreaks that occurred before 21 April 2021 are included in the current report.

The background, Terms of Reference and their interpretation are described in Appendix A and the data and methodologies are reported in Appendix B.

2. Main observation and conclusions

A description of the Avian influenza outbreaks in European countries and in other countries of interest between 24 February and 14 May 2021, 1 p.m. (CET), is presented below.

2.1. Main observations

- In Europe, between 24 February and 14 May 2021 10 a.m. (based on the Animal Disease Notification System (ADNS), ADIS and information provided by affected countries[2]):
  - 1,672 HPAI A(H5) detections were reported in poultry, and captive and wild birds: 580 outbreaks in poultry, predominantly in Poland (n=297), Germany (n=168) and Lithuania (n=37); 1,051 detections in wild birds, in Germany (n=603), Denmark (n=167), Poland (n=56) and Sweden (n=51); and 41 outbreaks in other captive birds;
  - Two LPAI outbreaks were reported in poultry: one A(H7N3) by Germany and one A(H5N3) by France.
- Compared to the 2016-2017 epidemic season, in the current A(H5N8) epidemic in Europe the outbreak has lasted longer in poultry and wild birds, with a second peak of reported HPAI detections in wild birds in northern Europe from February to April 2021.
- The high number of A(H5N8) outbreaks in poultry in Poland occurred within a short time and in densely populated poultry areas. The observed evolution of the epidemic appears to be related to transmission of infection between poultry establishments (following initial introductions of the HPAI A(H5) viruses from the wild reservoir), and through the intra-community trade of infected duck. Genomic analysis of the detected HPAI A(H5) virus strains could help in clarifying the dynamics of the epidemic.
- Several outbreaks in rural and commercial poultry have been linked to the national or intra-community trade of live HPAI infected poultry.
- The number of reported outbreaks in domestic birds for Asia, Africa and the Middle East was lower than in the previous time period (45 vs. 227) (EFSA et al., 2021).Further, only ten infected wild birds were reported in the relevant time period for this report (8 vs. 156). The unexpected relatively strong decrease of outbreaks for this quarter could also be the result of underreporting due to the update of the international notification systems during the reporting period.
- Whole genome sequencing of 2.3.4.4b HPAI A(H5) viruses collected in Europe and Central Asia since July 2020 revealed the co-circulation of sixteen distinct genotypes, confirming a high propensity of this virus to undergo multiple reassortment events. The most widespread genotype belongs to the A(H5N8) subtype, which was also responsible for some cases in wild

[1] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0429&rid=8
[2] The date of suspicion is used as reference date, when the date of suspicion is not available then the date of confirmation is used as reference date.

mammals (fox and seals) reported in England and Sweden, as well as for one human case reported in Russia (Astrakhan region) in December 2020.

- A marker for mammalian adaptation (PB2-E627K) was identified in one A(H5N5) virus collected from backyard poultry in Romania, this mutation in the PB2 protein has previously been identified in avian influenza viruses collected from wild mammals and humans and has been shown to correlate with increased replication and virulence in mice.
- Two human infections due to A(H5N6) HPAI have been reported from China (1) and Laos (1) and 10 human cases due to A(H9N2) LPAI virus were identified in China (9) and Cambodia (1) since the last report.

2.2. Conclusions

- Following the first report of human cases due to avian influenza A(H5N8) virus, the risk of infection for the general population in the EU/EEA is assessed as *very low*, and for occupationally exposed people *low*.
- The risk of transmission to humans by exposure to contaminated poultry products is considered *negligible* as also outlined in a previous EFSA assessment (EFSA AHAW Panel, 2017).
- The viruses characterized to date retain a preference for avian-type receptors; however, the recent reports of transmission events of A(H5) viruses to mammals, e.g. seals and foxes, as well as a human case in Russia, in addition to the sporadic identification of mutations of mammal adaptation, indicate adaptation processes that could increase the ability of viruses within this clade to transmit to mammals including humans.
- The 2020-2021 epidemic with a total of 1,247 outbreaks in poultry, 22,4 million birds affected, 65 detections in captive birds, and 2,243 HPAI events in wild birds in 28 European Countries appears to be one of the largest and most devastating HPAI epidemics ever occurred in Europe. Also, the number of reported wild bird events is an underestimate of the total number of wild birds that have died from HPAI during this epidemic.
- The high number of A(H5N8) outbreaks in poultry in Poland and in other Member States confirms how dangerous HPAI virus incursions into densely populated poultry areas can be if it is not possible to immediately put in place necessary measures to prevent and control the spread of the disease. In such situations, maintaining high levels of biosecurity, improving early detection, and strengthening emergency response, are the most important actions to be rapidly implemented.
- The observed longer persistence of HPAI in wild birds, compared to previous years, may indicate a continuation of the risk for the juveniles of several species of wild birds and mammals, as well as for virus entry into poultry farms.
- The long duration of the avian influenza risk period could represent a challenge for the sustainability of the reinforced biosecurity measures implemented along the poultry chain (e.g., compulsory indoor confinement of free-range poultry) in high-risk areas or production sectors. The persistent presence of HPAI A(H5) viruses in wild birds and the environment, and the possible reduction of biosecurity compliance might increase the risk of avian influenza incursions with the potential further spread between establishments, primarily in areas with high poultry densities.

3. Options for response

- Enhanced awareness among farmers to continue applying stringent biosecurity measures, and to monitor and report increases in daily mortality and drops in production parameters (EFSA et al., 2017), such as egg production and food and water intake, is recommended.
- In case of a HPAI outbreak, immediate restrictions to the movement of live poultry and at-risk poultry commodities should be enforced. Particularly in countries and geographical areas at risk

of HPAI infection, controls on live poultry movements should be strengthened. Rigorous hygienic and biosecurity standards should be applied to vehicles dedicated to the transport of live birds.

- Juvenile wild birds and mammals at risk of HPAI infection because they are wild waterbirds, because they feed on wild waterbird carcasses, or because their habitat overlaps with that of wild waterbirds, should be considered for HPAI testing.
- Cross-sectoral cooperation and communication between animal and public health and occupational safety and health (OSH) authorities is recommended (One Health approach) to initiate rapid response, follow-up and control measures.
- Continued surveillance of avian influenza virus in wild birds and poultry in Europe, combined with timely generation and sharing of complete viral genome sequences, are crucial. These efforts have led to the detection of new virus introductions and novel reassortant viruses and mutations associated with adaptation to mammals. Continued monitoring together with in-depth analyses on virus evolution and genetic mutations, resulting in changes in viral properties that are relevant for animal and public health, are of utmost importance. More efforts should be made by reporting countries to genetically characterize a higher number of samples.
- The evolution and increasing occurrence of reassortment events and mutations associated with human adaptation needs to be closely monitored. Surveillance in mammals and humans should be strengthened, especially in those areas with high virus circulation or where the virus with markers of mammalian adaptation have been observed. This would facilitate early identification of virus transmission events from birds to wild or domestic mammals and/or humans, and subsequently between humans.
- People should avoid touching sick or dead birds or bird droppings unprotected. Wearing personal protective equipment (PPE, face mask, goggles/face shield/protective glasses, gloves and gown/overall) when directly exposed to birds, their products or droppings, which may potentially be infected or contaminated with avian influenza viruses, will minimise any residual risk.
- People potentially exposed to infected birds, e.g. during culling operations, should be adequately protected and actively monitored or at least self-monitor for respiratory symptoms or conjunctivitis for 10 days following exposure and immediately inform local health and occupational health or other preventive services to initiate testing and follow-up. Antiviral pre- or post-exposure prophylaxis should be considered for exposed people according to national recommendations.
- Occupational safety and health measures should be set according to national legislation where workers could be exposed, and health surveillance should be offered according to national requirements (see Section 4.6.1 for more detail).
- The initiation of sero-epidemiological studies in exposed people following HPAI outbreaks is strongly encouraged to identify transmission events and support risk assessments.

4. Results

4.1. Overview of HPAI outbreaks in Europe during the previous and current seasons

Figures 1 and 2 show the HPAI outbreaks detected in birds (poultry, wild and captive birds) in Europe and reported via ADNS for seasons 2016–2017, 2017–2018, 2018–2019, 2019–2020 and 2020–2021 by week of suspicion and geographical distribution, respectively. A season is the period that starts in week 40 (the beginning of October) and ends in week 39 (the end of September) of the following year. For the current season, 2020–2021, data reported are truncated at the middle of week 19 (on 14 May 2021), as the season is still ongoing. A comparison among the geographical distribution of HPAI detections in the current 2020–2021 epidemic season to date and those recorded in 2016–2017 which was the largest recorded in the EU/EEA in terms of number of poultry outbreaks, geographical spread and number of dead wild birds, is shown in Figure 3.

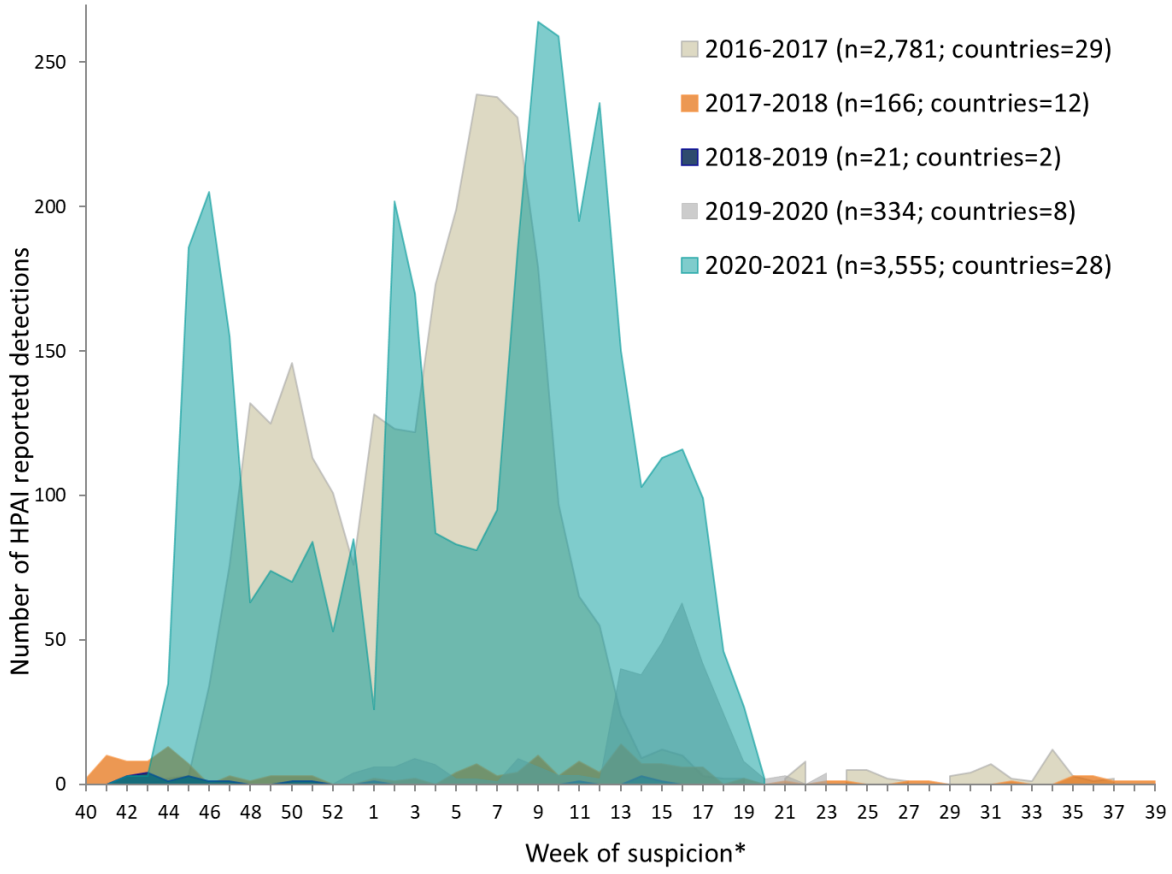
The analysis of the characteristics of current 2020–2021 avian influenza seasons, from October 2020 to 14 May 2021, is reported in Figure 4 and 5 by week of suspicion and virus subtype.

Comparison of the HPAI detections in wild birds and poultry between 2016-2017 and 2020-2021 (Figure 3) shows differences in the start, spread and course of the overall epidemic in Europe (the end cannot yet be compared because the 2020/2021 epidemic is still ongoing). At the start of the epidemic in October 2016, the most westerly limit was the border between Poland and Germany (about 14 degrees E), while in October 2020 it was already reported in Ireland (about 9 degrees W), with many reports in Germany, Denmark and the Netherlands (up to about 4 degrees E).

This was mirrored by the westward spread of the virus in the next two months: in 2016, the virus only became widespread in the U.K. and Ireland in December, while in 2020 this already was the case one month earlier, in November. Another difference in virus spread was the higher number of reports in south-east Europe (e.g. Romania, Bulgaria, Greece) in 2016/2017 than in 2020/2021.

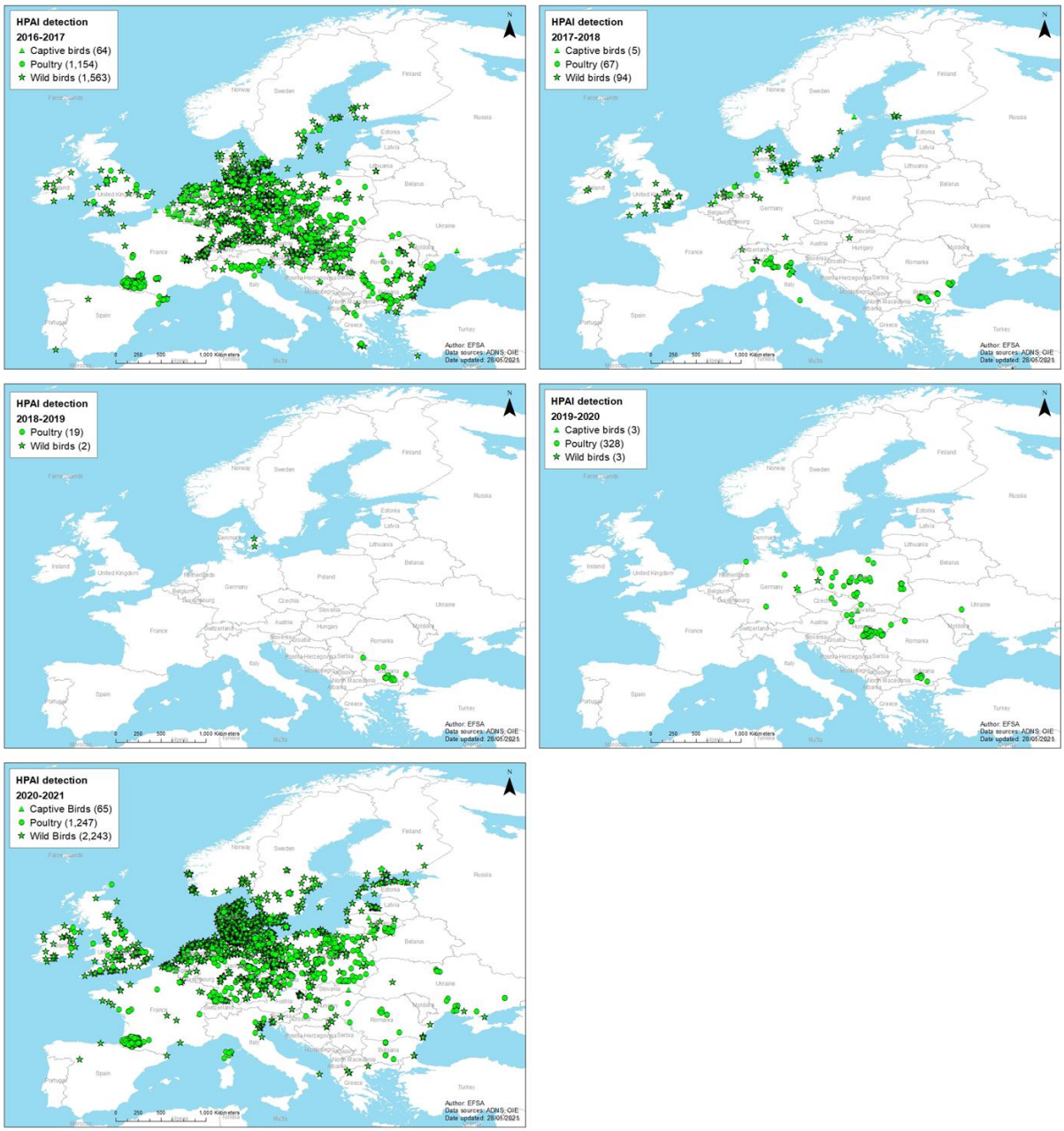
As for the course of the epidemic, the peak of reports in wild birds in 2016-2017 was three months later (February, n=590) than in 2020/2021, when the peak was already in November (n=582). In comparison, the peak of reported outbreaks in poultry holdings appeared more similar between the two winters: February 2017 (n = 323) versus January 2021 (n=415). In the current reporting period (from 24 February to 14 May 2021), there were higher numbers of both reported outbreaks in poultry holdings, and detections in wild birds compared to the same period in 2016 – 2017. In March and April 2021, more detections were reported in both poultry and wild birds in Poland and in the countries bordering the Baltic Sea than in the same months in 2017. In May of both 2017 and 2021, the number of reported detections decreased, but still more detections were reported in 2021 than in 2017.

Considering only HPAI outbrekas in poultry, so far around 22,400,000 birds have been affected in the current epidemic season since October 2020.



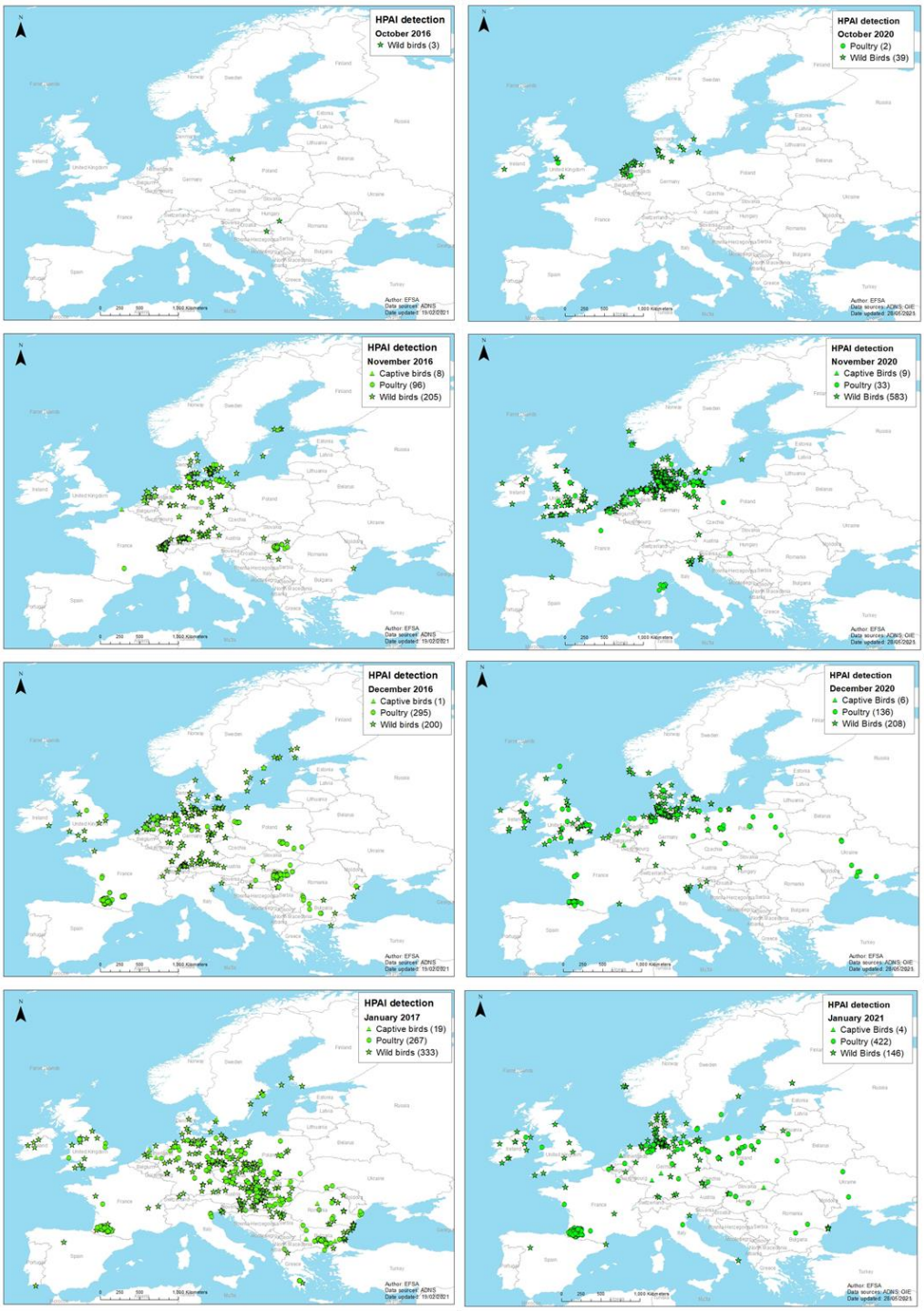
* When the date of suspicion is not available then the date of confirmation is used to assign the week of suspicion.
United Kingdom data are from ADNS up to 31 December 2020. From 1 January 2021 onwards, the data source was ADNS for Northern Ireland and OIE WAHIS for Great Britain.
Data source: ADNS, ADIS and OIE (20.05.2021).

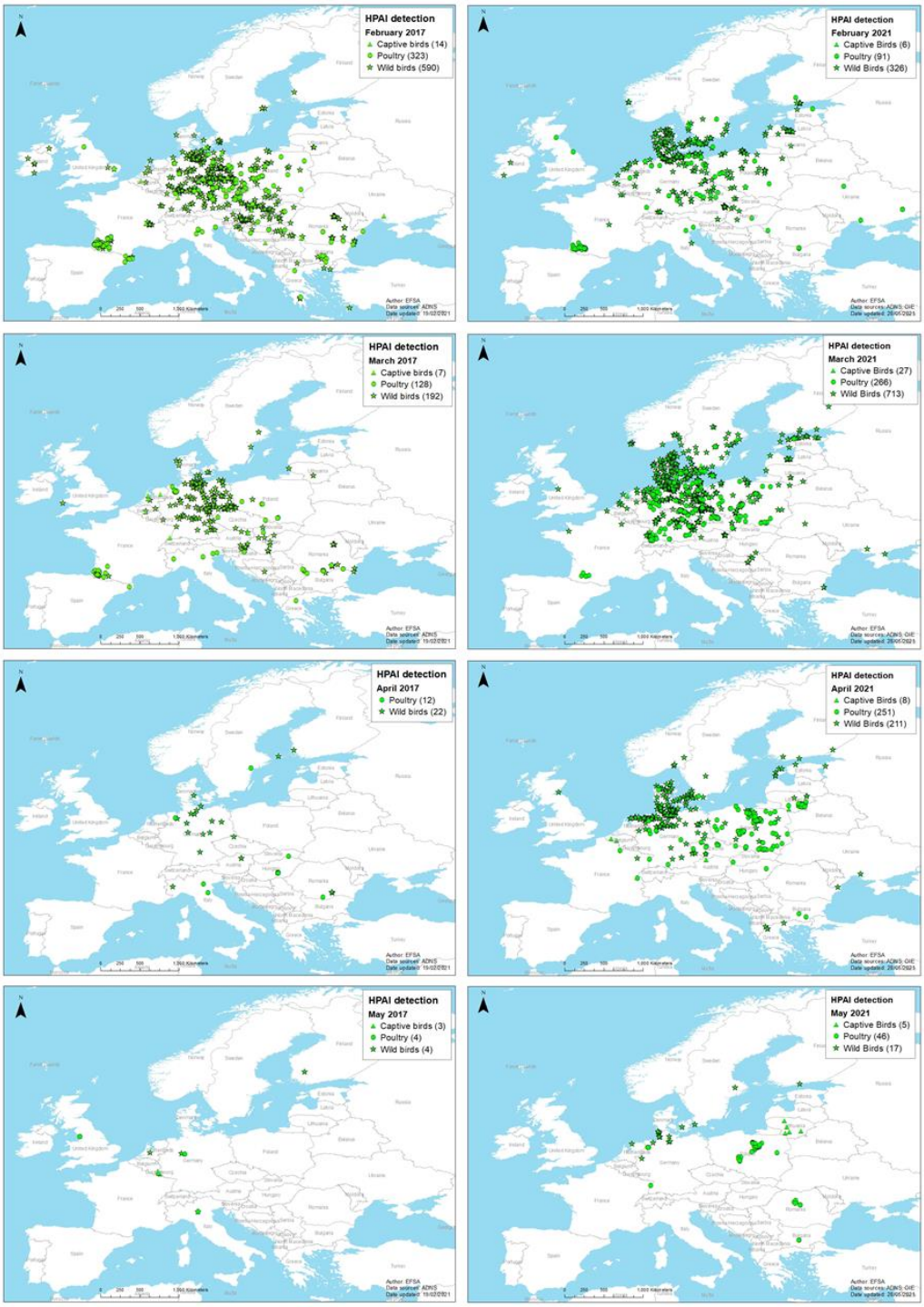
Figure 1: Distribution of total number of HPAI virus detections reported in Europe in the seasons 2016–2017 (green), 2017–2018 (orange), 2018–2019 (blue), 2019–2020 (grey), and 2020–2021 (turquoise) by week of suspicion, 28 September 2016 – 14 May 2021 (n=6,857)



* This designation is without prejudice to positions on status and is in line with United Nations Security Council Resolution 1244 and the International Court of Justice Opinion on the Kosovo Declaration of Independence.
United Kingdom data are from ADNS up to 31 December 2020. From 1 January 2021 onwards, the data source was ADNS for Northern Ireland and OIE WAHIS for Great Britain.

Figure 2: Geographical distribution, based on available geocoordinates, of HPAI detections in Europe in seasons 2016-2017 (n=2,781), 2017–2018 (n=166), 2018–2019 (n=21), 2019–2020 (n=334) and 2020-2021 (n=3,559) in poultry (circles), wild birds (stars) and captive birds (triangles) (1 October 2016 – 14 May 2021)


HPAI detection
October 2016
Wild birds (3)
HPAI detection
October 2020
Poultry (2)
Wild Birds (39)
HPAI detection
November 2016
Captive birds (8)
Poultry (96)
Wild birds (205)
HPAI detection
November 2020
Captive Birds (9)
Poultry (33)
Wild Birds (583)
HPAI detection
December 2016
Captive birds (1)
Poultry (295)
Wild birds (200)
HPAI detection
December 2020
Captive Birds (6)
Poultry (136)
Wild Birds (208)
HPAI detection
January 2017
Captive birds (19)
Poultry (267)
Wild birds (333)
HPAI detection
January 2021
Captive Birds (4)
Poultry (422)
Wild Birds (146)



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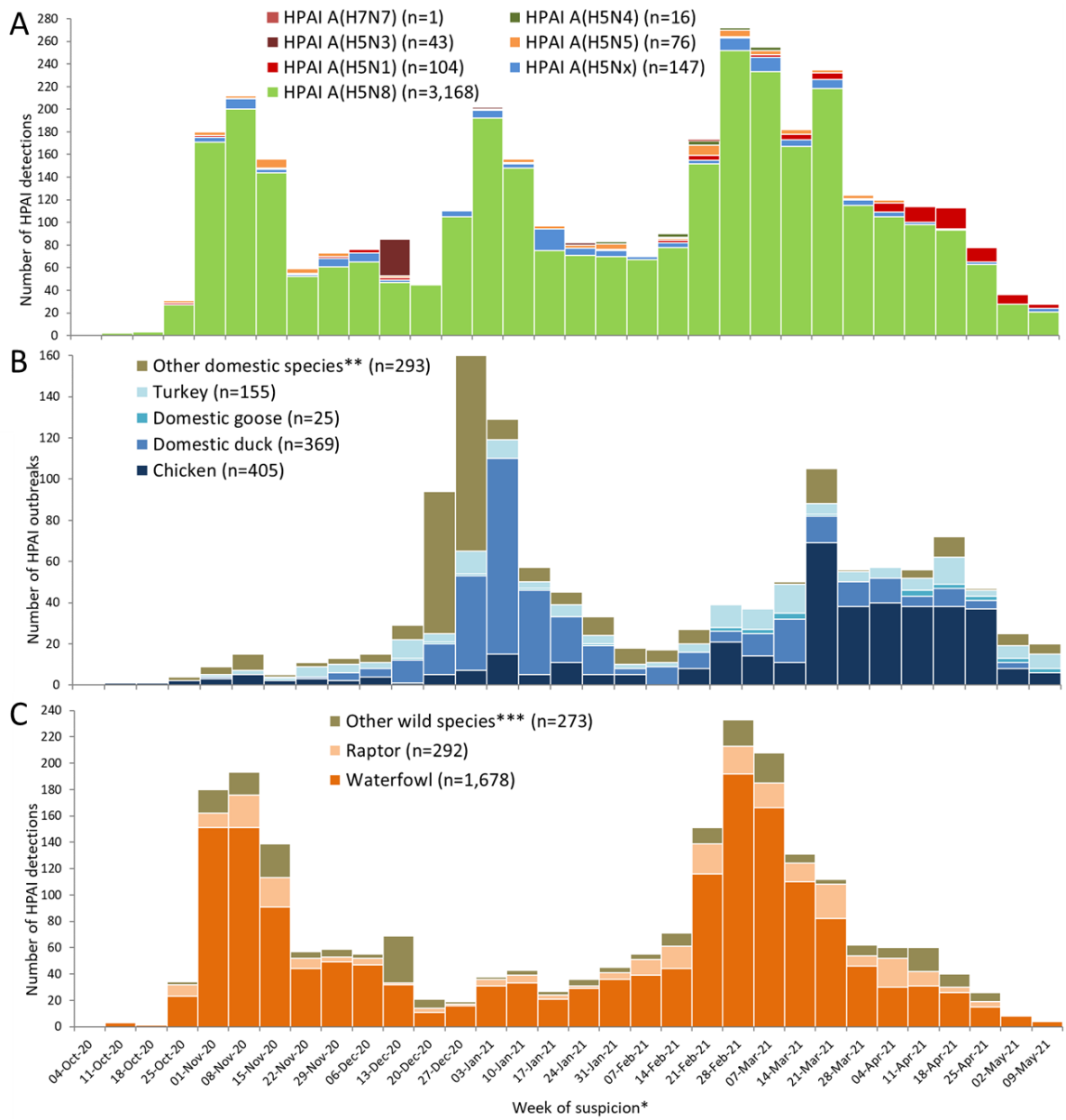
United Kingdom data are from ADNS up to 31 December 2020. From 1 January 2021 onwards, the data source was ADNS for Northern Ireland and OIE WAHIS for Great Britain.

Figure 3: Geographical distribution, based on available geocoordinates, of HPAI detections in Europe by month of suspicion in season 2016-2017 (left column, from October 2016 to May 2017) and in season 2020-2021 (right column, from October 2020 to 14 May 2021)



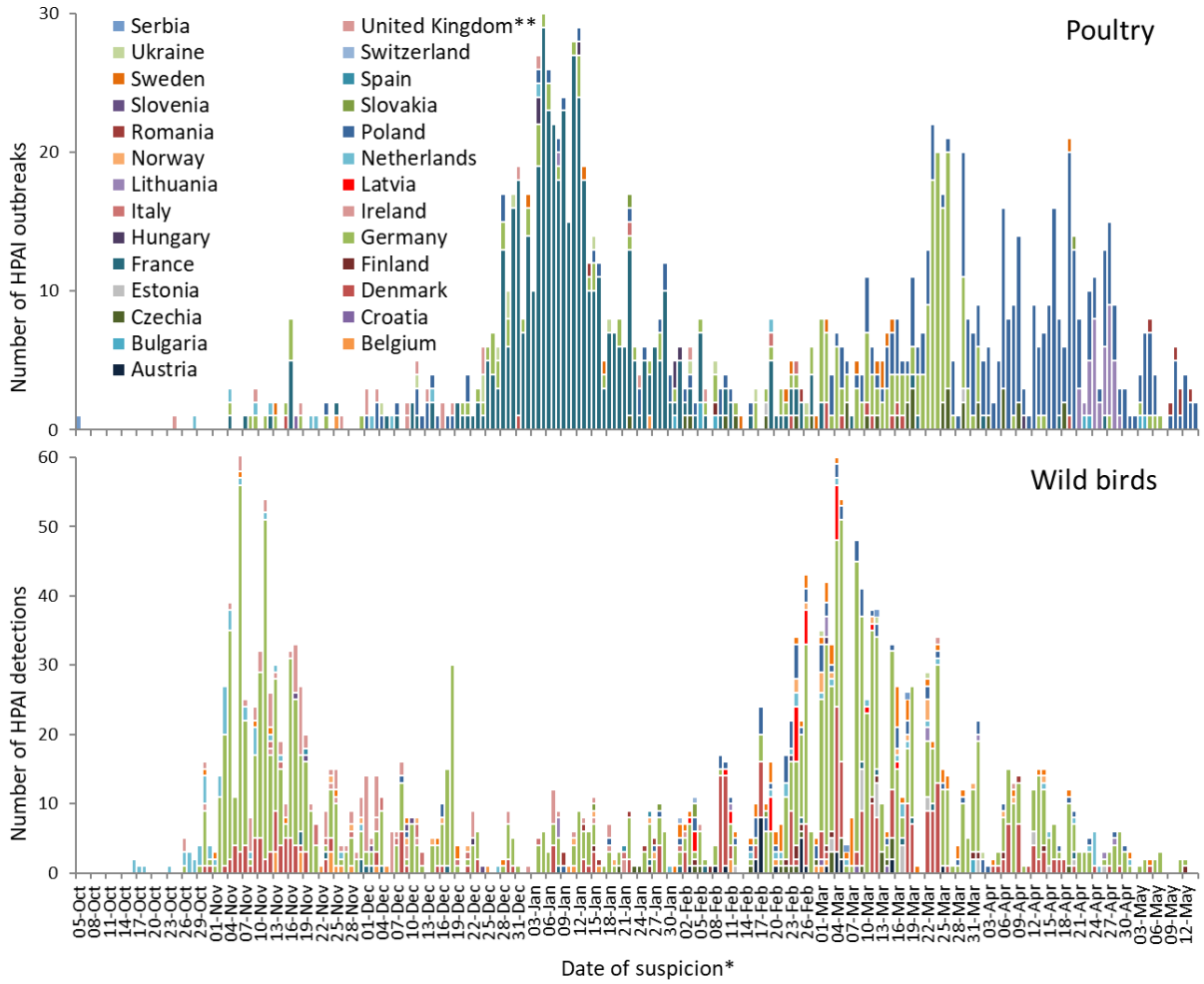
* When the date of suspicion is not available then the date of confirmation is used to assign the week of suspicion.
** 'Other domestic species' category contains mixed, unknown bird species, or categories different from those displayed (i.e guinea fowl, peacock, pheasant and quail).
*** 'Other wild species' category contains mixed, unknown bird species, or categories different from those displayed. The complete list of species by each wild bird category is reported in table C.1 in Annex C.
United Kingdom data are from ADNS up to 31 December 2020. From 1 January 2021 onwards, the data source was ADNS for Northern Ireland and OIE WAHIS for Great Britain.
Data source: ADNS, ADIS and OIE (20.05.21), EFSA.

Figure 4: Distribution of total number of HPAI virus detections reported in Europe by week of suspicion (dates indicate the first day of the week) and (A) virus subtype (n=3,555), (B) affected poultry categories (n=1,247), (C) affected wild bird categories (n=2,243), 5 October 2020 – 14 May 2021

4.2. HPAI and LPAI detections in Europe, 24 February – 14 May 2021 (TOR 1 and TOR 2)

4.2.1. HPAI detections in poultry, other captive birds and wild birds

From 24 February to 14 May 2021, 1,672 HPAI A(H5) virus detections were notified in poultry (n=580), captive (n=41) and wild birds (n=1,052) in Europe, and were reported via the ADNS or ADIS, as presented in Table 1. Overall, around 12,600,000 birds were affected in HPAI poultry outbreaks. The timeline, location and affected bird category of the avian influenza detections are presented in Figures 5 and 6. The characterisation of HPAI-affected poultry establishments[3] is reported in Section 4.2.1.1; the description of the HPAI detections in wild birds is reported in section 4.2.1.2.



* When the date of suspicion is not available then the date of confirmation is used to assign the week of suspicion.
** United Kingdom data was extracted from ADNS until 31 December 2020. From 1 January 2021 onwards, the data source was ADNS for Northern Ireland and OIE WAHIS for Great Britain.
Data source: EFSA, ADNS, ADIS and OIE (20.05.21).

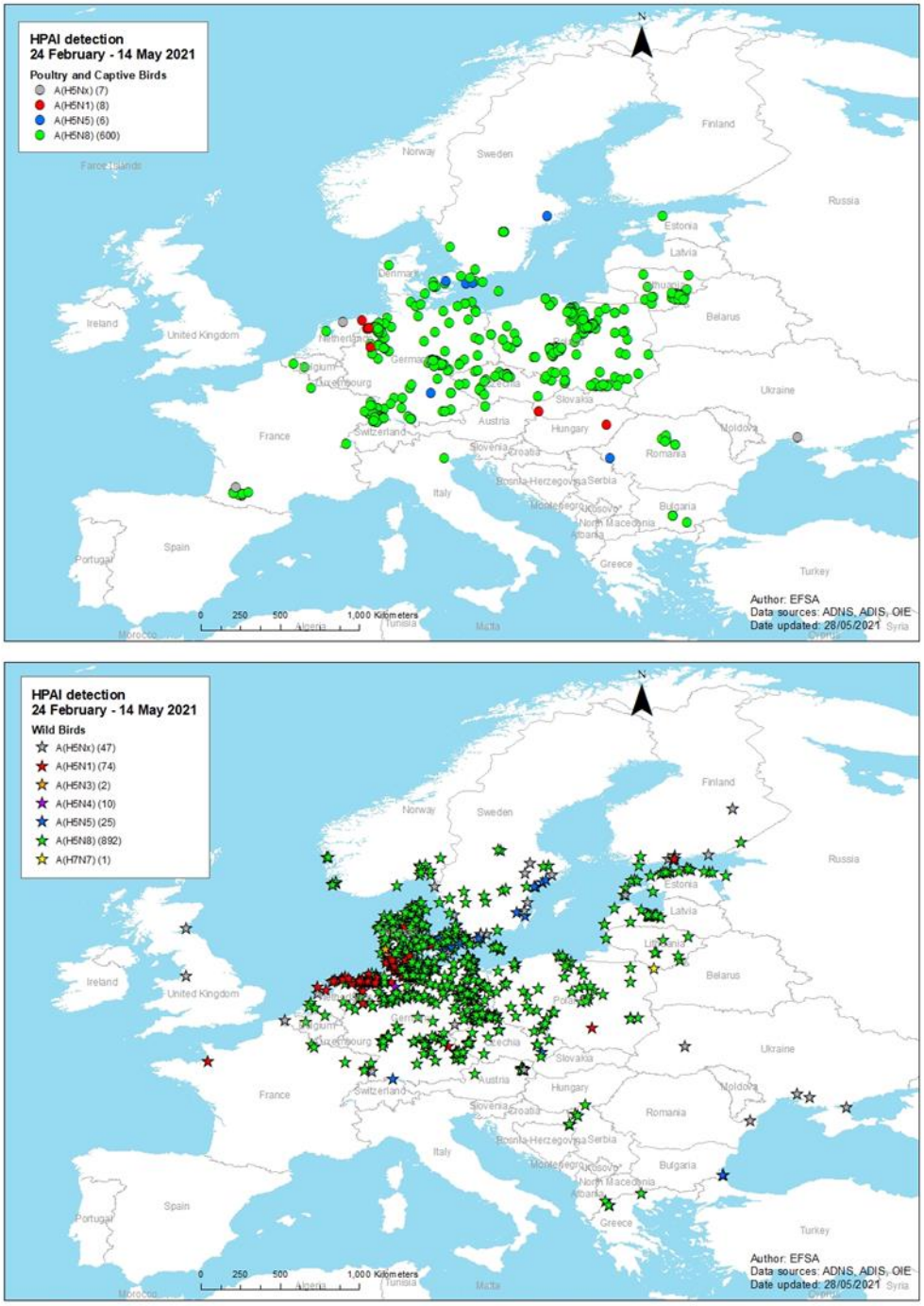
Figure 5: Distribution of the highly pathogenic avian influenza detections in Europe, by day of suspicion and country in poultry (n=1,247) and wild birds (n=2,243), from 5 October 2020 to 14 May 2021 (n=3,490)

[3] According to Regulation (EU) 2016/429 'establishment' means any premises, structure, or, in the case of open-air farming, any environment or place, where animals or germinal products are kept, on a temporary or permanent basis, except for: (a) households where pet animals are kept; (b) veterinary practices or clinics. Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law'). OJ L 84, 31.3.2016, p. 1–208.

Table 1: Number of highly pathogenic avian influenza outbreaks in Europe, by country, virus subtype and affected sub-population, 24 February – 14 May 2021. Cumulative numbers for the whole 2020-2021 season are reported in brackets (5 October 2020 – 14 May 2021)

Country	Captive Birds			Poultry				Wild Birds							Total
	A(H5Nx)	A(H5N5)	A(H5N8)	A(H5Nx)	A(H5N1)	A(H5N5)	A(H5N8)	A(H5Nx)	A(H5N1)	A(H5N3)	A(H5N4)	A(H5N5)	A(H5N8)	A(H7N7)	
Austria			1 (1)					6 (7)				1 (3)	8 (19)		16 (30)
Belgium	(1)		2 (2)			(1)	(1)	1 (4)					2 (21)		5 (30)
Bulgaria				2 (2)			2 (6)					2 (2)			6 (10)
Croatia							(1)						3 (3)		3 (4)
Czechia		(1)	1			(35)	29					1 (1)	17 (26)		48 (63)
Denmark		1 (1)	(2)				9 (12)	3 (9)	2 (2)	1 (2)		4 (6)	157 (295)		177 (329)
Estonia							1 (2)	2 (2)					24 (25)		27 (29)
Finland							(1)	4 (4)	1 (1)				7 (12)		12 (18)
France			1 (1)	3 (38)			12 (455)		1 (1)	(1)			6 (18)		23 (514)
Germany			21 (24)		6 (7)	1 (2)	161 (224)	8 (32)	53 (56)	1 (38)	10 (13)	7 (25)	524 (1,095)		792 (1,516)
Greece													4 (4)		4 (4)
Hungary					1 (1)		(6)					(1)	1 (2)		2 (10)
Italy							1 (3)		(5)			(1)	(13)		1 (22)
Latvia													24 (36)		24 (36)
Lithuania			8 (8)				37 (38)	(1)					7 (10)	1 (1)*	53 (58)
Netherlands	1 (1)		1 (11)		(1)		(10)	2 (6)	16 (23)		(1)	(1)	6 (51)		26 (105)
Norway	(1)												17 (30)		17 (31)
Poland			(1)				297 (340)		1 (1)			(1)	55 (90)		353 (433)
Romania						1 (1)	6 (7)	1 (5)				(3)			8 (16)
Serbia													3 (3)		3 (3)
Slovakia			(1)		1 (1)	(1)						(4)	(1)		1 (8)
Slovenia												(1)	(5)		0 (6)
Spain													(3)		0 (3)
Sweden		2 (3)	2 (4)			1 (2)	8 (14)	14 (15)				10 (13)	27 (54)		64 (105)
Switzerland											(2)				0 (2)
Ukraine				1 (10)			(4)	4 (4)							5 (18)
United Kingdom*			(2)		(2)		(19)	2 (5)	(3)	(2)		(3)	(116)		2 (152)
Total	1 (3)	3 (5)	37 (57)	6 (50)	8 (12)	3 (42)	563 (1,143)	47 (94)	74 (92)	2 (43)	10 (16)	25 (65)	892 (1,932)	1 (1)	1,672 (3,555)

*United Kingdom data was extracted from ADNS until 31 December 2020. From 1 January 2021 onwards, the data source was ADNS for Northern Ireland and OIE WAHIS for Great Britain.
** The HPAI A(H7N7) outbreak notified by the Lithuanian Health Authorities on 26.03.2021 was not confirmed by AI-ND EURL due to the very low viral load in the samples and the lack of other samples on which to repeat the analysis.
Data source: EFSA, ADNS and OIE (20.05.21).



* This designation is without prejudice to positions on status, and is in line with United Nations Security Council Resolution 1244 and the International Court of Justice Opinion on the Kosovo Declaration of Independence.
United Kingdom data was extracted from ADNS until 31 December 2020. From 1 January 2021 onwards, the data source was ADNS for Northern Ireland and OIE WAHIS for Great Britain.

Figure 6: Geographical distribution, based on available geocoordinates, of highly pathogenic avian influenza detections reported by virus subtype in Europe between 24 February and 14 May 2021. Poultry and captive birds (n=631) are shown in the upper figure, and in wild birds (n=965) at the bottom

4.2.1.1. HPAI in domestic birds

Characterisation of the HPAI-affected poultry establishments

In this section a detailed analysis of the HPAI affected poultry establishments is presented. Due to the time needed to carry out the data collection, the reporting period presented in this section is different and shorter than that of the whole report: only the outbreaks reported between 12 February 2021 and 30 April 2021 are thoroughly described (the earliest suspicion date was 10 February 2021). Outbreaks notified prior to 12 February 2021 were covered in the previous EFSA report (EFSA et al., 2020a), and the outbreaks occurred later than 30 April 2021 will be included in the next publication. EFSA thanks the affected countries that supported this *ad hoc* data collection.

From 12 February 2021 to 30 April 2021, a total of 589 HPAI outbreaks in poultry were notified in 15 countries through ADNS/ADIS: 265 in Poland, 193 in Germany, 37 in Lithuania, 31 in Czechia, 29 in France, 12 in Sweden, 10 in Denmark, two in Italy, Bulgaria, Estonia and Ukraine, and one outbreak in Romania, Slovakia, Netherlands and Hungary (Figure 7A). During this time, a total of 10,507,385 poultry were affected, with outbreaks in Poland accounting for 79% of this figure. Comparing to the previous reporting period, nearly the same number of outbreaks occurred, but approximately two additional million birds were affected (8 million birds affected in 566 outbreaks in the previous analysed period from to 26 November 2020 to 11 February 2021 (EFSA et al., 2021).

Three subtypes were reported; H5N8 (in 551 outbreaks), H5N1 (6 outbreaks, detected in Germany, Slovakia and Hungary), and H5N5 (3 outbreaks, detected in Germany, Romania and Sweden). Data on n-type was not available for seven outbreaks.

The description of the bird species and the production category of these HPAI-affected establishments are shown in Figure 8. A total of 197 establishments were housing >10,000 birds each, 102 holdings belong to the housing category of 1,001-10,000 birds; and the remaining 262 establishments were keeping less than 1,000 birds.

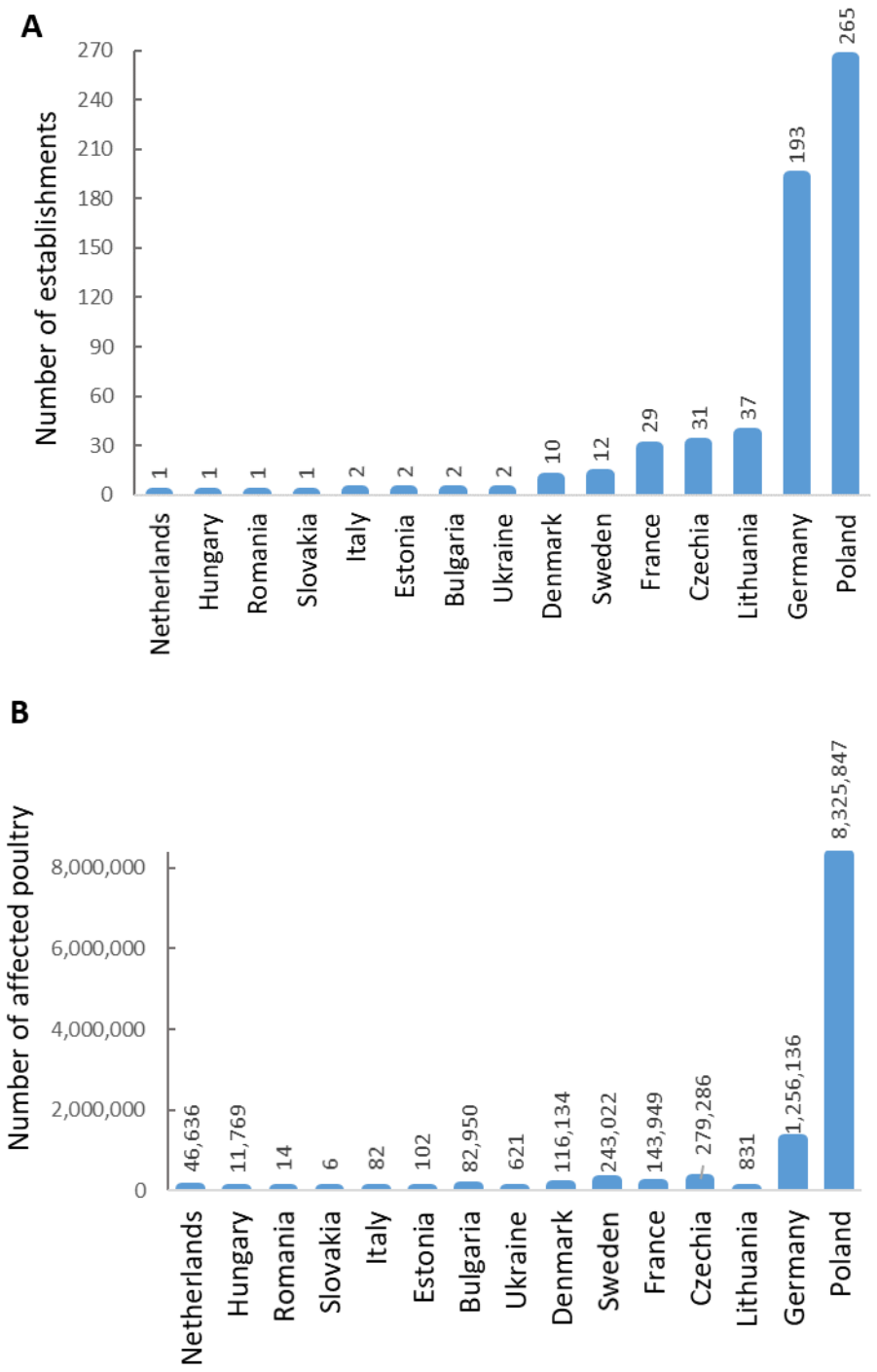
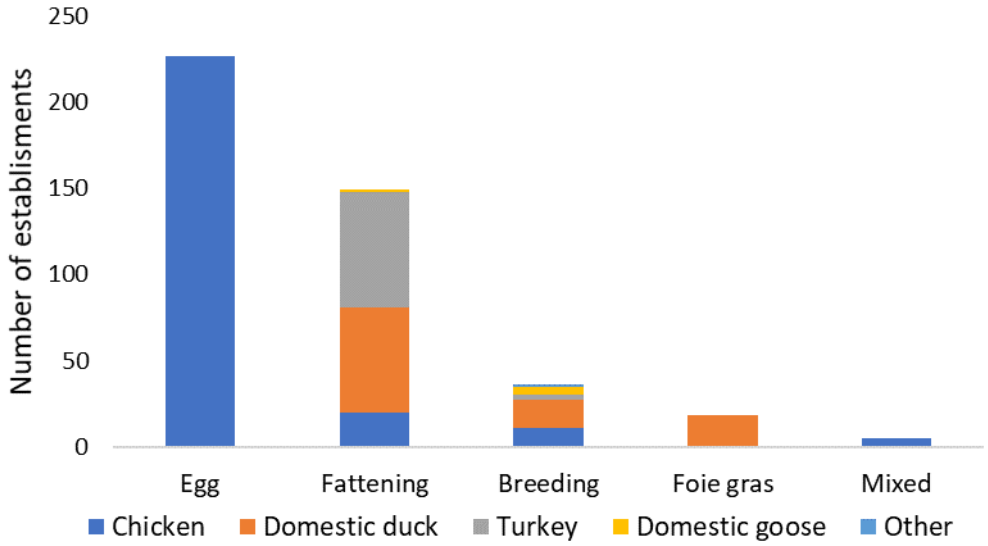


Figure 7: Number of establishments (A) and domestic birds (poultry) (B) affected by HPAI in the EU between 12 February 2021 and 30 April 2021.



* Other species: pheasant, quail, guinea fowl

Figure 8: Poultry species and production category of holdings affected by HPAI between 12 February and 30 April 2021 (n=435). Information for 146 outbreaks not shown due data unavailability.

HPAI A(H5N8)-affected poultry establishments in Bulgaria

Between 23 and 26 April 2021, two HPAI A(H5N8) outbreaks were reported in two large laying hen farms located in Plovdiv and Haskovo regions in Bulgaria. Increased mortality raised the suspicions; with 21 and 660 deaths being reported (out of 39,950 and 43,000 respectively). The source of infection in the holdings had not been determined at the time of publication of this report. The characteristics of the affected establishment and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8)-affected poultry establishments in Czechia

Between 26 February and 12 April 2021, 31 HPAI A(H5N8) outbreaks were confirmed in poultry holdings in the regions of Southern Bohemia, Central Bohemian, Usti nad Labem, Hradec Kralove, Pardubice, Vysocina, Zlin, Plzeň and Moravian-Silesian regions in Czechia. Eighteen outbreaks occurred in backyard holdings and thirteen in commercial farms.

Regarding the detections in commercial establishments, twelve outbreaks were considered part of a single cluster of cases by the Czech Veterinary Authorities because they occurred in duck breeders' holdings belonging to the same company, with population sizes ranging from 2,000 to 26,000 ducks. The first outbreak was detected in a parent flock of 26,000 ducks (*Anas platyrhynchos f. domestica*); suspicion was raised due to pronounced mortality (approximately 78 deaths per day) and drop in egg production. Whilst epidemiological investigations indicated that the primary source of infection was most likely via contact (indirect) with wild birds, secondary spread to other holdings was believed to have occurred due to indirect contact with poultry or contaminated materials. Mortality was observed in seven out of eleven holdings secondarily affected, with mortality ranging from six to 78 birds across holdings. In total, 96,175 breeding ducks were affected. In addition, a holding with 176,550 laying hens located in the same area was also infected. Mortality was observed in 1,500 laying hens but no other clinical signs were reported. In total, 424 people were considered to be exposed as a result of this cluster of cases.

Concerning detections in 18 backyard farms in Czechia, the affected holdings were keeping a median number of 25 chickens and a smaller number of other birds (hens, ducks, geese, turkey or other). Chicken deaths were observed in all 18 holdings and clinical signs in 13 holdings. In the other affected

holdings, mortality ranged from 20% to 100% in laying hens; only in two holdings there was mortality in ducks or geese. All 18 holdings had outdoor access and in seven of these, birds had direct contact with wild birds in nearby ponds or streams; for this reason direct or indirect contact with wild birds was considered the most likely source of virus in all cases. The characteristics of the affected establishment and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8)-affected poultry establishments in Denmark

Between 25 February and 20 April 2021, 10 HPAI A(H5N8) outbreaks were notified in five regions of Denmark (Bornholm, Ringsted, Slagelse, Kalundborg and Langeland). Seven of the detections occurred in commercial establishments and three in backyard holdings; details on each outbreak are provided as follows.

On 2 March 2021, the Danish Veterinary authorities were contacted due to increased mortality observed in a commercial gamebird holding in Ringsted region. The establishment had outdoor access and kept approximately 550 pheasants, 30 laying hens and two ornamental birds (Pavo cristatus); mortality was reported in 94 out of 550 pheasants. The most likely source of viral introduction had not been determined by the date of publication of this report.

On 5 March 2021, a clinical suspicion in a turkey holding with no outdoor access was reported to the Danish Veterinary and Food Administration and confirmed as HPAI A (H5N8) the following day. The holding consisted of approximately 37,000 fattening turkeys. All animals were culled, and protection and surveillance zones were established in the area. In the following weeks, three contact turkey holdings with population sizes of 24,000, 5,700 and 27,600 birds were also tested and found infected. Mortality, clinical signs and drop in feed and water intake were observed in the three holdings. The most likely cause of viral introduction is still being investigated.

On 15 March 2021, a laboratory suspicion was reported to the Danish Veterinary and Food Administration; HPAI A(H5N8) was confirmed two days later. The affected establishment had outdoor access and kept mallards (Anas platyrhynchos, 2,200 animals) and domestic ducks for fattening. No clinical signs nor mortality were observed in the birds.

A further HPAI A(H5N8) outbreak was confirmed in a fattening duck and goose holding in Midtjylland region in Denmark. The establishment kept approximately 9,000 domestic geese and 10,000 domestic ducks with outdoor access. The Veterinary Authorities were contacted after increased mortality was observed in geese (1,740 deaths); clinical signs and drop in egg production were also observed in this species. By the date of publication of this report the definitive source of viral introduction in this holding had not been determined.

Additionally, three outbreaks were notified in backyard holdings on 25 February, 3 and 12 March. One of the holding had outdoor access and kept 23 animals (20 chickens out of which five died, plus three moskovy ducks (Cairina moschata) which showed no signs of disease). A further outbreak occurred in a poultry holding with outdoor access in the same region (Bornholm), five out of ten laying hens died. Finally, an outbreak was confirmed in a mixed poultry holding in Kalundborg, four out of 14 laying hens died; five domestic ducks were also kept but no deaths were reported in those. The definitive source of viral introduction was not determined. No data were available on the number of exposed people in HPAI outbreaks in poultry in Denmark. The characteristics of the affected establishment and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8)-affected poultry establishments in Estonia

Two outbreaks of HPAI A(H5N8) in non-commercial establishments were confirmed between 18 February and 29 March 2021 in Lääne-Viru and Harju counties, Estonia. The holdings were keeping 78 and 24 birds from different species (chickens, domestic ducks, turkeys, guinea fowl and geese); mortality was observed in approximately 20% of the chickens but ducks showed no signs of disease. The ducks and geese kept in the holding had access to a pond where wild birds were swimming, and for this reason indirect contact with wild birds was the most likely source of viral transmission. The characteristics of the affected establishment and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8)-affected poultry establishments in France

Between 12 February 2021 and 22 April 2021, 28 HPAI A(H5Nx) outbreaks were confirmed at poultry establishments in France. The most affected region was Gers with 21 outbreaks; the remaining regions – Landes, Pyrénées-Atlantiques, Haut-Rhin, Haute-Savoie and Bas-Rhin had between one and three outbreaks.

Only one outbreak was confirmed in Landes region in this reporting period, in contrast to what had been observed between November 2020 and February 2021 when more than 400 outbreaks were detected. HPAI A(H5N8) virus was detected during outbreak-related surveillance activities in a holding keeping 1,170 domestic mule ducks for foie gras in 12 February 2021. The source of viral introduction was not determined.

Concerning the 21 outbreaks detected in Gers, most were detected in commercial farms (19/21 outbreaks). A(H5N8) subtype was identified in 13 cases but no information was available for the remaining six outbreaks in commercial farms in Gers. Fifteen of the 19 detections were in farms holding domestic mule ducks for foie gras production affecting a total of 85,500 animals. Mortality was reported in eight out of 15 holdings, but data was not available for the remaining outbreaks. Regarding the other HPAI detections in Gers, three commercial holdings were holding broilers (one holding with 10,000 birds and other 2,500 birds) and a third holding kept 600 broiler chickens and 2,400 domestic mule ducks for foie gras production. Moreover, two backyard farms were also affected. The source of introduction of the virus had not been determined at the time of publication of this report in any of the cases.

In Pyrénées-Atlantiques region three HPAI A(H5N8) outbreaks were detected; two affected commercial farms with outdoor access keeping domestic ducks for foie gras production. The farms had a population size of 3,040 and 2,000 ducks. Mortality was observed in both cases (3 deaths out of 3,040 in one farm and 40 deaths out of 2,000 in the other farm). The third outbreak in the region was detected through outbreak related surveillance activities; it affected an establishment keeping 5,260 domestic ducks for fattening. No mortality was observed in this case. No data was available on possible outdoor access nor subtype at the time of publishing of this report for this outbreak.

In Haut-Rhin region, one domestic farm with outdoor access keeping 21 Galliformes and five domestic ducks was also infected by HPAI A (H5N8); a high mortality rate (20/21 animals) was observed. Source of viral introduction was not determined.

On 13 April 2021 an outbreak was confirmed in a backyard farm keeping birds of multiple species (20 chickens, 14 pigeons) in Haute-Savoie. Mortality was observed in chickens (15 hens and 5 roosters) and 2 out of 14 pigeons. Wild birds were the most likely source of virus given that the farm was located near a lake, where sedentary wild greylag geese were present.

Finally, on 22 April 2021 a HPAI A(H5N8) outbreak was confirmed in a backyard holding 9 layers (with partial outdoor access for the birds) in Bas-Rhin. Mortality was observed in 4 birds, as well as clinical signs in 2 other birds out of 9. Indirect contact with wild birds was considered the most likely source of introduction of the virus. The characteristics of the affected establishments and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8) affected poultry establishments in Germany

Between 18 February and 9 April 2021, a total of 193 outbreaks occurred in Germany. Ninety-three of these outbreaks were considered primary and 101 secondary, affecting a total of 1,262,469 birds. Most secondary outbreaks were resultant from purchase of infected poultry. Most (96%, 188/194) infections were caused by A(H5N8) but there were also five detections of A(H5N1) and one of A(H5N5).

Most of the outbreaks were detected in commercial holdings (119/153) with 72 outbreaks occurring in backyard holdings and 3 in zoos. Outdoor access was not available for 48% of the commercial holdings (58/119) but data was not available for the remaining commercial facilities nor backyard holdings. The birds kept in the zoos had outdoor access.

Out of the commercial holdings affected, ten were breeding establishments (four keeping chickens, two domestic ducks, two domestic geese and 2 turkeys), 65 were egg production facilities (with laying hens) at 43 were fattening holdings (three holdings kept chickens, five domestic ducks and 35 kept turkeys). The 72 non-commercial establishments kept chickens for fattening and egg laying, domestic ducks and goose. One of the backyard farms kept ostriches.

Out of the ten outbreaks that occurred in breeding facilities (holding chickens, domestic ducks, domestic geese or ducks), birds had no outdoor access in eight of the cases, and data were unavailable for two holdings. The most likely source of introduction in nine of the 10 outbreaks was nevertheless through indirect contact with wild birds but no further details were provided. In the remaining outbreak, direct contact with poultry through the purchase of infected animals was the source of virus in the holding.

In relation to the 65 outbreaks that occurred in facilities holding laying chickens, mortality was observed in most cases (62/65) but specific data on mortality rates were not available. Regarding the source of virus, epidemiological investigations determined that in 51 cases viral introduction was due to purchase of infected poultry. In the remaining 13 cases, epidemiological investigation were still being carried out, but it was considered that indirect or direct contact with wild birds was the most likely source of virus.

Concerning the forty-one outbreaks detected in fattening establishments (keeping chickens, turkey, or ducks), all holdings reported bird mortality, however no data on mortality rates were available. The assumed reason for viral introduction was through indirect contact with wild birds in 21 instances, via purchased poultry in two instances and was not determined in 18 instances.

Regarding the 72 outbreaks notified in backyard holdings, 48 were detected through outbreak related surveillance activities and the most likely source of viral introduction in these cases was purchase of infected animals. Mortality was observed in most affected backyard farms (69/72 holdings).

The characteristics of the affected HPAI A(H5N8) affected poultry establishments in Hungary

HPAI A(H5N1) was confirmed on 13 April 2021 in a turkey breeding holding with approximately 12,000 birds in Hajdú-Bihar in Hungary. Increased mortality (2,650 deaths corresponding to 22% mortality rate), drop in feed and water intake and drop in egg production were observed in the holding. Samples were taken and sent to the National Reference Laboratory (NRL) and HPAI A(H5N1) confirmed. The detected strain showed 99,8% similarity with A/Eurasian Wigeon/Netherlands/5/2020 (A/H5N1) strain on gene H5 (638 bp) and 100% similarity on N1 gene (full length, 1360 bp). Contact with wild birds was the most likely source of virus because the holding was located near a wetland (Ramsar area). The characteristics of the affected establishments and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8) affected poultry establishments in Italy

Between 22 and 26 February 2021 two outbreaks of HPAI A(H5N8) were detected in backyard farms with more than 20 birds each in Fruili Venezia Giulia and Veneto regions, Italy. The Veterinary Authorities were contacted following observation of high mortality rates. Both farms were keeping more than one poultry species and had outdoor access. The holdings were located near a water source and results of genetic analysis confirmed that the most likely source of viral introduction were wild birds. The characteristics of the affected establishments and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8)-affected poultry establishments in Lithuania

Between 23 and 30 April 2021, 37 HPAI A(H5N8) were confirmed in Kaunas, Vilniaus and Utenos regions, Lithuania. All outbreaks were detected in backyard farms and 36 were considered to result from illegal trade. Infected live animals were purchased from an illegal trader in a local market and introduced in backyard holdings. The most likely source of viral introduction was not determined in one of the 37 outbreaks. All holdings were keeping laying hens (median size of the farm population was 20 chickens) and mortality was observed in all cases. The characteristics of the affected establishments and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8)-affected poultry establishments in Netherlands

HPAI A(H5N8) was confirmed in a poultry holding keeping 46,636 laying hens without access to outdoor in the region North-Brabant in the Netherlands. Approximately five hundred chickens died and clinical signs, drop in egg production and drop in feed and water intake were also observed. The most likely cause of viral introduction has not been determined by the time of publication of this report. The characteristics of the affected establishments and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8)-affected poultry establishments in Poland

Between 12 February and 25 April 2021, a total of 265 HPAI A(H5N8) outbreaks were notified in Poland affecting a total of 8,325,847 poultry. Detections of HPAI occurred in 15 regions of Poland, with the most affected being Mazowieckie, followed by Wielkopolskie and Pomorskie.

Information provided by the Veterinary Authorities and available online (PAAF) indicated that some of the outbreaks resulted from infected consignments originating from Czechia. The alert was provided by the Czechian Authorities to inform that 34 consignments of domestic ducks moved to Polish farms, 1 to a Polish dealer and 9 consignments moved to slaughterhouses were HPAI-infected. Following this information, Polish Authorities detected eight HPAI outbreaks at the consignment destinations in seven farms and one dealer. Ten additional outbreaks were confirmed in the same areas and were most likely associated with animal movement due to local trade with the dealer that received the infected consignments. Ten outbreaks potentially linked with these outbreaks and located in an area with high density of poultry farms were subsequently detected.

With regards to source of infection, indirect introduction via wild birds was indicated as the most likely source of virus in 30 outbreaks. Information on was not available for at the time of writing of this report because the epidemiological investigations were still ongoing.

HPAI A(H5N8)-affected poultry establishments in Romania

On 26 February 2021, one HPAI A(H5N5) outbreak was confirmed in a backyard farm with 14 chickens in Timis region, Romania. The veterinary authorities were alerted because all chickens in the holding were found dead. The most likely source of viral introduction was contact with wild birds. The characteristics of the affected establishment and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N5)-affected poultry establishments in Slovakia

On 22 January 2021, one HPAI A(H5N1) primary outbreak was confirmed in a backyard holding with outdoor access in Bratislavský, Slovakia. Mortality was observed in all six chickens kept in the holding. The characteristics of the affected establishment and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8) and HPAI A(H5N5)-affected poultry establishments in Sweden

Between 15 February and 20 April 2021, 12 HPAI A(H5N8) outbreaks were confirmed in Linköping (2), Trelleborg (2), Kungsbacka, Mjölby (3), Sjöbo, Tomelilla, Simrishamn and Eslöv municipalities in Sweden. Most outbreaks (11/12) were detected in commercial farms; more details on each outbreak are provided as follows. Outbreaks were confirmed in 5 backyard flocks and one zoo during the reporting period. The total number of estimated persons exposed to HPAI in the eleven outbreaks was 116.

On 16 February 2021, an HPAI A(H5N8) outbreak was detected on a fattening turkey farm with no outdoor access in Simrishamn region, housing 3,500 animals, of which 40 died. Indirect contact with wild birds was the most likely source of viral introduction.

An outbreak of HPAI A (H5N8) was also confirmed in an establishment in Linköping keeping approximately 14,300 broilers. Increased mortality was seen on 23 February with 350 chicken deaths. Indirect infection via wild birds was the most likely source of viral introduction.

HPAI was also detected in a non-commercial poultry farm that breed poultry for show and breeding, housing 200 chickens, 90 domestic ducks, and 17 pigeons. The birds started showing clinical signs of increased mortality (29 deaths in chickens) on 28 February 2021. The most likely source of virus was indirect contact with wild birds.

An additional outbreak was detected in breeding farm of pheasants (*Phasianus colchicus*) for restocking of game with 470 animals in Trelleborg. Increased mortality was observed among the pheasants.

On 3 March 2021 an outbreak was confirmed in an organic farm in Trelleborg with laying hens housing around 18,000 animals. The most likely source of introduction in the holding was via wild birds because several species of waterfowl were observed in the fields surrounding the farm.

An outbreak was confirmed in a laying egg farm on 8 March 2021 in Mjölby region. This was a farm with laying hens, housing around 24,000 animals. Suspicion was raised to increased mortality levels with a total of 9,000 dead birds.

On 13 March 2021, an additional outbreak was confirmed in Linköping in a layer farm housing around 33,000 laying hens. The most likely cause of viral introduction was unknown. Suspicion was raised due to increased mortality (928 chicken deaths).

On 14 march the presence of HPAI in a parent broiler farm in Sjöbo was confirmed. The establishment kept around 53,200 animals in four different units; suspicion was raised due to increased mortality in one of the units. Clinical signs of increased mortality in one of the units was reported on 13 March and all animals were euthanized the following days. The most likely source of viral introduction in the holding was indirect contact with wild birds.

Two organic farms housing respectively 22,700 and 26,400 laying hens were affected by HPAI in Mjölby. Following observed increased mortality (174 and 75 deaths respectively), an HPAI suspicion was raised and later confirmed on the 15th March.

On 16 March an outbreak was confirmed in a turkey holding with a population size of 30,000 animals housed in 12 different units. Birds kept in two of the units were reported to show increased mortality with a total number of 700 deaths. The animals had no outdoor access and the most likely source of virus was indirect infection via wild birds because several wild bird species including waterfowl were observed in fields surrounding the farm.

Finally, HPAI was confirmed on the 20 April in a layer farm in Eslöv with 17819 birds. The farm reported increased mortality and large numbers of barnacle geese were present in the fields near the farm prior to the outbreak.

The characteristics of the affected establishments and species reared are presented in Table A.1 in Annex A.

HPAI A(H5N8) and HPAI A(H5N5)-affected poultry establishments in Ukraine

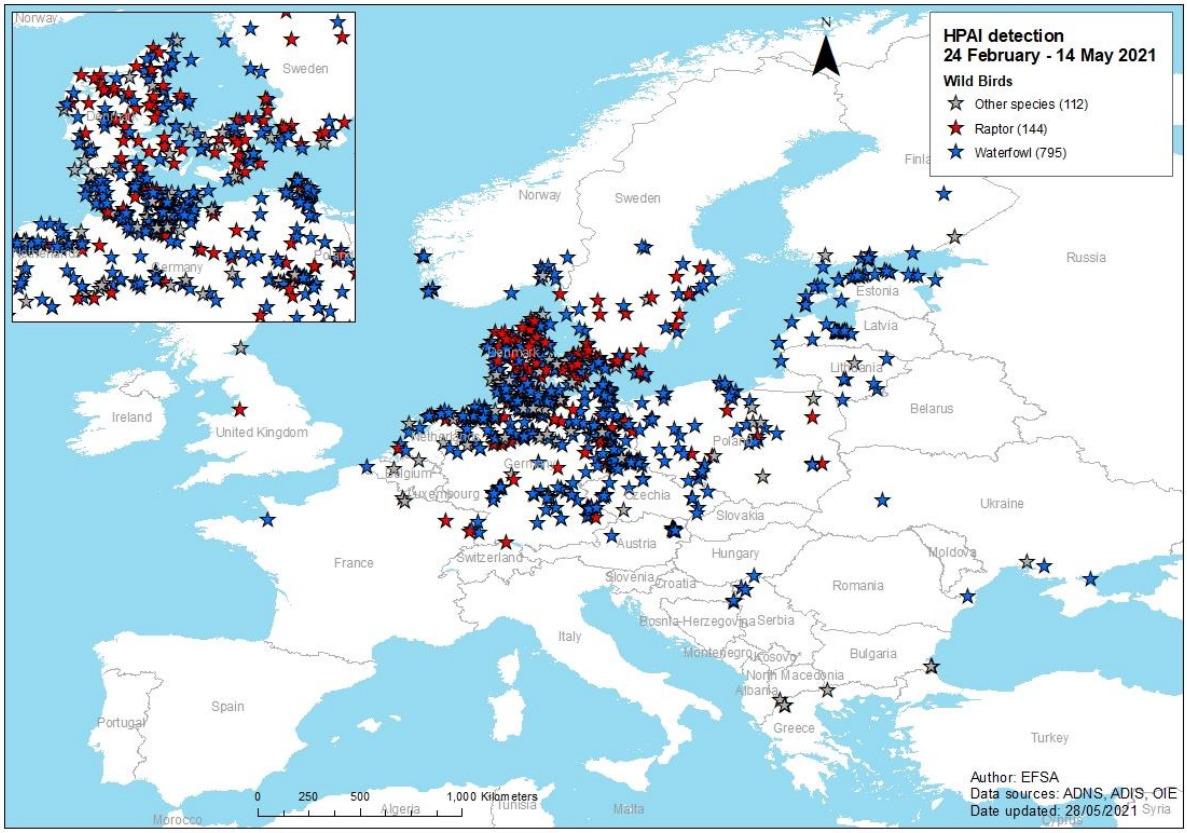
Two HPAI A(H5N8) outbreaks were detected through passive surveillance on 16 and 26 February 2021 in Kyiv and Mykolayiv, Ukraine. Both outbreaks were detected in backyard farms keeping chickens, domestic ducks, and domestic geese. One of the farms kept 68 birds of which 20 died and no information was available on presence of signs such as drop in egg production or drop in feed or water consumption. The other affected farm kept 553 birds and mortality was observed in 22 animals. In both cases, wild migratory birds had access to the farm and for this reason, contact with wild birds was considered the most likely source of viral introduction in the holdings. It was estimated that ten people were exposed to the virus in each outbreak.

Information extracted from the scientific literature

Smietanka et al. (2020) described the clinical signs of natural HPAI H5N8 virus infection, clade 2.3.4.4b, in Poland in 2019–2020 in various poultry species. In turkeys, sudden and high mortality was observed, and clinical signs included depression, reduction in vocalisation, decreased feed and water intake and nervous signs such as tremors, incoordination, paralysis of the wings and fast alternate movements of the legs. In chickens, there was increased mortality, and clinical signs included lethargy, ataxia, bloody nasal discharge, and diarrhoea. In domestic geese, mortality ranged between 2 and 13%, and clinical signs included depression, a drop in food consumption, tremors, movements of the neck and head, sinusitis and nasal discharge. In guinea fowl, no clear clinical signs were seen except for an increased mortality. Fattening domestic ducklings showed mortality from 20 to 65%, and neurological signs that included tremors, incoordination, lying on the back and making pedalling movements of the legs, opisthotonus, and circling movements of the body. In breeding ducks, only single deaths were observed, with total mortality in two positive flocks at the time of official intervention of 0.27 and 0.4%. Clinical signs were drop in food and water consumption and 90% decrease in egg production.

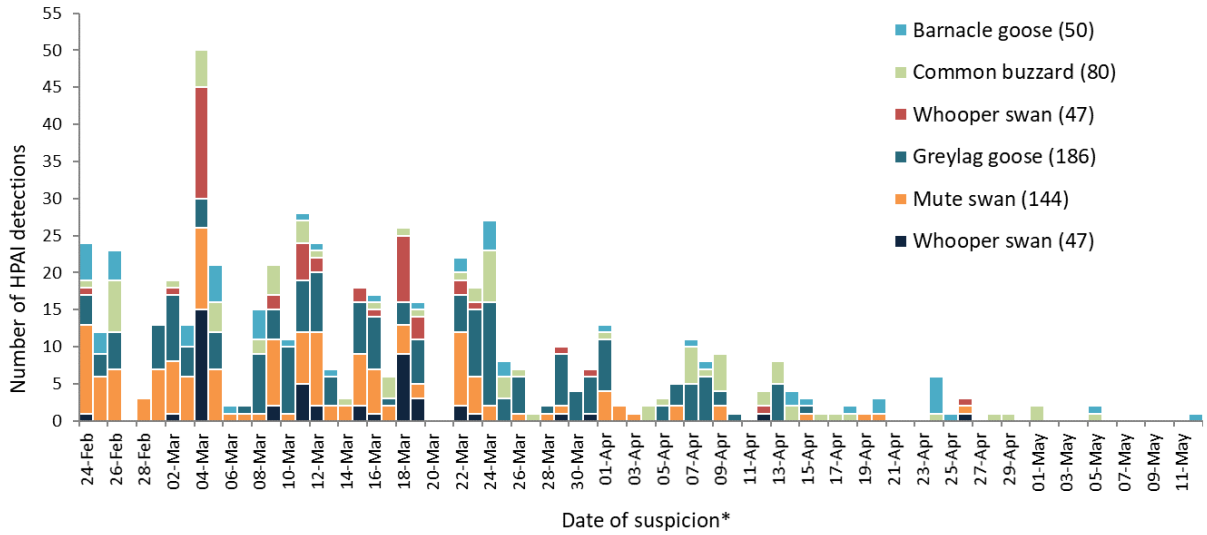
4.2.1.2. HPAI in wild birds

Between 24 February and 14 May 2021, 1,051 HPAI detections in wild birds were reported to the ADNS and OIE by EU/EEA and the UK (Figure 9). At least 16 waterfowl species (795 detections), at least 18 other wild bird species (112 detections) and at least 9 raptor species (144 detections). The complete list of HPAI detection by wild bird species is reported in Table C.1, Annex C. Of the wild birds species reported, those involved in more than 20 detections were greylag goose (*Anser anser*) (n=190), mute swan (*Cygnus olor*) (n=156), common buzzard (*Buteo buteo*) (n=81), barnacle goose (*Branta leucopsis*) (n=56), whooper swan (*Cygnus cygnus*) (n=48). Also, 224 HPAI detections were reported as unspecified swans, 57 as Anserinae, and 28 as Accipitrifromes. The actual mortality of wild birds associated with HPAI is much higher than the number in which HPAI has been detected in the laboratory, because in mass mortality events at a specific location and date, only one or a few birds are actually tested for HPAI. The daily distribution of HPAI detections in the most affected wild bird species in shown in Figure 10. Following a lower level of observed mortality of wild birds in December and January, there was a second peak of HPAI-positive wild bird reports in February, March and April 2021 (Figure 4C), and coincided with reports of increased wild bird mortality in the Netherlands (AImpact2021), Sweden (SVA), and Germany (SH, online), involving many barnacle geese, greylag geese, and mute swans.



* This designation is without prejudice to positions on status, and is in line with United Nations Security Council Resolution 1244 and the International Court of Justice Opinion on the Kosovo Declaration of Independence.

Figure 9: Geographical distribution, based on available geocoordinates, of highly pathogenic avian influenza detections in wild birds in Europe, by species category, 24 February – 14 May 2021 (n=965)



* When the date of suspicion is not available then the date of confirmation is used to assign the week of suspicion.
Data source: EFSA, ADNS and OIE (14.05.21).

Figure 10: Number of reported detections of highly pathogenic avian influenza virus A(H5) in wild birds of the most affected wild bird species (i.e. those involved in more than 20 detections) in the EU/EEA and the UK, by date of suspicion, from 24 February to 14 May 2021. Note that in one single reported detection of HPAI in wild birds more than one bird and wild bird species might be involved

Information extracted from the scientific literature

Verhagen et al. (2021) reviewed the outbreaks of HPAI in Europe from 2005 and 2020. The majority of HPAI H5 viruses have been isolated from birds found dead, yet HPAI H5 viruses have also been isolated from apparently healthy birds of several species. They reported the following detections of HPAI subclade 2.3.4.4.b viruses in apparently healthy wild birds (at least one individual): between 2016 and 2019, A(H5N5), A(H5N6) and/or A(H5N8) in Eurasian wigeon (*Mareca penelope*), Eurasian green-winged teal (*Anas crecca*), great crested grebe (*Podiceps cristatus*), black-headed gull (*Chroicocephalus ridibundus*), common tern (*Sterna hirundo*), and great cormorant (*Phalacrocorax carbo*); between 2017 and 2019, A(H5N6) in Eurasian wigeon, mallard, and Armenian gull (*Larus armenicus*); and between 2020 and 2021 (ongoing), A(H5N1), A(H5N3), A(H5N4), A(H5N5) and/or A(H5N8) in Eurasian wigeon, mallard, and Eurasian green-winged teal. In addition to HPAI A(H5) virus detection, host species have been defined based on serology. The presence of HPAI H5 virus and/or HPAI H5-specific antibodies in live birds suggests that (some individuals of) these bird species can (asymptomatically) carry the virus and act as a vector. They suggested that to detect novel HPAI H5 viruses earlier upon introduction, passive surveillance (of wild birds found dead) should be complemented by active surveillance (of apparently healthy wild birds) by the sampling of scientifically-based target species at locations derived from wild bird migration.

4.2.2. LPAI in domestic birds

Notification of LPAI outbreaks is no longer compulsory as of 21 April 2021 due to the entry into force of Regulation (EU) 2016/429 on transmissible animal diseases ('Animal Health Law')[4]. For this reason, this report section covers the period from 24 Feburary to 20 April 2021.

Between 24 February and 20 April 2021, two LPAI outbreaks were notified in the poultry sector and in captive birds in Europe. Information available from the ADNS (European Commission, online-b), from

[4] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0429&rid=8

the OIE (OIE, online) and provided by Member States, characterising the LPAI outbreaks, is presented in Table 2.

Table 2: Characteristics of the LPAI-affected poultry and captive bird establishments in Europe, 24 February – 14 May 2021 (n=2)

Country	Virus subtype	Poultry species	Surveillance stream	Presence of signs in the outbreaks	Date of suspicion	Number of susceptible birds
France	A(H5N3)	Domestic mule duck	Outbreak-related	no	9/3/2020	3,000
Germany	A(H7N3)	Domestic duck	Active	no	15/3/2021	7
Total						3,007

Data source: ADNS, OIE, Member States.

4.2.3. Genetic characterisation of avian influenza viruses

Description of the nomenclature of the HPAI A(H5) viruses used in the document

The HA gene of clade 2.3.4.4 A(H5) viruses has rapidly evolved since the most recent official update of the nomenclature of the A/goose/Guangdong/1/1996-lineage H5Nx virus (Smith et al., 2015). This clade emerged in China in 2008 and since then it has acquired various neuraminidase subtypes, including N1, N2, N3, N4, N5, N6 and N8, by reassortments with other enzootic avian influenza viruses from different regions, and evolved into several subgroups. While a revised nomenclature of clade 2.3.4.4 viruses is pending, in the previous reports we used the genetic clustering described in 2018 by Lee and co-authors, who recognised four groups (a to d) within clade 2.3.4.4 (Lee et al., 2018). Recently, an update to the unified nomenclature for clade 2.3.4.4 A(H5) viruses has been proposed by WHO (WHO, 2020a) and eight genetic groups (a to h) have been recognised. In order to align the nomenclature system between international organisations this classification has been adopted for this report. Based on this proposed clustering, A(H5) viruses of clades 2.3.4.4a and d–h have mainly been circulating in poultry in Asia, while clades 2.3.4.4b and 2.3.4.4c have spread globally through wild bird migrations during 2014–2015 (2.3.4.4c) and 2016–2017 (2.3.4.4b)

Genetic characterisation of HPAI viruses of the A(H5) subtype circulating in Europe

The topology of the HA phylogenetic tree shows that all the HPAI A(H5) viruses collected between 31 July 2020 and 6 April 2021 from 19 Member States, the United Kingdom, Norway and Russia (available in GISAID on 16 May 2021) make up a single genetic group within clade 2.3.4.4b. Analyses of the remaining gene segments revealed the co-circulation in Europe and Central Asia of sixteen distinct genotypes, which originated from multiple reassortment events with LPAI/HPAI viruses circulating in wild and domestic birds: six A(H5N8), one A(H5N1), eight A(H5N5) and one A(H5N3). The most widespread genotype circulating in wild and domestic birds in Europe belongs to the A(H5N8) subtype, which was also held responsible for some cases in wild mammals and for one human case reported in Russia (Astrakhan region) in December 2020, for which the complete genome sequence was made available. In particular, this genotype was identified in March 2021 by the Animal and Plant Health Agency-Weybridge (APHA) in one juvenile red fox (*Vulpex vulpex*), four juvenile harbour seals (*Phoca vitulina*) and one juvenile grey seals (*Halichoerus grypus*) exposed to HPAI A(H5N8) infected mute swans during rehabilitation in an animal rescue centre in England (Floyd et al., 2021). The fox had died suddenly after a short period of non-specific malaise and inappetence. The seals had exhibited sudden-onset neurological signs, including seizures prior to death or euthanasia (Floyd et al., 2021). The same genotype was also identified by the National Veterinary Institute (SVA) in a grey seal in Sweden (personal communication). Also, on 28 May 2021 Wageningen Bioveterinary Research (WBVR) reported the identification of HPAI A(H5N1) in two foxes in the Netherland (WUR, online).

Mutations recognized as being associated with mammalian adaptation have only been sporadically identified in the analysed viruses from avian species of the current epidemic. Specifically, one A(H5N5) virus collected from backyard poultry in Romania on February 23, 2021 possessed the PB2 E627K mutation, considered one of the most important mammalian adaptive markers, correlated with increased replication and virulence in mammals (Herfst et al.; Manzoor et al., 2009; Kim et al., 2010; Suttie et al.,

2019). According to the Romanian public health authorities, people exposed during this outbreak have been followed up and did not show any clinical sings.

Of note, this same mutation was identified in the A(H5N8) collected from the grey seal in Sweden (Siamak Zohari personal communication), while the virus detected in the infected mammalian species from England showed the PB2 D701N mutation (Floyd et al., 2021). This had previously been associated with increased ability to replicate in mammalian cells and with an increased virulence in mice (Gabriel et al., 2005; Li et al., 2005; Czudai-Matwich et al., 2014). The PB2 D701N mutation is entirely absent from the avian viruses of the current European HPAI epidemic studied so far, and is generally detected more rarely in human viruses arising from zoonotic infection compared to PB2 E627K (Arai et al., 2016).

In addition, a PB2 M64T amino acid substitution, which was identified in computational studies to be highly conserved in A(H3N2), A(H1N1), A(H2N2) human seasonal influenza viruses (A(H1N1)pdm09 viruses excluded) (Wen et al.; Finkelstein et al., 2007), was reported in two A(H5N8) viruses collected in 2020 from a wild bird in Denmark (Liang et al., 2021) and from a chicken in the Netherlands.

A single mutation (S678N) in the PB1 protein, which was described as being related to an enhanced polymerase activity in mammalian cells and to an increased virulence in mice (Gabriel et al., 2007), was detected in one A(H5N8) virus isolated from a wild bird (common buzzard) in Italy, as previously reported (EFSA, 2021), and also in four A(H5N8) viruses identified in turkeys in Russia (Rostov-on-Don) in January 2021.

These isolated mutations alone are not considered to significantly increase the risk for avian-to-mammal and mammal-to-mammal transmission, but a combination of adaptive and compensatory changes would likely be required for efficient adaptation.

Additionally, molecular features of host adaptation of viruses originating from wild birds to domestic gallinaceous poultry have been observed in several strains collected starting from January 2021. Specifically, potential additional glycosylation sites in the surface glycoproteins were detected in A(H5N8) viruses identified in wild and domestic birds in Sweden, Wales, Spain and the Czech Republic, while a deletion in the stalk region of the neuraminidase protein was observed in an A(H5N3) virus collected from a peregrine falcon in Northern Ireland.

A recently published study from Germany analysed serum specimens from wild boar for the presence of antibodies against type A influenza viruses and identified reactive neutralising antibodies against HPAI A(H5N8) in sera from 2016 and 2017 (Schülein et al., 2021).

Genetic characterisation of LPAI viruses of the A(H5) subtype circulating in Europe

Genetic analyses of a LPAI A(H5N3) virus collected in mule ducks in France show that all genome segments are related to LPAI virus sequences collected mostly in wild birds from Europe, Asia or Egypt.

4.2.4. Human cases due to A(H5Nx) viruses detected in Europe

Since 12 February and as of 14 May 2021, four countries reported a total of 714 people exposed to infected birds (e.g. during culling activities). Data on the number of exposed people involved in HPAI outbreaks was not available for 11 countries.

On 20 February 2021, media cited that Russian authorities had identified seven occupationally exposed workers infected with A(H5N8) virus at a poultry farm in south Russia (RBC TV, online). According to media reports the workers were exposed during an outbreak of A(H5N8) in a bird flock in December 2020. The cases were reported as asymptomatic or with mild symptoms. No human-to-human transmission has been observed according to Russian authorities (TASS, online). ECDC has published a Threat Assessment Brief in February 2021 that assessed the risk as very low for the general public and low for occupationally exposed people (ECDC, 2021a) (REF). The World Health Organization (WHO) assessed the risk as low (WHO, online-a) and a recent risk assessment by the United States Centers for Disease Control and Prevention (US CDC) placed the risk in the low to moderate category (CDC, online).

No human infection with avian influenza viruses, as currently detected in wild birds and poultry in Europe, has been identified during the period covered by this report or has been previously reported in the EU/EEA (EFSA et al., 2021).

4.2.5. Human cases reported within clade 2.3.4.4 A(H5Nx) viruses globally

Total 33 HA sequences from human cases due to H5Nx [32 A(H5N6) and 1 A(H5N8)] viruses of clade 2.3.4.4 have been submitted between 2014 and 2021. Viruses within clade 2.3.4.4 have diversified over the last years, so that WHO has suggested a classification system to separate the viruses into subclades a-h (WHO, 2020a). Only one A(H5N8) case reported from Russia in 2020 and one A(H5N6) case from China in 2017 clustered in subclade 2.3.4.4b, the same where A(H5Nx) viruses detected in wild birds and poultry in Europe clustered. All other human A(H5N6) cases described in the A(H5N6) section 4.4.3.2 cluster in other subclades (Table 3).

Table 3 Distribution of human cases infected by A(H5) viruses within clade.2.3.4.4

Clade	Year(s)	Number of human sequences	Country
2.3.4.4	2014-2015	6	China
2.3.4.4a	2014	1	China
2.3.4.4b	2017 and 2020	2	China, Russia
2.3.4.4d	2015, 2016	9	China
2.3.4.4e	2014, 2015	3	China
2.3.4.4g	2016	2	China
2.3.4.4h	2017, 2018, 2020, 2021	10	China

4.3. Prevention and control measures applied in Europe, 12 February – 30 April 2021 (TOR 3)

The description of the control and prevention measures applied in the affected Member States is presented in Annex B, thanks to the countries that were willing to collaborate with EFSA and kindly provided the information here reported. Due to the time needed to carry out the data collection, the reporting period presented in this section is different and shorter than that of the whole report: only the prevention and control measures applied in the affected Member States on outbreaks occurred between 12 February 2021 and 30 April 2021 are thoroughly presented. Outbreaks occurred prior to 11 February 2021 are covered in the previous EFSA report (EFSA et al., 2020a), and the outbreaks occurred later than 30 April were too close to the publishing of this report for collecting the data, and in many cases.

4.4. The avian influenza situation in other countries not reporting via ADNS, 24 February – 14 May 2021 (TOR 4)

An overview of the HPAI detections notified from other countries not reporting via ADNS but via the OIE or national authorities from 24 February to 14 May 2021 is presented in Table 4 and Figure 11. For the purposes of this report, only findings of avian influenza viruses occurring in countries that are considered to be of epidemiological interest for the EU/EEA or of public health relevance are described.

Table 4: Number of HPAI detections in other countries not reporting via ADNS, by virus subtype and country, 24 February – 14 May 2021 (n=45)

Region	Country	Domestic birds					Wild birds				Unknown species	Total
		A(H5Nx)	A(H5N1)	A(H5N2)	A(H5N5)	A(H5N8)	A(H5Nx)	A(H5N5)	A(H5N6)	A(H5N8)	A(H5N6)	
Africa	Mali		4									4
	Niger		2									2
	South Africa	1	9									10
Asia	China								1			1
	Iran					3						3
	Iraq					1						1
	Israel									1		1
	Japan					2				4		6
	Kuwait					1						1
	Laos										1	1
	Nepal					1						1
	Korea					7						7
	Taiwan			1	4							5
Europe	Russia						1	1				2
Total		**1**	**15**	**1**	**4**	**15**	**1**	**1**	**1**	**5**	**1**	**45**

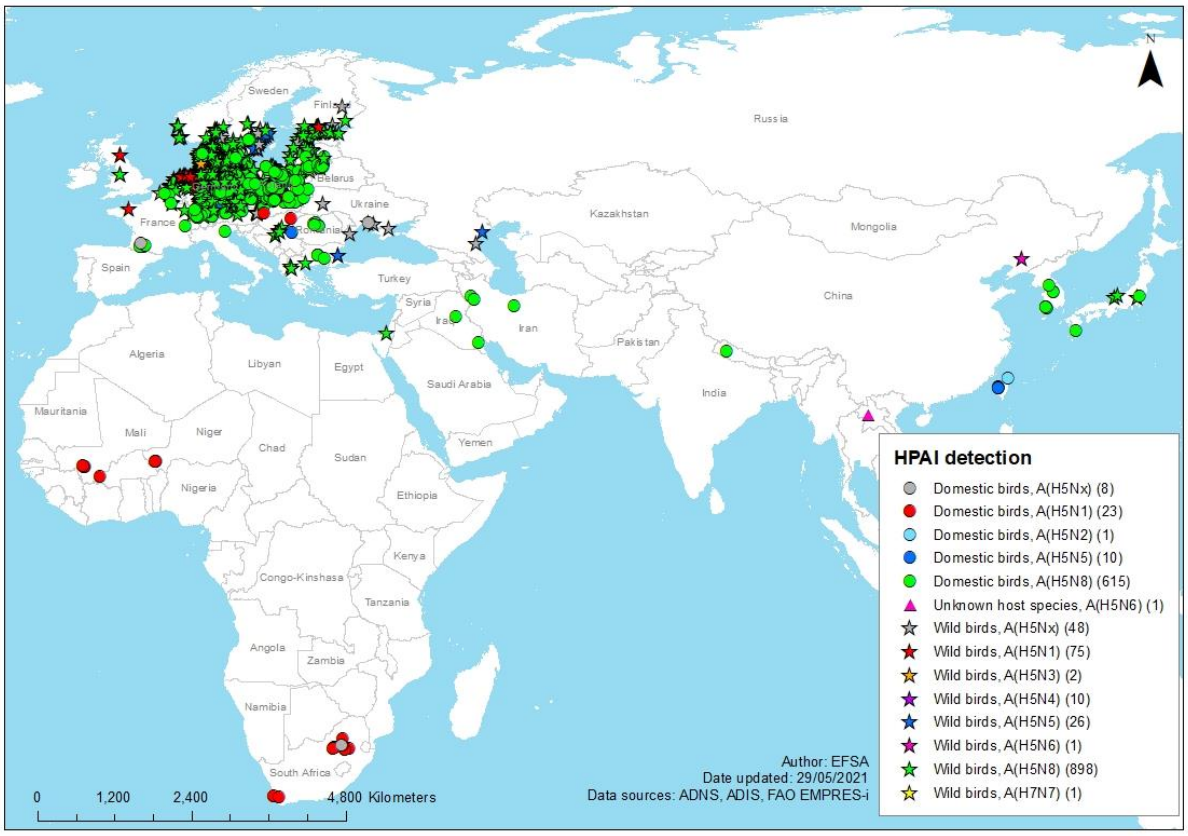


Figure 11: Geographical distribution, based on available geocoordinates, of HPAI detections reported in domestic birds (n=1,883), wild birds (n=2,588) and unknown bird species (n=9) in Europe, Asia and Africa, by virus type, 24 February – 14 May 2021

4.4.1. HPAI A(H5N1)

4.4.1.1. Domestic and wild birds in previously affected regions

Detections

From 24 February to 14 May 2021 only African countries notified the detection of HPAI A(H5N1) in domestic poultry. New outbreaks were notified by Mali, Niger and South Africa. Mainly medium-sized poultry farms were affected with exception of one backyard farm in Mali and a very large chicken farm in South Africa. In contrast to the last report, no outbreaks were notified from Asia and wild birds in the relevant time period (Figure 12).

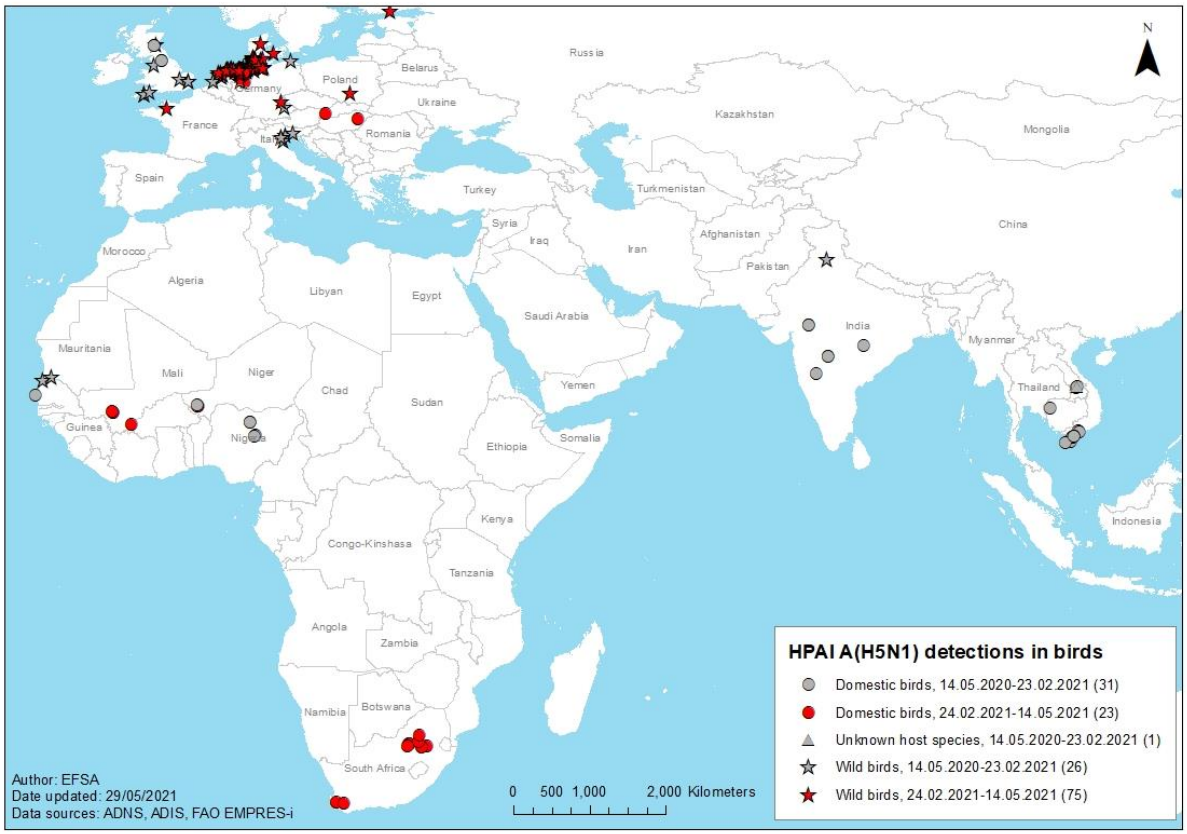


Figure 12: Geographical distribution, based on available geocoordinates, of HPAI A(H5N1) detections reported in domestic birds (circles) and wild birds (stars) (n=156); red symbols indicate outbreaks that occurred between 24 February and 14 May 2021, grey symbols indicate outbreaks that occurred between 14 May 2020 and 23 February 2021 (FAO, online-b)

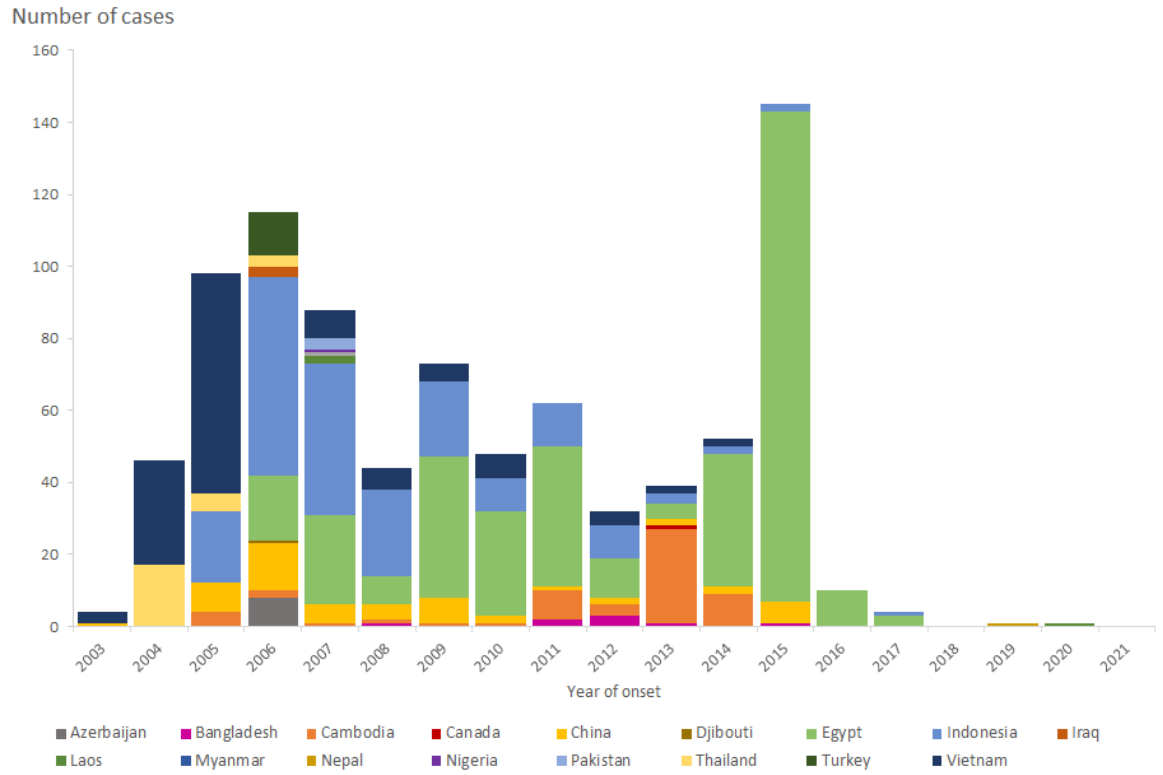
Information extracted from the scientific literature

During the reporting period, no new relevant information has been published on the phenotypic and genetic characterisation of HPAI A(H5N1) viruses circulating in countries outside the EU/EEA, concerning domestic and wild birds.

4.4.1.2. Human infections due to A(H5N1)

No human case due to avian influenza A(H5N1) has been reported since the last report (EFSA et al., 2021). Since 2003, and as of 14 May 2021, 862 laboratory-confirmed cases of human infection with avian influenza A(H5N1) virus, including 455 deaths, have been reported from 17 countries outside the EU/EEA (WHO, 2020c; CHP, 2021b) (Figure 13).

In April 2021, the Nigerian CDC reported seven people testing positive for influenza A virus exposed during HPAI A(H5N1) outbreaks, including six samples of influenza A(H5) (neuraminidase (NA) remained undetermined) and one sample of unsubtypable influenza A virus (ECDC, 2021b; NCDC, online-a, b). Specimens have been shared with the WHO Collaborating Centre in the US for further confirmation and characterisation. Until final WHO confirmation, these cases will not be included in the listed A(H5N1) cases above.



Data source: WHO (CHP, 2020; WHO, online-b).

Figure 13: Distribution of confirmed human cases of A(H5N1) by year and country of reporting, 2003 – 14 May 2021 (n=862)

4.4.2. HPAI A(H5N2) and A(H5N5)

4.4.2.1. Domestic and wild birds

Detections

The Taiwanese lineage HPAI A(H5N2) has been in circulation in Taiwan since 2012 and caused severe outbreaks at chicken, domestic duck, domestic goose and turkey establishments. Contrary to the last report, one case of HPAI A(H5N2) was reported in domestic birds to the OIE in the relevant reporting period. The Taiwanese lineages of HPAI A(H5N2) (clade 2.3.4.4) differ from the Eurasian HPAI A(H5N2) lineage (Li et al., 2020); the latter belonging to clade 2.3.4.4b, which has been detected, with different genotypes, in Egypt and Russia as well as in Asian countries between 2016 and 2019 (EFSA et al., 2019) and in Bulgaria in 2020. The outbreaks of HPAI A(H5N5) continued in the same region. In contrast to the last report, no wild bird cases of HPAI A(H5N5) were reported between 24 February and 14 May 2021 (Figure 14).

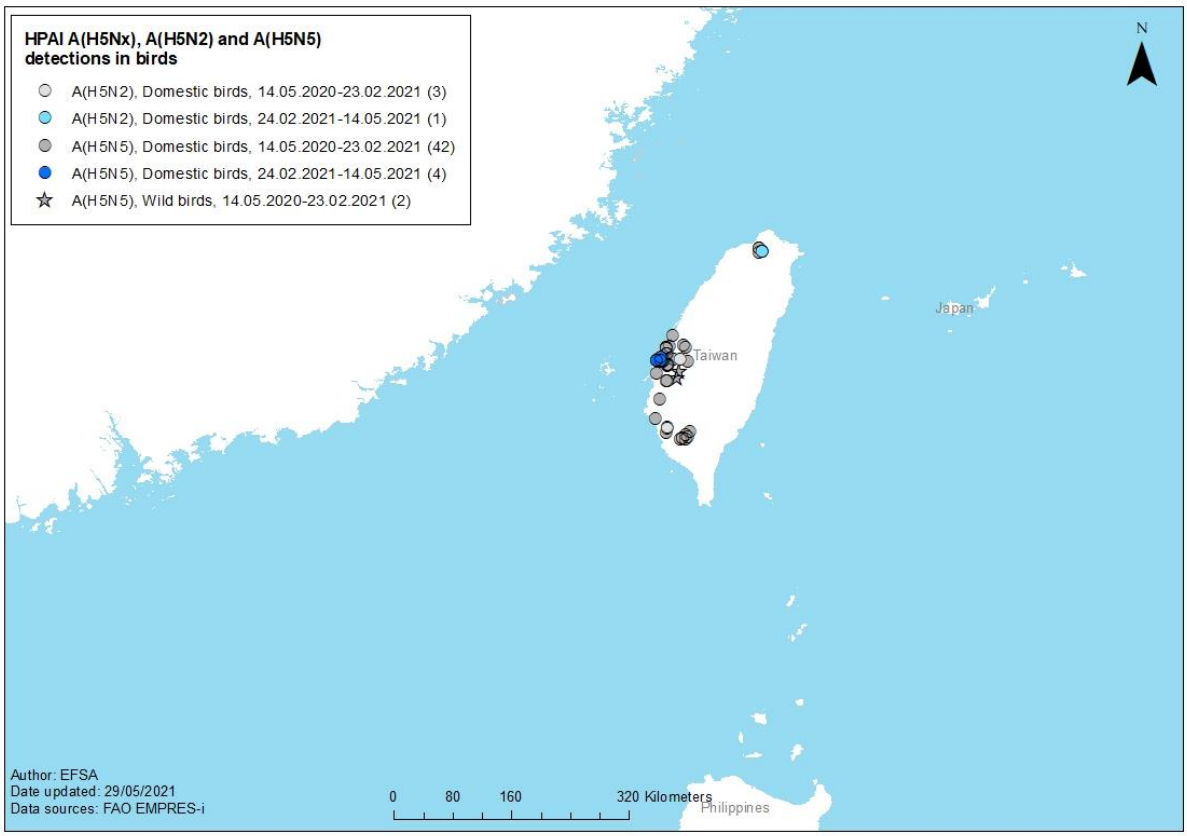


Figure 14: Geographical distribution, based on available geocoordinates, of HPAI A(H5N2) and A(H5N5) detections reported in domestic birds in Taiwan (n=52); dark grey symbols indicate HPAI A(H5N2) detections between 14 May 2020 and 23 February 2021, light grey symbols indicate HPAI A(H5N5) detections between 14 May 2020 and 23 February 2021, light blue symbols indicate HPAI A(H5N2) detection detections between 24 February and 14 May 2021, blue symbols indicate HPAI A(H5N5) detections between 24 February and 14 May 2021, (FAO, online-b)

Information extracted from the scientific literature

During the reporting period, no new relevant information has been published on the phenotypic and genetic characterisation of HPAI A(H5N2) and A(H5N5) viruses circulating in countries outside the EU/EEA, concerning domestic and wild birds.

4.4.3. HPAI A(H5N6)

4.4.3.1. Domestic and wild birds

Detections

No outbreaks of the zoonotic reassortment of HPAI A(H5N6) clade 2.3.4.4c cases were notified to the OIE within the relevant time period for this report. However, an outbreak in an unknown species was reported to WHO in relation to a human case in Laos. Furthermore, the Chinese national authorities detected HPAI A(H5N6) in several wild birds in a local forest park in the provincial capital Shenyang, Liaoning province (Figure 15).

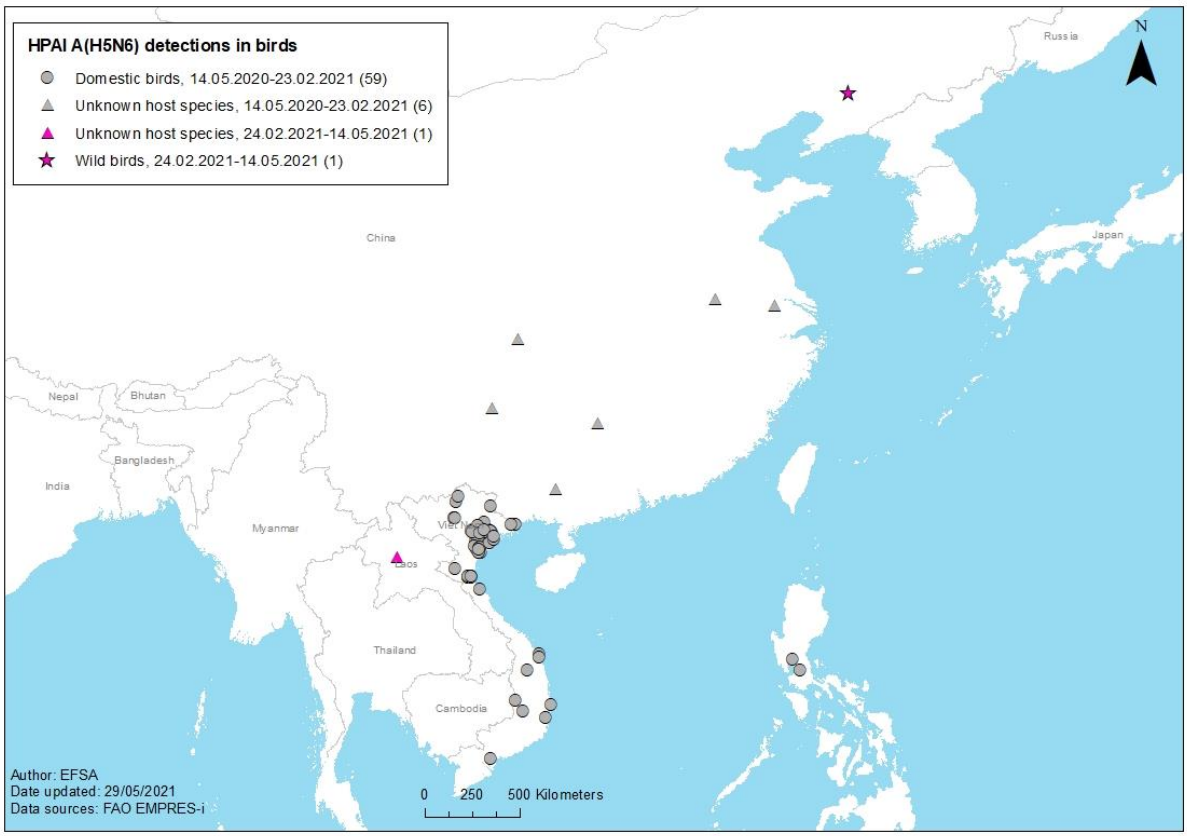


Figure 15: Geographical distribution, based on available geocoordinates, of HPAI A(H5N6) detections reported in domestic birds (n=67); pink symbols indicate outbreaks that occurred between 24 February and 14 May 2021, grey symbols indicate outbreaks that occurred between 14 May 2020 and 23 February 2021 (FAO, online-b)

Information extracted from the scientific literature

Jeong et al. (2021) reported the characterization of clade 2.3.4.4h HPAI A(H5N6) viruses isolated from brain tissue samples collected in April 2020 from two dead whooper swans (*Cygnus cygnus*) found at a wetland site in central Mongolia. These viruses shared high nucleotide identity for all their gene segments with A(H5N6) viruses identified in January 2020 from dead wild mute swans (*Cygnus olor*) and whooper swans in Xinjiang, north-western China (Li et al., 2021). All these viruses had several mutations in their HA protein, associated with increased affinity to α-2,6 sialic acid receptors, while maintaining amino acid positions related to tropism for α-2,3 sialic acids. Deletion in the stalk domain of the N6 protein as well as other mutations in the NS protein, associated with increased virulence in mice, were also present.

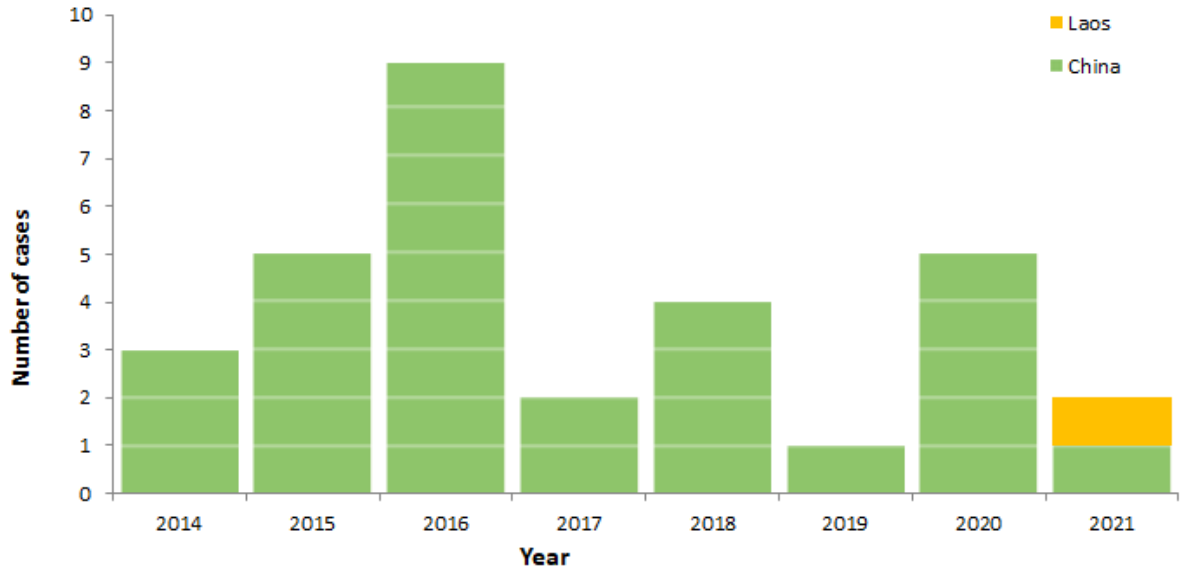
Further antigenic and in vivo testing was also performed on one of the viruses isolated in a whooper swan, Xinjiang, China (Li et al., 2021). Polyclonal antisera generated from this virus and from the inactivated Re-11 vaccine strain (derived for its H5 gene from a related clade 2.3.4.4h virus) and the corresponding antigens cross-reacted in HI tests with each other, within 2 $\log_2$ dilutions of their respective homologous HI titres. The intravenous pathogenicity index in 6-week-old SPF white Leghorn chickens was 2.59 (all birds had died within 3 days post-inoculation), confirming the high pathogenicity phenotype of the virus. Following intranasal inoculation of 10^5 EID_{50} in 3-week-old SPF domestic Shaoxin shelducks, 5 inoculated birds and 3 contacts all died within 7 days post-inoculation (dpi): virus was detected in oropharyngeal and cloacal swabs from surviving inoculated and contact ducks at 3 and 5 dpi, as well as in several organs (brain, kidney, pancreas, trachea and lungs, spleen, thymus, cecal tonsils and bursa of Fabricius) up to 10^8 EID_{50}/g from three inoculated ducks euthanized at 3 dpi. Following intranasal inoculation of 10^6 EID_{50} in 5-week-old female BALB/c mice, virus was detected in the nasal turbinates, lungs, spleens and kidney, but not in the brains of mice euthanized at 3 dpi, and

only one out of five mice inoculated with the same dose died at 8 dpi. All mice inoculated with lower doses of the virus survived during a 14-day observation period.

Peng et al. (2021) identified four clade 2.3.4.4h A(H5N6) HPAI strains isolated from fecal samples of sick domestic ducks and dead chickens in Shandong, eastern China, in 2019. This virus was a reassortant sharing close relationship with clade 2.3.4.4g A(H5N1) viruses for its PB1, PA, NP, M and NS genes, with A(H9N2) LPAI viruses of the G1 lineage for its PB2 segment, and with Eurasian A(H6N6) LPAI viruses for its NA segment. Following intranasal inoculation of a 10^6 EID_{50} dose of each virus in 6-week-old SPF white Leghorn chickens, all five inoculated and three contact birds died within 4-5 dpi and 6-8 dpi, respectively: most birds also showed clinical signs, including depression, reduction in food and water intake, ocular and nasal discharges, conjunctivitis, dyspnoea and signs of neurological dysfunctions. The inoculated virus was recovered in oropharyngeal and cloacal swabs collected from all inoculated and contact chickens, constantly from 3 dpi onwards (and only partial instances, as early as 1 dpi), as well as in several organs (brain, heart, liver, kidney, spleen, trachea and lungs) from three inoculated chickens euthanized at 3 dpi. Following intranasal inoculation of a 10^6 EID_{50} dose in 6-week-old female BALB/c mice, all mice suffered obvious weight loss and died within 8 to 12 dpi. Virus replication was detected in the lungs, spleens, kidneys and brains of inoculated mice, euthanized at 3 dpi and 5 dpi.

4.4.3.2. Human infections due to A(H5N6)

Two new human cases due to avian influenza A(H5N6) have been notified since the last EFSA report, one case from China, a hospitalised 51 year old man, and the first case reported from Laos, a five year old, who recovered after being hospitalised (EFSA et al., 2020a; WHO, 2020b, c). Since 2014, and as of 14 May 2021, 31 laboratory-confirmed cases of human infection with avian influenza A(H5N6) viruses of clade 2.3.4.4 circulating in South-East Asia have been reported globally with 16 of them being fatal (CHP, 2021a) (Figure 16). One case previously reported in the scientific literature was excluded based on feedback from WHO. Twelve deaths due to A(H5N6) had been reported between 2014 and 2017 (Jiang et al., 2017). (WHO, 2019a)



Source: ECDC line list (see Appendix B.2).

Figure 16: Number of human cases due to A(H5N6), clade 2.3.4.4, infection by year of onset, 2014 – 14 May 2021 (n=31)

4.4.4. HPAI A(H5N8)

4.4.4.1. Domestic and wild birds

Detections

The outbreaks of clade 2.3.4.4b, HPAI A(H5N8) in Middle East and Asia continued in the relevant time period for this report. Iran, Iraq and Kuwait as well as Japan, Nepal and the Republic of Korea notified several outbreaks in poultry farms to the OIE and FAO. Furthermore, HPAI A(H5N8) and reassortants (H5N1, H5N5) were detected in a peregrine falcon (Falco peregrinus) from United Kingdom, dalmatian pelican (Pelecanus crispus) and crow from Russia, a stork in Israel and several buzzards from Japan (Figure 17). Since the end of 2020 India were hit by a wave of outbreaks of HPAI A(H5N8) in poultry and wild birds. But no further outbreaks were officially reported from India despite media reports of a second wave of wild bird cases, mainly bar-headed geese (Anser indicus), in Himachal Pradesh (Hindu, online). In addition, FAO reported several outbreaks of HPAI A(H5N8) in ostriches, geese, turkeys, layer chickens and peacocks from several provinces of Nigeria between 24 February and 14 May 2021 (FAO, online-c).

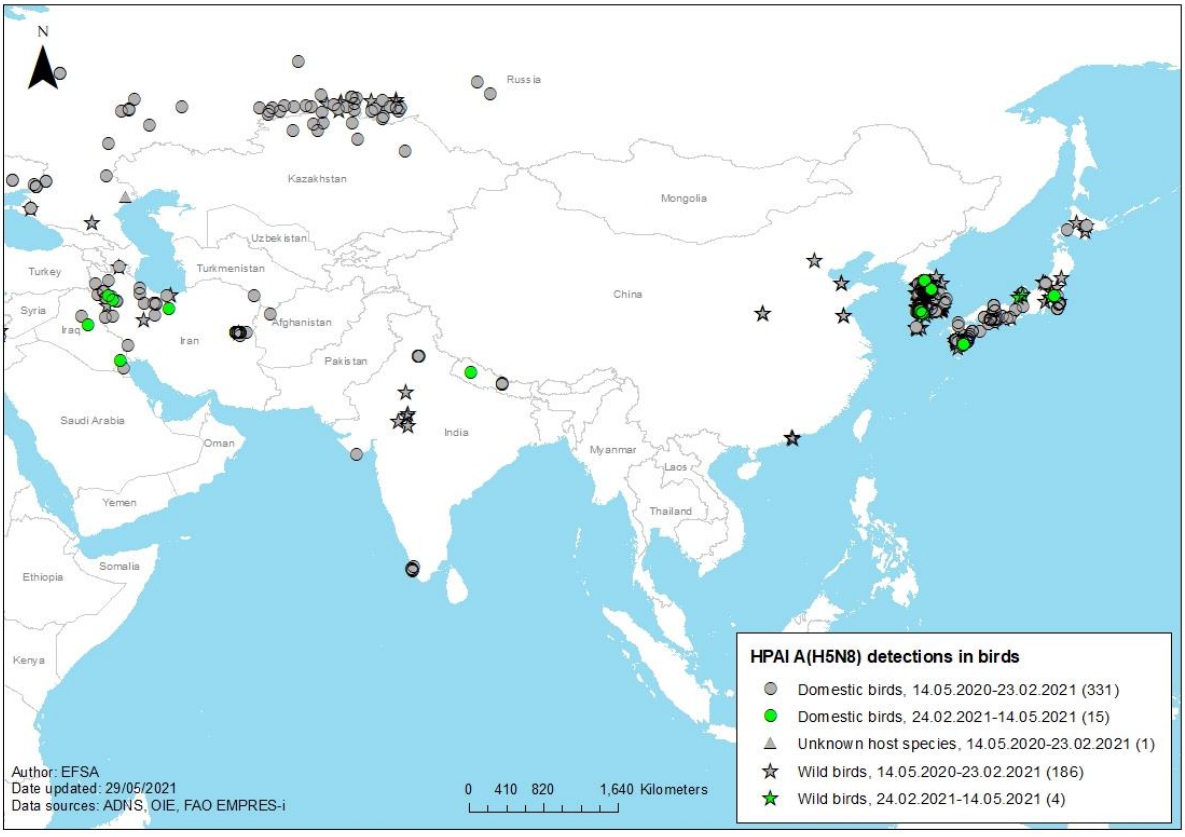


Figure 17: Geographical distribution, based on available geocoordinates, of confirmed HPAI A(H5N8) outbreaks in domestic birds (circles) and wild birds (stars) (n=537); green symbols indicate outbreaks that occurred between 24 February and 14 May 2021, grey symbols indicate outbreaks that occurred between 14 May 2020 and 23 February 2021 (FAO, online-b)

Information extracted from the scientific literature

Khalil et al. (2021) and Sakuma et al. (2021) reported the detection and genetic characterization in Japan in early November 2020 of A(H5N8) clade 2.3.4.4b HPAI viruses. These viruses were detected in fecal samples collected in southern Japan from falcated ducks (*Anas falcata*) and in environmental water samples from a nearby area, for the first study, and from an outbreak in a layer farm in western Japan

for the second study. They were related for all their gene segments with A(H5N8) viruses previously detected from wild bird fecal samples in East Asia in October 2020, Mandarin duck (*Aix galericulata*) in South Korea (Jeong et al., 2020) and Northern pintail (*Anas acuta*) in northern Japan (Isoda et al., 2020). All viruses also clustered with A(H5N8) strains that have been circulating in Europe between December 2019 and June 2020.

Sakuma et al. (2021) confirmed the high pathogenicity phenotype of the poultry-outbreak derived A/chicken/Kagawa/11C/2020 (H5N8) strain by intravenous inoculation of a $10^{7.75}$ EID_{50} dose in 7-week-old chickens, resulting in a 100% mortality rate within 48 hours. Mean time to death (MTD) was estimated to 134.4 hours following intranasal inoculation of 4-week-old White Leghorn chickens with a 10^{6} EID_{50} dose and the median chicken lethal dose was $10^{4.63}$ EID_{50} under the same conditions. For this strain, survivability was significantly higher, and MDT was significantly longer compared to other A/goose/Guangdong-lineage A(H5) HPAI viruses isolated in Japan between 2004 and 2018, except for A(H5N8) viruses identified in 2014. Virus shedding from 4-week-old chickens, intranasally infected with doses of 10^{5} and 10^{6} EID_{50} of A/chicken/Kagawa/11C/2020, could be detected from 1 day post-inoculation (dpi) in tracheal swabs, whereas the first signs developed only from 3 dpi at the earliest, involving depression of the infected animals (and comb cyanosis in a limited number of cases).

Li et al. (2021) reported the detection of two highly similar A(H5N8) clade 2.3.4.4b HPAIV, collected from a whooper swan (*Cygnus cygnus*) and a mute swan (*Cygnus olor*) found dead in mid-October 2020 in Inner Mongolia: both viruses were phylogenetically related to the dominant A(H5N8) genotype currently circulating in Europe and initially detected in Iraq in May 2020.

Baek et al. (2021) obtained the full genome sequences of 67 A(H5N8) HPAI viruses isolated from poultry (n=50) and wild bird (n=17) samples collected between October 2020 and January 2021 in South Korea. Most H5 sequences possessed an identical PLREKRRKRGLF multibasic cleavage site sequence, with a minor PLIEKRRKRGLF variant characterized from only two cases, predictive of a high pathogenicity phenotype in chickens. Phylogenetic analysis of the H5 gene sequences identified two distinct genetic groups belonging to clade 2.3.4.4b: cluster G1 closely related to A(H5N8) strains that have been circulating in Europe between December 2019 and June 2020, and cluster G2 related to A(H5N8) viruses detected in Iraq in May 2020 and currently circulating in Europe.

Cluster G1 strains comprised six genotypes: all segments of the genotype initially detected (in poultry and wild birds) in October 2020 clustered with sequences of the European A(H5N8) viruses from December 2019-June 2020 and with sequences of the Japanese and Korean viruses described at the beginning of this part. This genotype further reassorted with internal gene segments derived from Eurasian LPAI viruses to generate five genotypes sharing at least their HA, NA and NP segments: all of these were detected in poultry, and only three genotypes in wild birds. Cluster G2 strains consisted in a single genotype detected in poultry and wild birds, related for all eight segments with viruses circulating in Europe in late 2020 and in 2021. The major host population transitions identified by phylogenetic analyses of the whole set of sequences were from wild birds to domestic ducks, and between poultry populations, from domestic ducks to chickens and to minor poultry species.

4.4.5. HPAI-LPAI A(H7N9)

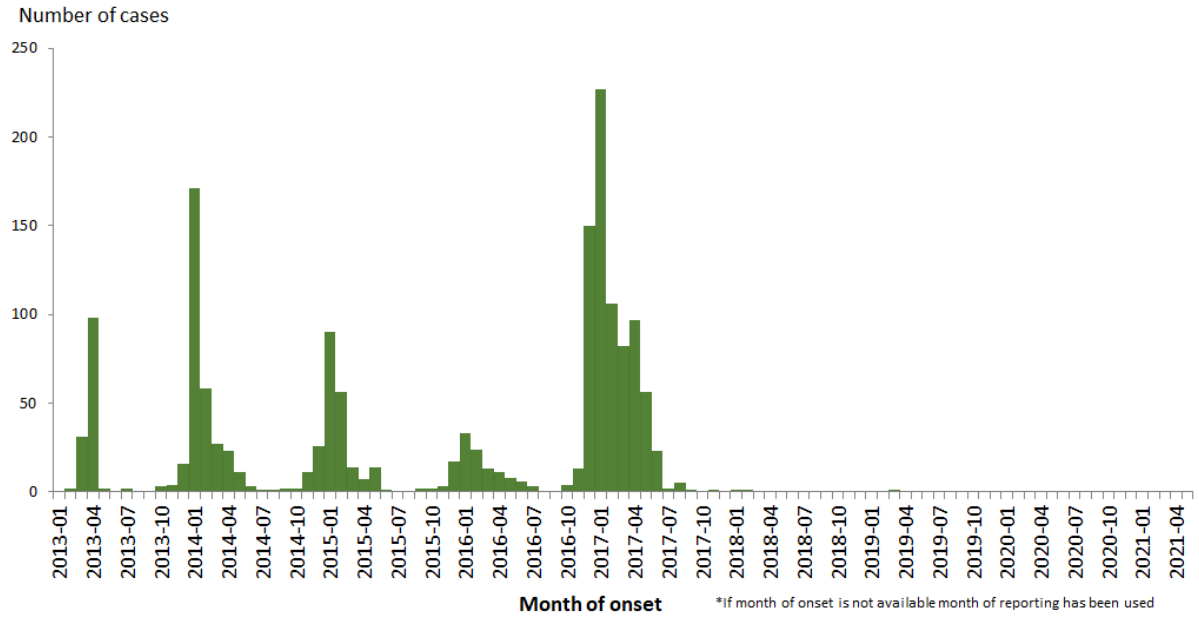
4.4.5.1. Domestic and wild birds

No LPAI or HPAI A(H7N9) cases were notified in poultry or wild birds within the relevant time period for this report. The last case was reported from Shandong province, China, in October 2020. The nationwide A(H7N9) vaccination campaigns for poultry, with the exception of poultry in AI-free zones and export farms, started extensively in September 2017 (FAO, online-a).

4.4.5.2. Human infections due to A(H7N9)

No human cases due to avian influenza A(H7N9) have ever been reported from Europe and no human case has been reported globally since 2019 (WHO, 2020d, b). Since February 2013, a total of 1,568 human cases have been reported from outside of Europe (Figure 18), including at least 615 deaths (39%) (CHP, 2021b) (WHO, 2019a, b). Of all human cases, 32 have been infected with HPAI virus

A(H7N9), 13 of them fatal, according to the Chinese National Influenza Center (Chinese National Influenza Center et al., 2018).



Source: ECDC line list (see Appendix B.2).

Figure 18: Number of human cases due to A(H7N9), infection by month and year of onset, 2013 – 14 May 2021 (n=1,568)

4.4.6. LPAI A(H9N2)

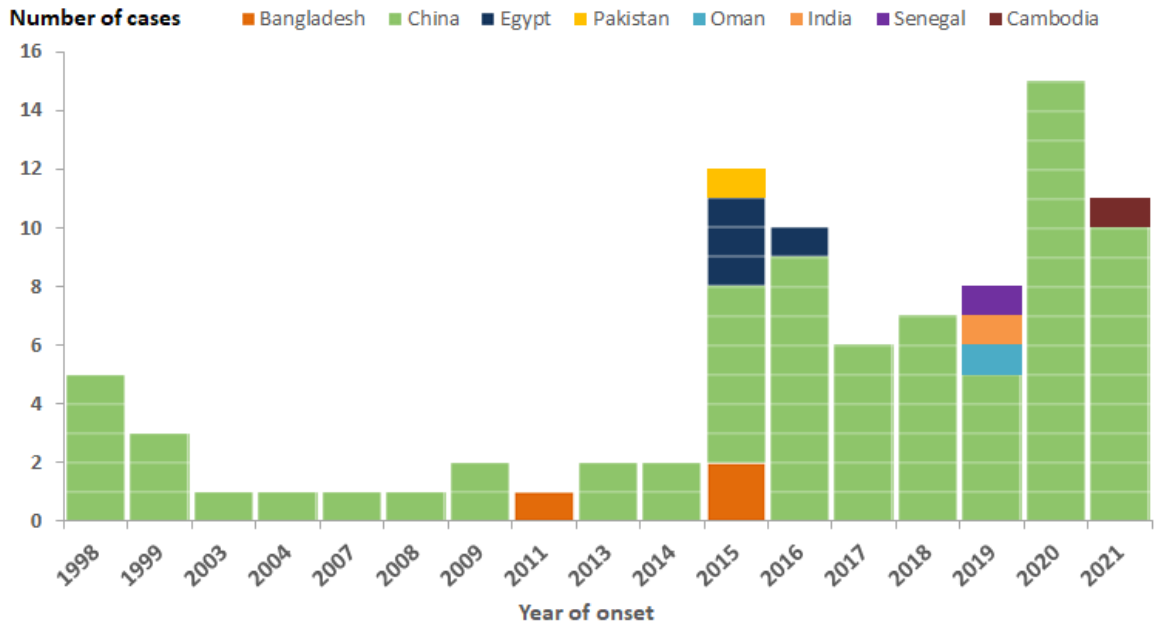
4.4.6.1. Domestic and wild birds

Detection

As mentioned in previous EFSA reports, A(H9N2) is the most commonly detected non-notifiable subtype of influenza virus in poultry in Asia, the Middle East and Africa (Zecchin et al., 2017; Bonfante et al., 2018; Chrzastek et al., 2018; Xu et al., 2018; Zhu et al., 2018; Awuni et al., 2019; Kariithi et al., 2019). These Regions remained LPAI (H9N2) endemic at least until 14 May 2021.

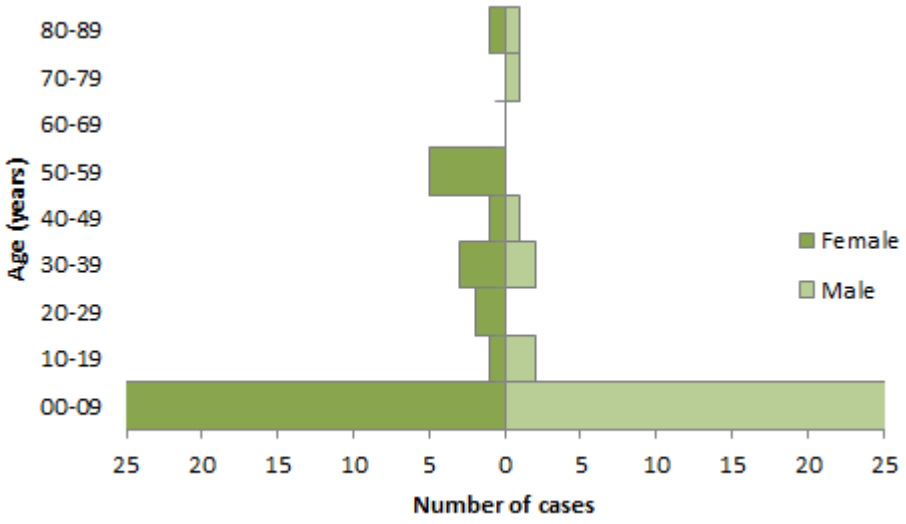
4.4.6.2. Human infections due to A(H9N2)

Since the last EFSA report, 10 human cases of infection have been reported, nine from China and one from Cambodia (CHP, 2021a). Since 1998, and as of 14 May 2021, 88 laboratory-confirmed cases of human infection with avian influenza A(H9N2) virus, including one death, have been reported globally. Cases were reported from China (76), Egypt (4), Bangladesh (3), Cambodia (1), India (1), Oman (1), Pakistan (1) and Senegal (1) (ECDC line list; see Appendix B.2) (Figure 19). Exposure to live or slaughtered poultry or contaminated environment has been reported. The age group most affected by A(H9N2) infections in humans was children under 10 years of age, who develped only mild symptoms (Figure 20).



Data source: ECDC line list

Figure 19: Distribution of confirmed human cases of A(H9N2) by reporting country, 1998 – 14 May 2021 (n=88)



Data source: ECDC line list

Figure 20: Distribution of confirmed human cases of A(H9N2) by age group, 1998 – 14 May 2021 (n=88)

4.5. Scientific analysis of avian influenza spread from non-EU/EEA countries and within the EU/EEA

Since 2005, at least ten incursions of HPAI H5 GsGd viruses through wild migratory waterbirds have occurred in Europe. These incursions were due to HPAI H5 GsGd viruses of different subtypes and clades, which could either cause high mortalities, with the involvement of multiple bird species in the various epidemics or circulate almost undetected in wild bird populations (Verhagen et al., 2021). Since 2014, HPAI viruses of the A(H5N8) subtype in combination with other neuraminidase subtypes have been introduced in the European territory almost once a year. The frequency of outbreaks in poultry, the number of affected countries, and the impact on the poultry industry have been variable in different years.

The 2020-2021 epidemic with a total of 1,247 outbreaks in poultry, 22,4 million birds affected, 65 detections in captive birds, and 2,243 HPAI events in wild birds in 28 European Countries appears to be one of the largest and most devastating HPAI epidemics ever occurred in Europe.

The recent detection of HPAI A(H5) cases in poultry and wild birds indicates that the virus is still circulating in the European territory. Indeed, a significant number of outbreaks has been recently reported in EU countries (Fig. 1). The rapid evolution of the epidemic in Poland with the recent involvement of 297 poultry establishments from March 2021 and more than 10 millions birds affected, is indicative of spread of the infection among commercial poultry operations and backyards (at least 70 secondary outbreaks has been identified) after the initial exposure to infected wild birds and the introduction of infected consignments of ducks from Czechia. The observed major national HPAI A(H5) epidemics have occurred due to the spread of the virus among highly susceptible poultry species (e.g., domestic ducks, domestic geese, turkeys) and poultry production systems (e.g., layers, backyards) in areas with high poultry densities.

The evolution of HPAI A(H5) viruses in wild birds in Europe should be constantly kept under scrutiny. Since October 2020, HPAI A(H5) viruses of numerous genotypes, which continue to mutate and reassort, have circulated among wild bird and poultry populations in several European countries. The observed second peak of HPAI-positive wild bird reports from February to April 2021 in north-west Europe is the first time that such a pronounced peak of HPAI-associated wild bird mortality has occurred into spring. The temporal extension of a relatively high prevalence of virus infection into the breeding season of wild birds means that juveniles of different wild bird species—both wild waterbirds such as ducks, geese and swans, and birds of prey such as falcons, buzzards and eagles—are at risk of infection. Because it also is the breeding season of wild mammals, the juveniles of species that have wild birds in their diet (such as red foxes, *Vulpes vulpes*), and species that share their habitat with wild waterbirds (such as harbour seals, *Phoca vitulina*), also are at risk of infection. Furthermore, the entry of naïve juvenile individuals into the population may allow HPAI to persist longer in wild birds, and so form a persistent risk of HPAI virus infection for poultry.

In such situations, the application of strict biosecurity and early detection measures will continue to be the first line of defence of poultry farms against the introduction and spread of avian influenza infections.

4.6. Monitoring, diagnosis of human infections and public health, occupational health and safety measures for infection prevention and control in the EU/EEA

4.6.1. Occupational health and safety measures

When there is a potential risk of exposure to these viruses from infected birds (whether in an agricultural or other setting), the workplace risk assessment should be revised taking into account all risks, including the increased physical load on workers from wearing PPE and appropriate measures should be taken, prioritising technical and organisational measures over personal measures. The measures should be consulted with the health and safety committee when available or workers´ representatives. These may include technical measures such as physical distancing, enhanced ventilation, dust-and aerosol-avoiding measures (for example when cleaning and handling litter) and using appropriate PPE, when other measures do not sufficiently protect workers. Work clothing and street clothing should be stored

separately and a separation of potentially contaminated areas from clean areas ensured (black/white areas) and appropriate hygiene measures applied. In agricultural settings, care should be taken to avoid contaminations of domestic areas, for example through contaminated work clothing. Appropriate PPE should be provided by employers and properly stored and disposed of, and workers should be trained in its use. Specific measures should be set out for culling operations and for the handling of dead animals and waste.

At premises where workers may be exposed to the above-mentioned viruses, for example when directly exposed to birds, their products or droppings, which may potentially be infected or contaminated with avian influenza viruses, the workplace risk assessment should be revised by employers and appropriate occupational safety and health measures should be set[5], taking into account all risks, including those from additional physical load when wearing PPE. Appropriate PPE should be provided by employers and workers should be trained in its use and disposal. PPE should be properly stored. At poultry farms, it should be ensured that living areas are not contaminated, for example through work clothing, e.g. to avoid additional risk to family workers and relatives.

4.6.2. Monitoring and options for public health measures

Surveillance of avian influenza viruses in wild birds and poultry in the EU/EEA is important in order to detect newly introduced and circulating viruses and reduce the possible risk of exposure of humans to infected birds. Sequencing efforts of avian influenza viruses should be increased related to outbreaks and wild bird detections to monitor the evolution of the viruses and identify mutations in the virus genome that indicate human transmissibility or pathogenicity.

It is important to remain vigilant, to prevent any transmission and identify any possible early transmission events to humans. People at risk are mainly those in direct contact/handling diseased birds or poultry, or their carcasses (e.g. farmers, agricultural workers at poultry farms, veterinarians and labourers involved in culling and rendering).

Countries are urged to implement follow-up and testing of exposed people. People developing respiratory symptoms including conjunctivitis within 10 days after contact with infected birds should be tested for influenza viruses. Other A(H5Nx) viruses have shown high severity and mortality, so that the evolution of these viruses need to be closely monitored and human-to-human transmission identified and reported as early as possibly to implement public health control and worker protection.

Workers should wear PPE (face mask, goggles/face shield/protective glasses, gloves and gown/overall) and avoid unprotected direct contact with sick or dead birds, carcasses, faeces as well as potentially contaminated environments. National public health and occupationally, safety and health (OSH) guidelines might detail the required level of protection and equipment. Appropriate measures should also be set for culling operations, which should cover the disposal of dead animals and waste. National public health and occupational health and safety guidelines might detail the required level of protection and equipment.

Occupationally and people otherwise exposed to birds with avian influenza virus infection should be identified and monitored for development of influenza-like symptoms. Local health authorities and occupational health services should consider active monitoring these groups, particularly during and after culling operations. Workers should have access to appropriate health surveillance according to national OSH requirements and the occupational health services or physicians should be consulted. Health monitoring of exposed workers should be offered in accordance with national OSH requirements at the affected holdings[6].

[5] An extensive body of occupational safety and health (OSH) legislation applies to the protection of workers. Employers' obligations are set out in the OSH framework Directive 89/391/EC and its daughter directives, in particular directive 2000/54/EC 000 on the protection of workers from risks related to exposure to biological agents at work. These Directives are minimum requirements and are implemented in national regulations. There may be specific guidance for poultry workers in the Member states and they may also include requirements for appropriate health surveillance for instance.

[6] Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC)-*OJ L 262, 17.10.2000, p. 21–45*

Additionally, people with direct exposure at affected holdings or to likely infected wild birds should be monitored for a minimum of 10 days to document possible related symptoms, including influenza-like illness (ILI) with fever and cough or conjunctivitis. As a minimum, all persons exposed to the likely infected birds should be instructed to report any symptoms to local health and occupational health or other preventive services.

Avian influenza viruses circulating in the EU/EEA have not shown any resistance to antivirals such as neuraminidase inhibitors. Early or presumptive treatment with neuraminidase inhibitors should always be considered for suspect or confirmed cases, in line with relevant national and international recommendations. Antiviral prophylaxis could also be considered depending on the local risk assessment (i.e. intensity of exposure).

It is recommended that confirmed cases, including family workers at farms and relatives, are followed-up, tested and offered post-exposure prophylaxis as recommended by relevant national/international guidelines. Healthcare workers managing symptomatic exposed (or possible) cases should follow standard, contact and respiratory precautions, depending on the local risk assessment. Workplace prevention measures should be set accordingly. A protocol to investigate non-seasonal influenza has been published by WHO (WHO, 2018).

The initiation of sero-epidemiological studies following HPAI virus outbreaks is strongly encouraged to identify transmission events and support risk assessments.

4.6.3. Diagnosis

People in the EU presenting with severe respiratory or influenza-like infection and a history of exposure to poultry or wild birds will require careful investigation, management and infection control. Appropriate samples for influenza tests should be rapidly taken and processed from patients with relevant exposure history within 10 days preceding symptom onset. If positive specimens cannot be subtyped, those should be shared with the national reference laboratory (National Influenza Centres; NICs).

With routine diagnostic laboratory assays, human infection with A(H5Nx) viruses should be detected as positive for influenza A virus, and negative for influenza B, A(H1), A(H1)pdm09 and A(H3) viruses and therefore classified as unsubtypable influenza A virus if no-specific A(H5) diagnostic test is performed. Such unsubtypable influenza A virus isolates or clinical samples that cannot be subtyped should be sent to NICs, and further to a WHO Collaborating Centre for Reference.

4.6.4. Reporting

Human infections with avian influenza viruses are notifiable under EU legislation within 24 hours through the Early Warning and Response System (EWRS) according to EU Decision 1082/2013/EU[7].

Reporting is also required through the International Health Regulations (IHR) notification system (WHO, 2017): 'Each State Party shall notify WHO, by the most efficient means of communication available, by way of the National IHR Focal Point, and within 24 hours of assessment of public health information, of all events that may constitute a public health emergency of international concern within its territory according to the decision instrument, and any health measure implemented in response to those events'

Information should also be shared with local OSH authorities.

4.6.5. Sharing of sequences

The timely characterisation of viruses and the sharing of sequence information remain crucial for the monitoring of virus evolution and for virus vaccine development. Sharing of sequence data through the GISAID EpiFlu (GSAID, online) or other sequence databases and virus isolates with WHO Collaborating Centres are important for public health assessment, improvement of diagnostics and the development of candidate vaccines. Sharing of influenza viruses is through the Global Influenza Surveillance and Response System (GISRS) (WHO, online-b).

[7] Commission Implementing Decision of 8 August 2012 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council (notified under document C(2012) 5538) - OJ L 262, 27.9.2012

4.6.6. Candidate vaccine viruses

Candidate vaccine viruses (CVV) developed, under development or proposed are listed in a report from WHO (WHO, 2020a). The Vector institute in Russia reported about a vaccine under development against A(H5N8) (RGRU, online; TASS, online).

4.7. ECDC risk assessment for the general public in the EU/EEA

Avian influenza A(H5N8) viruses have caused large outbreaks in birds and poultry since 2014 [14]. ECDC has published a Threat Assessment Brief on 24 February 2021 (ECDC, 2021a).

Since 2019, 13 countries reported more than 2,800 exposures of people during culling and related activities, but no transmission to humans (data reported to EFSA between 1 January 2019-14 May 2021). Despite this high number of exposure events and ongoing large and widespread outbreaks, no documented transmission to humans has been reported in the EU/EEA. No human-to-human transmission has been described. The risk assessment is based on the likelihood of infection and disease severity: the likelihood of infection is related to direct unprotected exposure to infected wild birds or poultry and therefore is very low for the general population and low for people directly exposed to infected birds. The disease severity has been described as asymptomatic or mild, therefore the impact based on severity is very low.

This risk to the general public of human transmission due to avian influenza A(H5N8) is therefore assessed as *very low* and to occupationally exposed people *low*.

Avian influenza virus transmission to humans is a rare event and the risk is considered very low for viruses adapted to avian species. However, the detection of viruses carrying markers for mammal adaptation, in particular the occurrence of the PB2 E627K mutation, which is correlated with increased replication and virulence in mammals, is of concern. The additional reports of transmission events to mammals, e.g. seals and a fox as well as seroepidemiological evidence of transmission to wild boar, could indicate evolutionary processes including mammal adaptation with the possibility to acquire the ability to transmit to humans. The risk assessment from 24 February 2021 remains valid, these transmission events and findings of relevant mutations have been very rare and the currently decreasing number of HPAI outbreaks will reduce the likelihood of human exposure.

Zoonotic transmission of avian influenza viruses cannot be fully excluded in general when avian influenza viruses are present in birds and people should avoid touching sick or dead birds or their droppings unprotected or wear PPE when in direct contact. Workers should be protected following an updated workplace risk assessment and prevention measures set accordingly[8]. Using personal protective measures for people exposed to birds infected with avian influenza viruses will minimise any residual risk. Follow-up measures and testing should be initiated as described above.

The risk of travel-related importation of human avian influenza cases from countries where the viruses are detected in poultry or wild birds is *very low* also considering the generally lower travel volume due to the ongoing COVID-19 pandemic. Sporadic human cases infected with A(H9N2) LPAI or A(H5N6) HPAI viruses outside of Europe underline the risk of transmission whenever people are exposed to infected birds.

8

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Abbreviations

ADNS	Animal Disease Notification System
AI	Avian influenza
CCA	Central Competent Authority
CVI	Croatian Veterinary Institute
CVO	Chief Veterinary Officer
CVV	Candidate vaccine viruses
DVFA	Danish Veterinary and Food Administration
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EFSA	European Food Safety Authority
EU	European Union
EURL	European Union Reference Laboratory
EWRS	Early Warning and Response System
FAO	Food and Agriculture Organization
GISRS	Global Influenza Surveillance and Response System
HPAI	Highly pathogenic avian influenza
IHR	International Health Regulations
ILI	Influenza-like illness
IVPP	Influenza Viruses with Human Pandemic Potential
LPAI	Low pathogenic avian influenza
MTD	Mean time to death
NFVRAI	National food and veterinary risk assessment institution
NRL	National Reference Laboratory
OIE	World Organisation for Animal Health
OSH	Occupational safety and health
PCR	Polymerase chain reaction
PIP	Pandemic Influenza Preparedness
PPE	Personal protective equipment
RVO	Regional Veterinary Officer
SCOPAFF	Standing Committee on plants, animals, food and feed
SVFA	State Veterinary and Food Administration
TOR	Term of Reference
WHO	World Health Organization

Appendix A – Terms of Reference

A.1. Background and Terms of Reference as provided by the requestor

Avian influenza is an infectious viral disease in birds, including domestic poultry. Infections with avian influenza viruses in poultry cause two main forms of that disease that are distinguished by their virulence. The low pathogenic (LPAI) form generally only causes mild symptoms, while the highly pathogenic (HPAI) form results in very high mortality rates in most poultry species. That disease may have a severe impact on the profitability of poultry farming.

Avian influenza is mainly found in birds, but under certain circumstances infections can also occur in humans even though the risk is generally very low.

More than a decade ago, it was discovered that virus acquired the capability to be carried by wild birds over long distances. This occurred for the HPAI of the subtype A(H5N1) from South East and Far East Asia to other parts of Asia, Europe and Africa as well as to North America. In the current epidemic the extent of the wild bird involvement in the epidemiology of the disease is exceptional.

Since late October 2016 up to early February 2017, highly pathogenic avian influenza (HPAI) of the subtype A(H5N8) has been detected in wild migratory birds or captive birds on the territory of 21 Member States, namely Austria, Belgium, Bulgaria, Croatia, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. In 17 Member States the virus has spilled over to poultry holdings leading also to lateral spread between holdings in a few Member States, in particular in those with a high density of duck and geese holdings where the poultry cannot sufficiently be protected against contacts with wild birds. A second HP AI subtype A(H5N5) has been detected in wild birds and recently also in poultry holdings in Germany.

The number of infected migratory wild birds found dead and the geographical extent of these findings are posing an immense threat for virus introduction into poultry or captive birds holdings as demonstrated by the high number of outbreaks (~700 as of 08/02/2017).

In the event of an outbreak of avian influenza, there is a risk that the disease agent might spread to other holdings where poultry or other captive birds are kept. As a result it may spread from one Member State to other Member States or to third countries through trade in live birds or their products.

There is knowledge, legislation[9], technical and financial tools in the EU to effectively deal with outbreaks of avian influenza in poultry and captive birds. However, the very wide virus spread by wild birds and the increased risk of direct or indirect virus introduction into poultry or captive bird holdings has led to the largest HPAI epidemic in the EU so far. This situation calls for a reflection and evaluation how preparedness, risk assessment, early detection and control measures could be improved.

The Commission and Member States are therefore in need of an epidemiological analysis based on the data collected from the disease affected Member States. The use of the EFSA Data Collection Framework is encouraged given it promotes the harmonisation of data collection. Any data that is available from neighbouring third countries should be used as well, if relevant.

Therefore, in the context of Article 31 of Regulation (EC) No. 178/2002[10], EFSA should provide the technical and scientific assistance to the Commission based on the following Terms of Reference (TOR):

1) Analyse the epidemiological data on highly pathogenic avian influenza (HPAI) and low pathogenic avian influenza (LPAI), where co-circulating or linked within the same epidemic, from HPAI disease affected Member States.

[10] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety. OJ L 31, 1.2.2002, p. 1–24.

2) Analyse the temporal and spatial pattern of HPAI and LPAI as appropriate in poultry, captive birds and wild birds, as well the risk factors involved in the occurrence, spread and persistence of the HPAI virus in and at the interface of these avian populations.

3) Based on the findings from the points above, describe the effect of prevention and control measures.

4) Provide for regular quarterly reports updating on the avian influenza situation within the Union and worldwide, in particular with a view to describe the evolution of virus spread from certain regions towards the EU. In case of significant changes in the epidemiology of avian influenza, these reports could be needed more frequently. These reports should in particular closely follow the developments of zoonotic avian influenza viruses (such as HPAI A(H5N6) and LPAI A(H7N9)) in collaboration with the European Centre for Disease Prevention and Control (ECDC).

A.2. Interpretation of the Terms of Reference

In reply to TOR 1 and TOR 2, this scientific report gives an overview of the HPAI and LPAI outbreaks in poultry, captive and wild birds detected in Europe between 24 February and 14 May 2021 and reported by Member States and neighbouring countries via ADNS or OIE. Member States where avian influenza outbreaks have occurred in poultry submitted additional epidemiological data to EFSA, that have been used to analyse the characteristics of the affected poultry establishments.

It was not possible to collect data for a risk factor analysis on the occurrence and persistence of HPAI virus within the EU. Risk factor analysis requires not only case-related information, but also data on the susceptible population (e.g. location of establishments, population structure), that should be collected in a harmonised manner across the EU. Limitations in data collection, reporting and analysis were explained in the first avian influenza overview report (EFSA AHAW Panel, 2017).

If HPAI outbreaks in poultry are detected in the EU, a description of the applied prevention and control measures (TOR 3) is given in the case report provided by representatives from the affected Member States and attached as an annex. Information was collected for outbreaks that occurred from 24 February up to 14 May 2021. The main topics covered are increasing awareness, release and repeal of housing orders, strengthening biosecurity, preventive culling, implementation of a regional standstill, bans on hunting and derogations from restriction zone implementation after a risk assessment.

Monitoring of the avian influenza situation in other countries (TOR 4) is based on data submitted via the OIE or reported to the FAO. The description focuses only on findings of avian influenza viruses occurring in countries that are considered to be of epidemiological interest for the EU/EEA and the UK or of public health relevance, specifically on HPAI A(H5N1), HPAI A(H5N2), HPAI A(H5N5), HPAI A(H5N6), HPAI A(H5N8), HPAI/LPAI A(H7N9) and LPAI A(H9N2). The background and epidemiology, detections, phenotypic and genetic characterisations are described based on information from confirmed human, poultry and wild bird cases that occurred between 24 February and 14 May 2021. Possible actions for preparedness in the EU are discussed.

This report mainly describes information that became available since the publication of the EFSA report for the period August – December 2020 (EFSA et al., 2020d) and that might affect the interpretation of risks related to avian influenza introduction and/or spread in Europe.

Appendix B – Data and methodologies

B.1. Data on animals

B.1.1. Overview of avian influenza outbreaks in Europe (TOR 1 and TOR 2)

Data on the avian influenza outbreaks that occurred in Europe from 24 February to 14 May 2021 submitted by Member States to the ADNS and ADIS (European Commission, online-b) were taken into account for this report. In addition, HPAI-affected Member States were asked to provide more detailed epidemiological data directly to EFSA on the avian influenza outbreaks that occurred in poultry during the same period.

The information that EU Member States affected by HPAI and LPAI presented to the Standing Committee on Plants, Animals, Food and Feed (SCOPAFF) meetings, and the evidence on HPAI and LPAI outbreaks provided in the info notes from the affected Member States to the European Commission, were consulted to extract the relevant information which is reported in Section 4.2.2. The PDFs of the SCOPAFF presentations are available on the European Commission website (European Commission, online-a).

Wild bird species have been categorised according to Table B1.

The public GISAID's EpiFlu Database was accessed to download newly released avian influenza sequences.

A descriptive analysis of the data collected is reported in Section 4.2.

Table B1. Categorisation of wild bird species for detection between 5 October 2020 and 14 May 2021

Other wild bird species	Raptor	Waterfowl
Black-headed gull	Accipitridae	Anserinae
Common eider	Accipitriformes	Barnacle goose
Common gull	Common buzzard	Bean goose
Common pheasant	Common kestrel	Black swan
Common raven	Eurasian eagle-owl	Brant goose
Common starling	Eurasian sparrowhawk	Canada goose
Common wood pigeon	Falco sp.	Charadriidae
Cormorant	Marsh harrier	Common eider
Corvidae	Northern goshawk	Common goldeneye
Curlew	Peregrine falcon	Common moorhen
Curlew sandpiper	Short-eared owl	Common guillemot
Dunlin	Strigiformes	Common merganser
Eurasian curlew	Tawny owl	Common moorhen
Eurasian magpie	White-tailed eagle	Common shelduck
Eurasian oystercatcher		Duck
Eurasian woodcock		Egyptian goose
European herring gull		Eurasian coot
Fringillidae		Eurasian teal
Great black-backed gull		Eurasian wigeon
Great cormorant		Gadwall
Great white egret		Garganey
Grey heron		Goose
Gruidae		Great crested grebe
Gull		Greater scaup
Knot		Greater white-fronted goose
Lesser black-backed gull		Greylag goose
Little egret		Little grebe

Mediterranean Gull		Mallard
Northern gannet		Muscovy duck
Northern lapwing		Mute swan
Pheasant		Pink-footed goose
Red knot		Swan
Scolopacidae		Tufted duck
Sparrow		Tundra bean goose
Turdidae		Whooper swan
Water rail		Wigeon
Western jackdaw		
White stork		
Yellow-legged gull		

B.1.1.1. Literature review on phenotypic characterisation of HPAI viruses circulating in the EU

Information on the phenotypic characterisation of AI viruses circulating in the EU was extracted from the scientific literature by performing a literature review.

Review question Update on the phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds within the last 2 years.

Search The PubMed database was searched using subject index terms and free-text terms combined with the appropriate Boolean operators. Scientific articles added to the database from 1 February to 30 April 2021 were searched; the search was run on 30 April 2021.

Relevance criteria Scientific articles added to the database from 1 February to 30 April 2021 and reporting information on the presence or absence of clinical signs or pathological changes or mortality due to HPAI infection with viruses circulating within the last 2 years in the EU in domestic or wild birds.

Eligibility criteria Host species all domestic birds or wild birds present in the EU; the virus subtype should be reported; for experimental studies only, the age of the infected animals should be reported (at least as juvenile/adult).

Results The search retrieved 109 papers. The articles were subsequently screened against the relevance and eligibility criteria. One of the screened papers was finally taken into consideration in the description of the phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period.

The search protocol and the results can be consulted at https://doi.org/10.5281/zenodo.4878857.

B.1.2. Overview of avian influenza outbreaks in other countries not reporting via ADNS (TOR 4)

Data from FAO EMPRES-i (FAO, online-b) on HPAI A(H5N1), HPAI A(H5N2), HPAI A(H5N5), A(H5N6), A(H5N8), HPAI and LPAI A(H7N9) in domestic, captive and wild birds, and environmental samples, were used to describe and to map the geographical distribution of avian influenza cases in domestic and wild birds in Africa, Asia and Europe based of the observation dates. Data were extracted on 17 May 2021. The OIE's World Animal Health Information Database (OIE, online) was consulted on 7 December to complement the information reported by FAO. To avoid over-complication of the maps, captive birds and environmental samples have been mapped as domestic birds. Although some of these kept animals may be wild species, in most cases of captive birds, or, for environmental samples, the birds from which samples have been taken (mainly at live markets) will not move around and not spread the infection by migrating and, for this reason, have been considered as domestic birds in the maps provided in this report. Only when there was a strong discrepancy between the locality, the administrative regions and geocoordinates, and the outbreaks were not officially reported to the OIE, if the outbreaks were not taken into account in the analysis.

B.1.2.1. Literature review on phenotypic and genetic characterisation of HPAI viruses circulating on other continents

Information on phenotypic and genotypic characterisation of HPAI viruses circulating on other continents and in other regions (Africa, Asia, the Middle East) in domestic or wild birds or mammals (excluding humans) were extracted from the scientific literature by performing a literature review.

Review questions Update on the phenotypic and genetic characterisation of HPAI viruses circulating on other continents and in other regions (Africa, Asia, the Middle East) in domestic or wild birds or mammals (excluding humans) within the last 3 years.

Search The PubMed database was searched by using subject index terms and free-text terms combined with the appropriate Boolean operators. Scientific articles added to the database from 1 February to 30 April 2021 were searched; the search was run on 30 April 2021.

Relevance criteria Scientific articles added to the database from 1 February to 30 April 2021 that report information on the presence or absence of clinical signs, pathological changes or mortality or genotypic characterisation (only new information) due to HPAI infection with viruses circulating within the last 3 years in Asia, Africa or the Middle East in domestic or wild birds or mammals other than humans.

Eligibility criteria Host species all domestic birds or wild birds present in the EU or mammals other than humans; the virus subtype should be reported; for experimental studies only the age of the infected animals should be reported (at least as juvenile/adult).

Results The search retrieved 100 papers. The articles were subsequently screened against the relevance and eligibility criteria. Seven papers were in the end taken into consideration in the description of phenotypic and genotypic characterisation of HPAI viruses circulating on other continents and in other regions (Africa, Asia, the Middle East) in domestic or wild birds or mammals (excluding humans) in the reporting period.

The search protocol and the results can be consulted at https://doi.org/10.5281/zenodo.4878857.

B.2. Data on humans

The numbers of human cases due to infection with avian influenza viruses were collected by ECDC. Multiple sources are scanned regularly as part of Epidemic Intelligence activities at ECDC to collect information on laboratory-confirmed human cases. Data were extracted and line lists developed to collect case-based information on virus type, date of disease onset, country of reporting, country of exposure, sex, age, exposure, clinical information (hospitalisation, severity) and outcome. All cases included in the line list and mentioned in the document have been laboratory-confirmed. Data are continuously checked for double entries and validity. The data on human cases cover the full period of time since the first human case was reported. Therefore, data on human cases refer to different time periods and are included irrespective of whether there have been any new human cases during the reporting period.

Annex A – Characteristics of the HPAI A(H5N8) and A(H5N5)-positive poultry establishments.

Table A.1: Characteristics of the HPAI A(H5N8), A(H5N5) and A(H5N1)-positive poultry establishments by affected EU Member State from 12 February to 30 April 2021 (n=564). Unknown information are left as empty cells (Comm. = Commercial holding, Non comm. = Non commercial holding).

Country	Suspicion date	Holding production category	Poultry species	Production type	Susceptible poultry	Presence of clinical signs	Exposed persons
Bulgaria	23/04/2021		Chicken	Egg	43000	Yes	
	22/04/2021		Chicken	Egg	39950	Yes	
Czechia	11/02/2021	Non comm.	Chicken	Egg	21	Yes	3
	18/02/2021	Non comm.	Chicken	Egg	443	Yes	10
	24/02/2021	Non comm.	Chicken	Egg	17	Yes	1
	27/02/2021	Non comm.	Chicken	Egg	51	Yes	2
	06/03/2021	Non comm.	Chicken	Egg	103	Yes	4
	06/03/2021	Non comm.	Chicken	Egg	22	Yes	4
	10/03/2021	Non comm.	Chicken	Egg	35	Yes	4
	12/03/2021	Non comm.	Chicken	Egg	406	Yes	5
	16/03/2021	Non comm.	Chicken	Egg	40	Yes	3
	18/03/2021	Comm.	Domestic duck	Breeding	26264	Yes	35
	18/03/2021	Comm.	Domestic duck	Breeding	14479	Yes	35
	19/03/2021	Comm.	Domestic duck	Breeding	6550	Yes	30
	19/03/2021	Comm.	Domestic duck	Breeding	2970	Yes	46
	19/03/2021	Comm.	Domestic duck	Breeding	3346	Yes	24
	25/03/2021	Non comm.	Chicken	Egg	40	Yes	2
	25/03/2021	Non comm.	Chicken	Egg	3	Yes	0
	26/03/2021	Comm.	Domestic duck	Breeding	7086	Yes	53
		Comm.	Domestic duck	Breeding	1832	No	20
		Comm.	Domestic duck	Breeding	3347	No	20
		Comm.	Domestic duck	Breeding	7537	Yes	46
	29/03/2021	Comm.	Chicken	Egg	176500	Yes	80
	01/04/2021	Non comm.	Chicken	Egg	15	Yes	2
	01/04/2021	Non comm.	Chicken	Egg	34	Yes	2
	03/04/2021	Non comm.	Chicken	Egg	14	Yes	0
	06/04/2021	Non comm.	Chicken	Egg	16	Yes	2
	06/04/2021	Comm.	Domestic duck	Breeding	9385	Yes	35
	06/04/2021	Non comm.	Chicken	Egg	5	Yes	3
	09/04/2021	Non comm.	Chicken	Egg	81	Yes	4
	09/04/2021	Non comm.	Chicken	Egg	9	Yes	1
	18/04/2021	Comm.	Domestic duck	Breeding	5,600	Yes	30
	18/04/2021	Comm.	Domestic duck	Breeding	7,779	Yes	30
Denmark	19/04/2021	Comm.	Domestic duck	Fattening	19000	Unknown	
	23/02/2021	Non comm.	Chicken		23	Yes	
	02/03/2021	Non comm.	Chicken	Egg	10	Yes	
	02/03/2021	Comm.	Chicken	Other	582	No	
	05/03/2021	Comm.	Turkey	Fattening	37000	Yes	
	06/03/2021	Comm.	Turkey	Fattening	24000	Yes	
	11/03/2021	Non comm.	Chicken	Egg	19	Yes	
	06/03/2021	Comm.	Turkey	Fattening	5700	Yes	
	06/03/2021	Comm.	Turkey	Fattening	27600	Yes	
	15/03/2021	Comm.	Domestic duck	Game	2200	No	
Estonia	18/02/2021	Non comm.	Chicken	Egg	78	Yes	7
	29/03/2021	Non comm.	Chicken	Egg	24	Yes	5
France	27/02/2021	Non comm.	domestic duck	Other	60	Unknown	
	27/02/2021	Comm.	Domestic duck	Foie gras	2030	Yes	
	01/03/2021	Comm.	Domestic duck	Foie gras	20500	Yes	

	19/03/2021	Comm.	Chicken	Fattening	10000	No	
	20/03/2021	Comm.	Chicken	Mixed	3000	Unknown	
	20/02/2021	Comm.	Domestic duck	Foie gras	1230	No	
	22/02/2021	Comm.	Domestic duck	Foie gras	2000	Yes	
	23/02/2021	Comm.	Domestic duck	Foie gras	5845	Yes	
	21/02/2021	Non comm.	Other	Other	21	Yes	
	23/02/2021	Comm.	Domestic duck	Foie gras	999	No	
	24/02/2021	Comm.	Domestic duck	Foie gras	20000	No	
	24/02/2021	Comm.	Domestic duck	Foie gras	5000	No	
	25/02/2021	Comm.	Domestic duck	Foie gras	5000	Yes	
	25/02/2021	Comm.	domestic duck	Other	6000	No	
	01/03/2021	Comm.	Domestic duck	Foie gras	6200	Yes	
	07/03/2021	Comm.	Domestic duck	Foie gras	2000	Yes	
	27/02/2021	Non comm.	Chicken	Other	26	Yes	
	15/02/2021	Comm.	Domestic duck	Foie gras	22000	Yes	
	19/02/2021	Comm.	Domestic duck	Foie gras	2700	Yes	
	19/02/2021	Comm.	Domestic duck	Foie gras	930	Yes	
	19/02/2021	Comm.	Domestic duck	Foie gras	6500	Yes	
	19/02/2021	Comm.	Domestic duck	Foie gras	5912	Yes	
	19/02/2021	Comm.	Domestic duck	Foie gras	1000	No	
	10/02/2021	Comm.	domestic duck	Fattening	5260	No	
	11/02/2021	Comm.	Domestic duck	Foie gras	1170	No	
	10/02/2021	Comm.	Chicken	Fattening	8500	No	
	02/04/2021	Non comm.	Chicken	Egg	48	Yes	
	17/04/2021	Non comm.	Chicken	Egg	9	Yes	
Germany	12/02/2021	Non comm.	Chicken	Fattening	35	Yes	
	16/02/2021	Comm.	Turkey	Fattening	11566	Yes	
	16/02/2021	Comm.	Domestic duck	Fattening	17002	Yes	
	18/02/2021	Comm.	Domestic duck	Fattening	18000	Yes	
	19/02/2021	Comm.	Turkey	Fattening	13485	Yes	
	21/02/2021	Comm.	Turkey	Breeding	16457	Yes	
	21/02/2021	Comm.	Turkey	Fattening	14172	Yes	
	23/02/2021	Comm.	Chicken	Egg	11384	Yes	
	22/02/2021	Non comm.			75	Yes	
	24/02/2021	Comm.	Chicken	Egg	6	Yes	
	26/02/2021	Non comm.	Chicken	Egg	56	Yes	
	27/02/2021	Comm.	Turkey	Fattening	24518	Yes	
	27/02/2021	Comm.	Turkey	Fattening	16556	Yes	
	01/03/2021	Comm.	Chicken	Egg	60996	Yes	
	01/03/2021	Comm.	Chicken	Breeding	41425	Yes	
	01/03/2021	Comm.	Turkey	Fattening	18178	Yes	
	01/03/2021	Non comm.	Chicken		10	Yes	
	02/03/2021	Comm.	Turkey	Fattening	32626	Unknown	
	01/03/2021	Comm.	Domestic duck	Fattening	23021	Yes	
	02/03/2021	Non comm.	Chicken	Mixed	104	Yes	
	02/03/2021	Comm.	Chicken	Egg	23	Yes	
	02/03/2021	Comm.	Turkey	Fattening	14468	Yes	
	01/03/2021	Comm.	Chicken	Egg	6	Yes	
	02/03/2021	Comm.	Turkey	Breeding	6708	Yes	
	03/03/2021	Comm.	Chicken	Breeding	52395	Yes	
	04/03/2021	Comm.	Turkey	Fattening	15659	Yes	

	04/03/2021	Non comm.	Domestic goose		5	Yes	
	04/03/2021	Comm.	Turkey	Fattening	8582	Yes	
	04/03/2021	Comm.	Chicken		141	Yes	
	04/03/2021	Comm.	Turkey	Fattening	10013	Yes	
	04/03/2021	Non comm.	Chicken		28	Yes	
	06/03/2021	Non comm.	Chicken	Egg	332	Yes	
	05/03/2021	Comm.	Turkey	Fattening	12383	Yes	
	05/03/2021	Comm.	Chicken	Egg	75799	Yes	
	06/03/2021	Comm.	Chicken	Egg	103559	Yes	
	08/03/2021	Non comm.	Chicken		52	Yes	
	08/03/2021	Comm.	Turkey	Fattening	10880	Yes	
	08/03/2021	Non comm.	Chicken	Egg	20	Yes	
	09/03/2021	Comm.	Turkey	Fattening	9329	Yes	
	09/03/2021	Comm.	Chicken	Fattening	26877	Yes	
	10/03/2021	Non comm.	Domestic goose		4	Yes	
	10/03/2021	Non comm.	Chicken		39	Yes	
	10/03/2021	Comm.	Turkey	Fattening	3890	Yes	
	10/03/2021	Comm.	Turkey	Fattening	14589	Yes	
	11/03/2021	Comm.	Turkey	Fattening	15125	Yes	
	10/03/2021	Comm.	Turkey	Fattening	16095	Yes	
	11/03/2021	Non comm.	Domestic duck		9	Yes	
	11/03/2021	Comm.	Chicken	Egg	55373	Yes	
	12/03/2021	Comm.	Turkey	Fattening	17348	Yes	
	12/03/2021	Comm.	Domestic duck	Fattening	9630	Yes	
	13/03/2021	Comm.	Turkey	Fattening	14333	Yes	
	13/03/2021	Comm.	Domestic duck	Fattening	30343	Yes	
	14/03/2021	Comm.	Turkey	Fattening	6691	Yes	
	14/03/2021	Comm.	Turkey	Fattening	7189	Yes	
	14/03/2021	Comm.	Turkey	Fattening	9889	Yes	
	15/03/2021	Comm.	Turkey	Fattening	18678	Yes	
	15/03/2021	Comm.	Turkey	Fattening	15970	Yes	
	15/03/2021	Comm.	Turkey	Fattening	14823	Yes	
	16/03/2021	Non comm.	Chicken		4	Yes	
	17/03/2021	Comm.	Domestic goose	Breeding	2800	Yes	
	17/03/2021	Comm.	Turkey	Fattening	24308	Yes	
	17/03/2021	Comm.	Turkey	Fattening	6984	Yes	
	16/03/2021	Non comm.	Chicken	Egg	25	Yes	
	18/03/2021	Comm.	Domestic goose	Breeding	2400	Unknown	
	18/03/2021	Non comm.	Chicken	Fattening	4098	Yes	
	19/03/2021	Comm.	Turkey	Fattening	7800	Yes	
	19/03/2021	Non comm.	Chicken	Fattening	5131	Yes	
	20/03/2021	Comm.	Domestic duck	Breeding	1856	Unknown	
	20/03/2021	Comm.	Chicken	Breeding	37397	Yes	
	20/03/2021	Comm.	Chicken	Egg	160	Yes	
	21/03/2021	Comm.	Turkey	Fattening	15710	Yes	
	21/03/2021	Non comm.	Chicken		20	Unknown	
	23/03/2021	Comm.	Turkey	Fattening	6800	Yes	
	23/03/2021	Non comm.	Chicken	Egg	221	Yes	

	24/03/2021	Comm.	Turkey	Fattening	913	Yes	
	22/03/2021	Comm.	Chicken	Egg	360	Yes	
	22/03/2021	Comm.	Chicken	Egg	180	Yes	
	23/03/2021	Comm.	Chicken	Egg	654	Yes	
	22/03/2021	Comm.	Chicken	Egg	10	Yes	
	24/03/2021	Comm.	Chicken	Fattening	141	Yes	
	23/03/2021	Comm.	Chicken	Egg	10	Yes	
	24/03/2021	Comm.	Chicken	Egg	15	Yes	
	23/03/2021	Non comm.	Chicken	Egg	347	Yes	
	24/03/2021	Comm.	Chicken	Egg	15	Yes	
	24/03/2021	Comm.	Chicken	Egg	39	Yes	
	24/03/2021	Comm.	Chicken	Egg	7	Yes	
	24/03/2021	Comm.	Chicken	Egg	13	Yes	
	24/03/2021	Comm.	Chicken	Egg	8	Yes	
	25/03/2021	Comm.	Chicken	Egg	5	Yes	
	25/03/2021	Comm.	Chicken	Egg	19	Yes	
	24/03/2021	Comm.	Chicken	Egg	24	Yes	
	24/03/2021	Comm.	Chicken	Egg	45	Yes	
	23/03/2021	Non comm.	Chicken	Egg	54	Yes	
	25/03/2021	Comm.	Chicken	Egg	12	Yes	
	23/03/2021	Non comm.	Chicken	Egg	22	Yes	
	23/03/2021	Comm.	Chicken	Egg	32	Yes	
	26/03/2021	Comm.	Chicken	Egg	6	Yes	
	24/03/2021	Comm.	Chicken	Egg	78	Yes	
	24/03/2021	Comm.	Chicken	Egg	20	Yes	
	26/03/2021	Non comm.	Chicken	Egg	54	Yes	
	23/03/2021	Non comm.	Chicken		33	Yes	
	23/03/2021	Comm.	Chicken	Egg	21	Yes	
	26/03/2021	Non comm.	Chicken		15	Yes	
	24/03/2021	Comm.	Chicken	Egg	57	Yes	
	25/03/2021	Comm.	Chicken	Egg	15	Yes	
	26/03/2021	Non comm.	Chicken		8	Yes	
	24/03/2021	Non comm.	Chicken	Egg	10	Yes	
	26/03/2021	Non comm.	Chicken		5	Yes	
	26/03/2021	Comm.	Turkey	Fattening	31908	Yes	
	22/03/2021	Comm.	Chicken	Egg	38	Yes	
	22/03/2021	Non comm.	Chicken		32	Yes	
	25/03/2021	Non comm.	Chicken	Egg	23	Yes	
	25/03/2021	Non comm.	Chicken		21	Yes	
	29/03/2021	Comm.	Chicken	Egg	14	Yes	
	26/03/2021	Comm.	Domestic duck	Breeding	10	Unknown	
	25/03/2021	Comm.	Chicken	Egg	8	Yes	
	25/03/2021	Non comm.	Chicken		22	Yes	
	25/03/2021	Non comm.	Chicken		13	Yes	
	26/03/2021	Non comm.	Chicken		18	Yes	
	24/03/2021	Non comm.	Chicken		14	Yes	
	24/03/2021	Non comm.	Chicken		15	Yes	
	25/03/2021	Comm.	Chicken	Egg	57	Yes	
	24/03/2021	Non comm.	Chicken		9	Yes	
	26/03/2021	Comm.	Chicken	Egg	28	Yes	
	29/03/2021	Comm.	Chicken	Egg	16	Yes	

	29/03/2021	Comm.	Chicken	Egg	10	Yes	
	25/03/2021	Comm.	Chicken	Egg	14	Yes	
	29/03/2021	Comm.	Chicken	Egg	11	Yes	
	24/03/2021	Comm.	Chicken	Fattening	6	Yes	
	23/03/2021	Comm.	Chicken	Egg	25	Yes	
	23/03/2021	Comm.	Chicken	Egg	19	Yes	
	24/03/2021	Comm.	Chicken	Egg	10	Yes	
	29/03/2021	Comm.	Chicken	Egg	25	Unknown	
	26/03/2021	Comm.	Chicken	Egg	8	Yes	
	25/03/2021	Comm.	Chicken	Egg	20	Yes	
	29/03/2021	Comm.	Chicken	Egg	14	Yes	
	23/03/2021	Comm.	Chicken	Egg	8	Yes	
	26/03/2021	Comm.	Chicken	Egg	50	Yes	
	26/03/2021	Comm.	Chicken	Egg	15	Yes	
	30/03/2021	Comm.	Chicken	Egg	26	Yes	
	26/03/2021	Non comm.	Chicken	Egg	17	Yes	
	26/03/2021	Non comm.	Chicken		14	Yes	
	29/03/2021	Comm.	Chicken	Egg	78	Yes	
	27/03/2021	Comm.	Chicken	Breeding	15	Yes	
	26/03/2021	Comm.	Chicken	Egg	65	Yes	
	29/03/2021	Non comm.	Chicken		7	Yes	
	01/04/2021	Comm.	Chicken	Egg	18	Yes	
		Comm.	Chicken	Egg	93	Yes	
	01/04/2021	Non comm.	Chicken		14	Yes	
	01/04/2021	Comm.	Chicken	Egg	29560	Yes	
	01/04/2021	Non comm.	Chicken	Egg	216	Yes	
	30/03/2021	Comm.	Chicken	Egg	10	Yes	
	08/04/2021	Comm.	Chicken	Egg	152185	Yes	
	03/03/2021	Zoo			47	Yes	
	03/03/2021	Zoo			254	Yes	
	12/03/2021	Zoo			112	Yes	
	23/03/2021	Non comm.			20	Yes	
	23/03/2021	Non comm.			24	Yes	
	24/03/2021	Non comm.	Other		25	Yes	
	22/03/2021	Comm.	Chicken	Egg	40	Unknown	
	22/03/2021	Comm.	Chicken	Egg	39	Yes	
	22/03/2021	Comm.	Chicken	Egg	9	Yes	
	22/03/2021	Comm.	Chicken	Egg	11	Yes	
	23/03/2021	Non comm.	Chicken		58	Yes	
	23/03/2021	Non comm.	Chicken		17	Yes	
	23/03/2021	Non comm.	Chicken		13	Yes	
	25/03/2021	Non comm.			6	Yes	
	26/03/2021	Non comm.	Chicken	Egg	14	Yes	
	25/03/2021	Non comm.			5	Yes	
	25/03/2021	Non comm.			9	Yes	
	22/03/2021	Non comm.	Chicken		11	Yes	
	22/03/2021	Non comm.	Chicken		4	Yes	
	22/03/2021	Non comm.	Chicken	Egg	24	Yes	
	22/03/2021	Non comm.	Chicken		18	Yes	
	22/03/2021	Non comm.	Chicken		5	Yes	
	22/03/2021	Comm.	Chicken	Egg	25	Yes	

	22/03/2021	Non comm.			2	Yes	
	22/03/2021	Non comm.	Chicken		19	Yes	
	24/03/2021	Non comm.	Chicken		21	Yes	
	24/03/2021	Non comm.	Chicken		13	Yes	
	25/03/2021	Non comm.	Chicken		42	Yes	
	30/03/2021	Comm.	Chicken	Egg	11	Unknown	
	30/03/2021	Non comm.			6	Yes	
	30/03/2021	Non comm.			8	Yes	
	26/03/2021	Non comm.			6	Unknown	
	26/03/2021	Non comm.			4	Yes	
	26/03/2021	Non comm.	Chicken		4	Yes	
	26/03/2021	Non comm.	Chicken		20	Yes	
	29/03/2021	Non comm.	Chicken		8	Yes	
	31/03/2021	Non comm.			7	Unknown	
	13/04/2021	Non comm.	Other		20	Yes	
	14/04/2021	Non comm.	Chicken	Egg	46	Yes	
	27/04/2021	Comm.	Turkey	Fattening	4400	Yes	
Hungary	10/04/2021	Comm.	Turkey	Breeding	11769	Yes	
Italy	19/02/2021	Non comm.	Chicken	Fattening	22	Yes	
	24/02/2021	Non comm.	Chicken	Fattening	60	Yes	
Lithuania	28/04/2021	Non comm.		Egg	30	Yes	
	28/04/2021	Non comm.		Egg	15	Yes	
	28/04/2021	Non comm.		Egg	12	Yes	
	28/04/2021	Non comm.		Egg	25	Yes	
	28/04/2021	Non comm.		Egg	15	Yes	
	29/04/2021	Non comm.		Egg	15	Yes	
	27/04/2021	Non comm.		Egg	20	Yes	
	27/04/2021	Non comm.		Egg	24	Yes	
	27/04/2021	Non comm.		Egg	30	Yes	
	27/04/2021	Non comm.		Egg	38	Yes	
	27/04/2021	Non comm.		Egg	16	Yes	
	27/04/2021	Non comm.		Egg	30	Yes	
	27/04/2021	Non comm.		Egg	10	Yes	
	27/04/2021	Non comm.		Egg	30	Yes	
	26/04/2021	Non comm.		Egg	17	Yes	
	26/04/2021	Non comm.		Egg	28	Yes	
	26/04/2021	Non comm.		Egg	25	Yes	
	26/04/2021	Non comm.		Egg	13	Yes	
	26/04/2021	Non comm.		Egg	11	Yes	
	25/04/2021	Non comm.		Egg	16	Yes	
	25/04/2021	Non comm.		Egg	20	Yes	
	24/04/2021	Non comm.		Egg	16	Yes	
	24/04/2021	Non comm.		Egg	32	Yes	
	24/04/2021	Non comm.		Egg	42	Yes	
	24/04/2021	Non comm.		Egg	6	Yes	
	24/04/2021	Non comm.		Egg	15	Yes	
	24/04/2021	Non comm.		Egg	17	Yes	
	24/04/2021	Non comm.		Egg	11	Yes	
	24/04/2021	Non comm.		Egg	11	Yes	
	23/04/2021	Non comm.		Egg	25	Yes	
	23/04/2021	Non comm.		Egg	13	Yes	

	23/04/2021	Non comm.		Egg	23	Yes	
	23/04/2021	Non comm.		Egg	10	Yes	
	22/04/2021	Non comm.		Egg	45	Yes	
	21/04/2021	Non comm.		Egg	20	Yes	
	21/04/2021	Non comm.		Egg	50	Yes	
	21/04/2021	Non comm.		Egg	55	Yes	
Netherlands	19/02/2021	Comm.	Chicken	Egg	46636	Yes	
Poland	03/03/2021	Non comm.	Chicken	Fattening	78	Unknown	
	05/03/2021	Non comm.	Chicken	Egg	44	Unknown	
	04/03/2021	Comm.	Domestic duck	Fattening	3901	Unknown	
	06/03/2021	Comm.	Turkey	Fattening	5150	Unknown	
		Comm.	Domestic duck	Fattening	75300	Unknown	
	22/03/2021	Comm.	Domestic duck		18817	Unknown	
	19/03/2021	Comm.	Domestic duck	Fattening	10870	Unknown	
	16/03/2021	Comm.	Domestic duck	Fattening	7497	Unknown	
		Comm.	Domestic duck		18000	Unknown	
	21/03/2021	Comm.	Turkey		32537	Unknown	
	22/03/2021	Comm.	Domestic duck		25210	Unknown	
	17/03/2021	Comm.	Domestic duck	Fattening	9668	Unknown	
	20/03/2021	Comm.	Domestic duck	Fattening	19306	Unknown	
	21/03/2021				59023	Unknown	
		Comm.	Domestic duck	Fattening	8700	Unknown	
	15/02/2021	Non comm.	Chicken	Egg	49	Unknown	
		Comm.	Domestic duck	Fattening	20470	Unknown	
		Comm.	Domestic duck	Fattening	12578	Unknown	
	19/03/2021	Comm.	Chicken	Egg	5975	Unknown	
	19/03/2021	Comm.	Turkey	Fattening	11142	Unknown	
	21/03/2021	Comm.	Domestic goose	Breeding	2148	Unknown	
	16/03/2021	Comm.	Domestic duck	Fattening	14620	Unknown	
	20/03/2021	Comm.	Domestic duck	Fattening	9514	Unknown	
		Comm.	Domestic duck	Fattening	15160	Unknown	
	22/03/2021	Comm.	Domestic duck		4371	Unknown	
	16/03/2021	Comm.	Turkey	Fattening	29704	Unknown	
	22/03/2021	Comm.	Chicken	Egg	414301	Unknown	
	10/03/2021	Comm.	Chicken	Egg	17844	Unknown	
	15/03/2021	Comm.	Domestic duck	Fattening	7958	Unknown	
		Comm.	Domestic duck	Fattening	7667	Unknown	
	14/03/2021	Comm.	Domestic duck		5326	Unknown	
	05/03/2021	Comm.	Turkey	Fattening	20897	Unknown	
	15/03/2021	Comm.	Chicken	Egg	21705	Unknown	
	15/03/2021	Comm.	Domestic goose		3932	Unknown	
	10/03/2021	Comm.	Turkey	Fattening	24301	Unknown	
	08/03/2021	Comm.	Chicken	Fattening	141208	Unknown	
		Comm.	Domestic duck	Fattening	3820	Unknown	
	03/03/2021	Comm.	Domestic duck	Fattening	16000	Unknown	
	16/03/2021	Comm.	Domestic duck	Fattening	15057	Unknown	
	05/03/2021	Comm.	Domestic goose	Breeding	19011	Unknown	
	09/03/2021	Comm.	Domestic duck	Fattening	9140	Unknown	

	09/03/2021	Comm.	Domestic duck	Fattening	10717	Unknown	
	12/03/2021	Comm.	Domestic duck	Fattening	9379	Unknown	
	11/03/2021	Comm.	Domestic duck	Fattening	5881	Unknown	
		Comm.	Domestic duck	Fattening	21794	Unknown	
	13/03/2021	Comm.	Domestic duck	Fattening	6114	Unknown	
	06/04/2021	Comm.	Chicken	Egg	7922	Unknown	
	06/04/2021	Comm.	Chicken	Egg	320000	Unknown	
	12/04/2021	Non comm.	Chicken	Mixed	52	Unknown	
	09/04/2021	Comm.	Chicken	Egg	91499	Unknown	
		Non comm.	Chicken	Egg	180	Unknown	
	07/04/2021	Comm.	Chicken	Egg	27727	Unknown	
	06/04/2021	Comm.	Chicken	Mixed	19473	Unknown	
	09/04/2021	Comm.	Chicken	Egg	11400	Unknown	
	09/04/2021	Comm.	Domestic duck	Breeding	5905	Unknown	
	10/03/2021	Comm.	Domestic goose		38143	Unknown	
	09/04/2021	Comm.	Chicken	Egg	9641	Unknown	
			Domestic duck	Fattening	6013	Unknown	
	05/04/2021	Comm.	Chicken	Egg	45718	Unknown	
	07/04/2021	Comm.	Turkey	Fattening	73538	Unknown	
	08/04/2021	Comm.	Chicken	Egg	127161	Unknown	
		Comm.	Turkey		36959	Unknown	
	08/04/2021	Comm.	Turkey	Fattening	40000	Unknown	
	05/04/2021	Comm.	Turkey	Fattening	13941	Unknown	
	06/04/2021	Comm.	Chicken	Fattening	4257	Unknown	
	06/04/2021	Comm.	Chicken	Egg	96	Unknown	
	07/04/2021	Comm.	Domestic duck	Fattening	11640	Unknown	
	08/04/2021	Comm.	Chicken	Egg	30000	Unknown	
	29/03/2021	Comm.	Domestic duck	Fattening	6837	Unknown	
	09/04/2021	Comm.	Chicken	Egg	60660	Unknown	
	05/04/2021	Comm.	Chicken	Egg	51922	Unknown	
	07/04/2021	Comm.	Domestic duck	Fattening	38101	Unknown	
	08/04/2021	Comm.	Chicken	Fattening	70000	Unknown	
	09/04/2021	Comm.	Domestic duck	Fattening	3900	Unknown	
	07/04/2021	Comm.	Chicken	Egg	7674	Unknown	
	05/04/2021	Comm.	Chicken	Fattening	10300	Unknown	
	09/04/2021	Comm.	Chicken	Egg	350	Unknown	
	03/04/2021	Comm.	Turkey	Fattening	13300	Unknown	
	02/04/2021	Non comm.	Chicken	Egg	64	Unknown	
	30/03/2021	Comm.	Domestic duck	Fattening	6546	Unknown	
	10/04/2021	Comm.	Chicken	Egg	60901	Unknown	
	06/04/2021	Comm.	Chicken	Breeding	34787	Unknown	
	06/04/2021	Comm.	Chicken	Fattening	17000	Unknown	
	12/04/2021	Comm.	Domestic duck	Fattening	3240	Unknown	
	06/04/2021	Non comm.	Chicken	Egg	43	Unknown	
	08/04/2021	Non comm.	Chicken	Egg	13	Unknown	
	09/04/2021	Comm.	Chicken	Egg	11600	Unknown	
	03/04/2021	Comm.	Turkey	Fattening	27100	Unknown	
	06/04/2021	Comm.	Domestic duck	Fattening	6490	Unknown	
	03/04/2021	Comm.	Chicken	Egg	70133	Unknown	
		Comm.	Domestic duck	Fattening	26743	Unknown	

			Domestic duck	Fattening	8968	Unknown	
	06/04/2021	Comm.	Domestic duck	Fattening	5100	Unknown	
	04/04/2021	Comm.	Chicken	Breeding	19370	Unknown	
	04/04/2021	Comm.	Chicken	Egg	59000	Unknown	
	06/04/2021	Comm.	Chicken	Egg	15000	Unknown	
	06/04/2021	Comm.	Chicken	Egg	8900	Unknown	
	07/04/2021	Comm.	Chicken	Fattening	14535	Unknown	
	08/04/2021	Comm.	Chicken	Breeding	31368	Unknown	
	06/04/2021	Comm.	Chicken	Egg	46509	Unknown	
	03/03/2021	Comm.	Chicken	Egg	98300	Unknown	
	05/04/2021	Comm.	Domestic duck	Fattening	13136	Unknown	
	08/04/2021	Comm.	Chicken	Egg	19573	Unknown	
	07/04/2021	Comm.	Domestic duck	Fattening	5977	Unknown	
			Domestic duck	Fattening	8990	Unknown	
	08/04/2021	Comm.	Chicken	Fattening	19082	Unknown	
	31/03/2021	Comm.	Chicken	Egg	39500	Unknown	
	31/03/2021	Non comm.			101	Unknown	
	29/03/2021	Non comm.	Chicken	Egg	94	Unknown	
	02/04/2021	Comm.	Chicken	Breeding	79815	Unknown	
	02/04/2021	Comm.	Chicken	Egg	67418	Unknown	
	30/03/2021	Comm.	Chicken	Egg	20895	Unknown	
	28/03/2021	Comm.	Turkey	Fattening	5009	Unknown	
	29/03/2021	Comm.	Domestic duck	Fattening	16683	Unknown	
	30/03/2021	Comm.	Turkey	Fattening	40417	Unknown	
		Comm.	Domestic duck	Fattening	3346	Unknown	
	10/03/2021	Comm.	Domestic duck		5585	Unknown	
	02/04/2021	Non comm.	Chicken	Egg	30	Unknown	
	29/03/2021	Comm.	Domestic duck	Fattening	11608	Unknown	
	29/03/2021	Comm.	Chicken	Egg	46035	Unknown	
	27/03/2021	Non comm.	Chicken	Egg	104	Unknown	
	30/03/2021	Comm.	Domestic duck	Fattening	6575	Unknown	
	10/02/2021	Comm.	Turkey	Fattening	21777	Unknown	
	27/03/2021	Comm.	Chicken	Egg	17664	Unknown	
	30/03/2021	Comm.	Chicken	Egg	25000	Unknown	
	23/03/2021	Comm.	Domestic duck	Fattening	5220	Unknown	
	03/04/2021	Comm.	Domestic duck		5100	Unknown	
	27/03/2021	Comm.	Chicken	Egg	32223	Unknown	
	25/03/2021	Comm.	Chicken	Egg	19800	Unknown	
	29/03/2021	Comm.	Chicken	Egg	34345	Unknown	
	31/03/2021	Comm.	Domestic duck	Fattening	3717	Unknown	
	01/04/2021	Comm.	Domestic duck	Fattening	8929	Unknown	
		Comm.	Domestic duck	Fattening	5918	Unknown	
	26/03/2021	Comm.	Domestic duck	Fattening	8558	Unknown	
	29/03/2021	Comm.	Chicken	Egg	1330	Unknown	
	31/03/2021	Comm.	Chicken	Egg	30000	Unknown	
	01/04/2021	Comm.	Domestic duck	Fattening	6898	Unknown	
	29/03/2021	Comm.	Chicken	Egg	21512	Unknown	
	01/04/2021	Comm.	Chicken	Egg	20000	Unknown	
	31/03/2021	Comm.	Chicken	Egg	325113	Unknown	
	11/02/2021	Non comm.	Chicken	Egg	160	Unknown	
	03/04/2021	Comm.	Turkey	Fattening	5600	Unknown	

	07/04/2021	Comm.	Chicken	Breeding	25135	Unknown	
	12/04/2021	Comm.	Turkey	Fattening	26231	Unknown	
	13/04/2021	Non comm.	Chicken	Egg	29	Unknown	
	13/04/2021	Comm.	Chicken	Egg	19523	Unknown	
	12/04/2021	Non comm.	Chicken	Egg	53	Unknown	
	12/04/2021	Comm.	Chicken	Egg	156000	Unknown	
	12/04/2021	Comm.	Chicken	Egg	32114	Unknown	
	12/04/2021	Non comm.	Chicken	Egg	16	Unknown	
	13/04/2021	Comm.	Chicken	Egg	54375	Unknown	
	12/04/2021	Comm.	Chicken	Egg	305000	Unknown	
		Comm.	Chicken	Egg	17500	Unknown	
		Non comm.			242	Unknown	
	14/04/2021	Non comm.	Chicken	Egg	31	Unknown	
	12/04/2021	Non comm.	Chicken	Egg	16	Unknown	
	16/04/2021	Comm.	Domestic duck	Fattening	41839	Unknown	
	15/04/2021	Comm.	Chicken	Egg	271530	Unknown	
		Comm.	Chicken	Egg	31698	Unknown	
	12/04/2021	Comm.	Chicken	Egg	305000	Unknown	
	14/04/2021	Comm.	Domestic goose		43028	Unknown	
	13/04/2021		Chicken	Egg	107	Unknown	
	16/04/2021	Comm.	Chicken	Egg	116558	Unknown	
	13/04/2021	Non comm.	Chicken	Egg	49	Unknown	
	14/04/2021	Comm.	Turkey	Fattening	24365	Unknown	
	15/04/2021	Comm.	Chicken	Egg	29300	Unknown	
	16/04/2021	Comm.	Chicken	Fattening	39000	Unknown	
	15/04/2021	Comm.	Domestic goose	Fattening	18180	Unknown	
	16/04/2021	Comm.	Chicken	Egg	19400	Unknown	
	14/04/2021	Non comm.	Chicken	Egg	50	Unknown	
	16/04/2021	Comm.	Turkey	Fattening	5600	Unknown	
	16/04/2021	Non comm.			79	Unknown	
	16/04/2021	Non comm.	Chicken	Egg	48	Unknown	
	18/04/2021	Comm.	Turkey	Fattening	13088	Unknown	
	16/04/2021	Non comm.	Chicken	Egg	158	Unknown	
	14/04/2021	Non comm.	Chicken	Egg	30	Unknown	
	15/04/2021	Comm.	Chicken	Breeding	109021	Unknown	
	14/04/2021	Non comm.	Chicken	Egg	56	Unknown	
	15/04/2021	Non comm.	Chicken	Egg	184	Unknown	
	16/04/2021	Comm.	Chicken	Egg	24762	Unknown	
	23/04/2021	Comm.	Domestic duck		16826	Yes	
	20/04/2021	Comm.	Chicken	Egg	36546	Yes	
	20/04/2021	Comm.	Chicken	Egg	171000	Yes	
	21/04/2021	Comm.	Turkey		73800	Yes	
	21/04/2021	Comm.	Turkey		52490	Yes	
	23/04/2021	Non comm.			35	Yes	
	23/04/2021	Non comm.	Chicken	Egg	65	Yes	
	19/04/2021	Non comm.	Chicken	Egg	30	Yes	
	23/04/2021	Comm.	Turkey		36978	Yes	
	23/04/2021	Comm.	Turkey		19293	Yes	
	19/04/2021	Comm.	Turkey		8426	Yes	

	24/04/2021	Comm.	Chicken	Egg	35251	Yes	
	21/04/2021	Comm.	Domestic goose		2052	Yes	
	19/04/2021	Comm.	Turkey	Fattening	7420	Yes	
	19/04/2021	Comm.	Domestic duck	Fattening	60722	Yes	
	20/04/2021	Comm.	Chicken	Egg	15412	Yes	
	20/04/2021	Comm.	Chicken	Egg	33750	Yes	
	20/04/2021	Comm.	Chicken	Egg	504949	Yes	
	19/04/2021	Comm.	Chicken	Egg	25000	Yes	
	19/04/2021	Comm.	Chicken	Egg	44300	Yes	
	21/04/2021	Comm.	Turkey	Fattening	23395	Yes	
	19/04/2021	Comm.	Chicken	Egg	28611	Yes	
	21/04/2021	Comm.	Chicken	Egg	5143	Yes	
	19/04/2021	Comm.	Turkey	Fattening	21700	Yes	
	19/04/2021	Comm.	Chicken	Egg	114880	Yes	
	16/04/2021	Non comm.	Chicken	Egg	51	Unknown	
	16/04/2021	Non comm.	Chicken	Egg	70	Unknown	
	16/04/2021	Non comm.	Chicken	Egg	54	Unknown	
	17/04/2021	Non comm.	Chicken	Egg	94	Unknown	
	17/04/2021	Non comm.	Chicken	Egg	51	Unknown	
	15/04/2021	Non comm.	Chicken	Egg	150	Yes	
	19/04/2021	Comm.	Chicken	Egg	2200	Yes	
	19/04/2021	Comm.	Chicken	Egg	15300	Yes	
	20/04/2021	Comm.	Chicken	Egg	117200	Yes	
	19/04/2021	Comm.	Chicken	Egg	39900	Yes	
	19/04/2021	Comm.	Chicken	Egg	76110	Yes	
	20/04/2021	Comm.	Turkey	Fattening	19680	Yes	
	18/04/2021	Comm.	Turkey	Fattening	12090	Yes	
	20/04/2021	Non comm.	Chicken	Egg	63	Yes	
	20/04/2021	Comm.	Chicken	Egg	29138	Yes	
	19/04/2021	Non comm.	Domestic duck	Fattening	790	Yes	
	20/04/2021	Comm.	Domestic duck	Fattening	17654	Yes	
	20/04/2021	Non comm.	Chicken	Egg	35	Unknown	
	20/04/2021	Non comm.	Chicken	Egg	70	Unknown	
	19/04/2021	Comm.	Turkey	Fattening	39102	Yes	
	20/04/2021	Non comm.			59	Yes	
	17/04/2021	Non comm.	Domestic duck	Fattening	33600	Yes	
	19/04/2021	Non comm.	Chicken	Egg	70	Yes	
	19/04/2021	Comm.	Chicken	Egg	23677	Unknown	
	19/04/2021	Comm.	Chicken	Egg	305129	Unknown	
	18/04/2021	Comm.	Domestic duck	Fattening	10484	Unknown	
	17/04/2021	Comm.	Turkey	Fattening	8100	Unknown	
	17/04/2021	Comm.	Chicken	Egg	24700	Unknown	
	16/04/2021	Comm.	Turkey	Fattening	5386	Unknown	
	19/04/2021	Comm.	Turkey	Fattening	12832	Unknown	
	15/04/2021	Non comm.	Chicken	Egg	102	Unknown	
	15/04/2021	Non comm.	Chicken	Egg	108	Unknown	
	15/04/2021	Non comm.	Chicken	Egg	85	Unknown	
	18/04/2021	Comm.	Domestic duck	Breeding	14145	Unknown	
	16/04/2021	Comm.	Domestic duck	Fattening	6495	Unknown	

	17/04/2021	Comm.	Domestic goose	Breeding	957	Unknown	
Romania		Backyard	Chicken	Egg	14	Unknown	
Slovakia	20/04/2021	Non comm.	Chicken	Egg	6	Yes	
Sweden	13/02/2021	Comm.	Turkey	Fattening	3500	Yes	7
	23/02/2021	Comm.	Chicken	Fattening	14300	Yes	7
	22/02/2021	Comm.	Pheasant	Breeding	470	Yes	3
	28/02/2021	Non comm.	Chicken	Mixed	263	Yes	3
	02/03/2021	Comm.	Chicken	Egg	18000	Yes	4
	08/03/2021	Comm.	Chicken	Egg	24000	Yes	10
	12/03/2021	Comm.	Chicken	Egg	33000	Yes	15
	13/03/2021	Comm.	Chicken	Breeding	53200	Yes	20
	13/03/2021	Comm.	Chicken	Egg	22700	Yes	14
	14/03/2021	Comm.	Chicken	Egg	26400	Yes	12
	15/03/2021	Comm.	Turkey	Fattening	30000	Yes	21
	20/04/2021	Comm.	Chicken	Egg	18,000	Yes	20
	21/04/2021	Comm.	Chicken	Egg	1789	Yes	10
Ukraine		Non comm.	Chicken	Other	68	Yes	10
		Non comm.	Chicken	Other	553	Yes	10

Data source: ADNS, ADIS and Member States.

Annex B – Applied prevention and control measures on avian influenza

Scope

This document provides a brief overview of specific prevention and control measures applied in the Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Italy, Lithuania, the Netherlands, Norway, Poland, and Slovakia from 12 2021 to 14 May in relation to avian influenza outbreaks in poultry and in wild birds. Information is only provided that is relevant to the implementation of measures such as increasing awareness of stakeholders and the general public, housing orders, strengthening biosecurity measures (other than poultry confinement), preventive culling, regional stand-stills, derogations on restriction zone implementation after risk assessment, hunting or any other relevant measures that have been applied. This document is made to support the EFSA working group in generating an overview on the application of the selected measures at EU level.

Timing of the applied prevention and control measures

Tables B.1–B.16 of Annex B provide timelines for the main events that triggered actions in relation to the selected prevention and control measures in Belgium, Bulgaria,Croatia, Czechia, Denmark, Estonia, Finland, France, Greece, Hungary, Italy, Lithuania, the Netherlands, Norway, Poland and Slovakia. More information on the actions taken is provided in the sections below the tables.

B.1 Belgium

Ingeborg Mertens

Federal Agency for the Safety of the Food Chain (FASFC)

Timing of the applied prevention and control measures

Table B.1 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.1: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
18/2/2021	Wild bird finding in Eupen	No specific measures except disinfection Communication to the mayor and adaptation of the website	Poultry associations and general public
5/3/2021	Wild bird findings in Genk, Erembodegem and Merelbeke	No specific measures except disinfection Communication to the mayors and adaptation of the website	Poultry associations and general public
10/3/2021	Wild bird finding in Arendonk	No specific measures except disinfection Communication to the mayor and adaptation of the website	Poultry associations and general public
12/3/2021	Wild bird finding in Diksmuide	No specific measures except disinfection Communication to the mayor and adaptation of the website	Poultry associations and general public
6/4/2021	Release housing order (poultry confinement) for the non-professional	After risk assessment and approved by the Minister Clarinval adaptation of the website and general communication	General public
16/4/2021	Outbreak in captive birds in Silly	Increasing awareness, implement preventive culling, demarcation of a restriction zone, inventory of all poultry in that zone	Poultry associations, local units of the FASFC and general public

		Adaptation of the website and general communication	
23/4/2021	Outbreak in captive birds in Waregem	Increasing awareness, implement preventive culling, demarcation of a restriction zone, inventory of all poultry in the 3 km zone, implement derogations on restriction zone implementation after risk assessment Adaptation of the website and communication to the poultry associations	Poultry associations, local units of the FASFC and general public

Increasing awareness of the stakeholders and the general public

From the first outbreaks in neighbouring countries Belgium went into a period of increased risk. There was a communication to the stakeholders and the general public to increase awareness and to remind to strictly apply the biosecurity rules.

From the 1 November the following measures were applied throughout the Belgian territory:

- All poultry and birds from professional poultry holdings, must be confined or shielded in such a way as to avoid contact with wild birds. This measure shall not apply to ratites.
- Feeding and watering poultry and other captive birds must be carried out indoors or in such a way that contact with wild birds is impossible.
- It is prohibited to water poultry and other captive birds with water from surface water resources or rainwater to which wild birds have access, unless that water has been treated to inactivate any viruses present.

From the 15 November (after the first finding of H5N8 in wild birds in Belgium) the following measure was added throughout Belgian territory:

- All poultry and birds, including pigeons, from poultry holdings (non-professional), must be confined or shielded in such a way to avoid contact with wild birds. This measure shall not apply to ratites.
- All collections (exhibitions, competitions, markets) of poultry and birds are prohibited, both for professional companies and hobbyists. The sale of poultry and birds by professional traders on public markets is permitted.

All documents are placed on the website:

- https://www.favv-afsca.be/professionelen/dierlijkeproductie/dierengezondheid/vogelgriep/ (professional)
- https://www.favv-afsca.be/consumenten/extra/vogelgriep/ (non-professional).

Housing order

For the **non-professional:** implemented on the 15 November 2020, released on the 6 April 2021.

In the meantime some derogations were given for the confinement of pigeons and raptors.

Implemented after the first finding of avian influenza in wild birds in Belgium.

Released on two conditions: no findings of wild birds in the last 3 weeks before release and no cases of avian influenza in a zone of 50 km around Belgium.

For the **professional:** implemented on the 1 November 2020. At that time there were no outbreaks in Belgium but outbreaks in the neighbouring countries. Therefore 'a period of increased risk' was declared in Belgium.

No release yet because of two recent outbreaks in captive birds.

Strengthening biosecurity measures (other than housing order)

See description increasing awareness.

Preventive culling

We applied preventive culling in holdings (both professional and non-professional) where an outbreak of a HPAI was confirmed. If there was poultry in the immediate vicinity (100 m) of an outbreak we also applied preventive culling of that poultry. All contact holdings from an outbreak were checked (also sampling) but there was no culling because there was no infection.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Regional standstill is only applied in the restriction zones.

Derogations on restriction zone implementation after risk assessment

After risk assessment derogations were given in the restriction zones:

- derogation on slaughter of poultry from a surveillance zone;
- derogation on the unloading of hatching eggs from a surveillance zone;
- derogation on the prohibition of unloading poultry for slaughter;
- derogation for the vaccination of birds in approved zoos.

All derogations were published on the website:

https://www.favv-afsca.be/professionelen/dierlijkeproductie/dierengezondheid/vogelgriep/maatregelen.asp

Hunting

No specific measures

B.2 Bulgaria

Aleksandra Miteva

Animal Health and Welfare, and Feed Control Directorate – Bulgarian Food Safety Agency

Timing of the applied prevention and control measures

Table B.2 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.2: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
23/6/2021	Confirmation of primary outbreak of HPAI in poultry	Eradication of outbreaks, control and surveillance according to the Directive 2005/94/EC ; Enhanced official inspections for biosecurity Enhanced passive surveillance in wild birds Ban for outdoor keeping poultry Ban for poultry market	Official vets, poultry farmers
26/4/2021	Confirmation of primary outbreak of HPAI in poultry		

Increasing awareness of the stakeholders and the general public

- Meetings with representatives of the poultry associations aimed at keeping them up to date with the epidemiological situation, present and further control measures to be enforced.

Housing order

- Precautionary measures such as keeping poultry indoors, trying to separate them from wild birds and ensuring feed and water is not accessible to wild birds were also required.

Strengthening biosecurity measures (other than housing orders)

Preventive culling

Not applied.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Not applied.

Derogations on restriction zone implementation after risk assessmen

Derogation in line with the Directive 2005/94.

Hunting

Not forbidden.

B.3 Croatia

Tihana Miškić, Gordana Nedeljović

Ministry of Agriculture, Veterinary and Food Safety Directorate-General

Timing of the applied prevention and control measures

Table B.3 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.3: Overview of main actions

Date	Event that triggered action	Type of action taken
1/3/2021	First wild bird finding: 1 carcass of mute swan (*Cygnus olor*), found on Bosut river near Podgrađe, Vukovar-Srijem County, Croatia. Suspicion on HPAI received form the official veterinarian	The carcass was delivered to the Croatian Veterinary Institute (CVI), branch Vinkovci. Necropsy was performed and the organs (trachea, lungs, liver, kidneys, spleen, intestines and brain) were forwarded for further AI testing to the National Reference Laboratory for avian influenza (NRL for AI) in Poultry centre (CVI branch), Zagreb
8/3/2021	Confirmation and subtyping of AI (1st case)	NRL for AI confirmed HPAI, subtype H5N8
	Second wild bird finding: 1 carcass of Mute Swan (*Cygnus olor*), found on Bosut river near Podgrađe, Vukovar-Srijem County, Croatia. Suspicion on HPAI received form the official veterinarian	The carcass was delivered to CVI, branch Vinkovci. Necropsy was performed and the organs (trachea, lungs, liver, kidneys, spleen, intestines and brain) were forwarded for further AI testing to the National Reference Laboratory for avian influenza (NRL for AI) in poultry centre (CVI branch), Zagreb

14/3/2021	Third wild bird finding: 1 carcass of mute swan (*Cygnus olor*), found on Bosut river near Podgrađe, Vukovar-Srijem County, Croatia. Suspicion on HPAI received form the official veterinarian	The carcass was delivered to CVI, branch Vinkovci. Necropsy was performed and the organs (trachea, lungs, liver, kidneys, spleen, intestines and brain) were forwarded for further AI testing to the National Reference Laboratory for avian influenza (NRL for AI) in poultry centre (CVI branch), Zagreb
17/3/2021	Confirmation and subtyping of AI (2nd case)	NRL for AI confirmed HPAI, subtype H5N8 in second swan carcass
23/3/2021	Confirmation and subtyping of AI (3rd case)	NRL for AI confirmed HPAI, subtype H5N8 in third swan carcass

Increasing awareness of the stakeholders and the general public

Brief description of the communication/activities during February to May 2021:

- Continuously publishing summary of epidemiological situation related to AI in neighbouring countries, information on new outbreaks (national and neighbouring), recommendations to the poultry producers and other relevant information on official website of Ministry of Agriculture and Veterinary and Food Safety Directorate-General (http://www.veterinarstvo.hr/).
- Information for general public made available via TV, newspapers and internet portals.
- Continuously informing the authorised veterinarians about epidemiological situation and new outbreaks in inland and neighbouring countries, signs of disease, obligations related to reporting of suspicion and confirmation of the disease, transmission of knowledge about AI to the animal owners, via emails.
- Coordination with Directorate-General for hunting, forestry and wood industry followed by written communication with Croatian hunting association to increase awareness among hunters.

Housing order

Annual order on measures to protect animal health from infectious and parasitic diseases and their financing (Official Gazette, Nos. 2/21, 4/21, 7/21 and 19/21) prescribes obligatory biosecurity measures for poultry producers keeping 1000 birds and more.

Order on measures for preventing occurrence and control of spread of avian influenza (AI) in the Republic of Croatia (Official Gazette, No. 127/20) in force from 18 November 2020, prescribes obligatory detention of poultry and game birds in fenced areas in such a way that any contact with wild birds is prevented.

Order on measures for preventing occurrence and control of spread of avian influence in protection and surveillance areas of the Republic of Croatia (Official Gazette, No. 130/20) from 25 November 2020 under Directive 2005/94/EC, was in force until repealing of restriction zones on 9 February 2021.

Strengthening biosecurity measures (other than housing order)

Order on measures for preventing occurrence and control of spread of avian influence in the Republic of Croatia (Official Gazette, No 127/20) prescribes for the whole territory of Croatia following:

- Obligatory keeping of feeders and drinkers for poultry, game birds and birds in captivity in closed or covered areas, which prevents the landing and the contact of wild birds with food and water.
- Mandatory storage of feed intended for poultry, game birds and captive birds in facilities protected from the access of wild birds and rodents.
- The water supply of poultry, game birds and captive birds with water from surface water tanks to which wild birds have access, or outdoor water tanks, unless protected from the access of wild waterfowl, is prohibited.

- It is mandatory to keep poultry and game birds at fairs, markets, exhibitions, shows and cultural events indoors or closed pens without the possibility of contact with other animals and wild birds.

Mandatory implementation and maintenance of hygienic conditions and biosecurity measures in all facilities for breeding and rearing poultry, game birds and captive birds, and at fairs, markets, exhibitions, shows and cultural events and on all locations on which poultry, game birds and captive birds temporarily stay.

Suggestion of stringent implementation and maintenance of hygienic conditions and biosecurity measures in all holdings for breeding and rearing poultry, game birds or captive birds in Vukovar-Srijem County (the area where wild birds were found), including:

5) use of PPE;
6) disinfection of hands and footwear upon entering the facility;
7) cleaning, washing and disinfection of footwear upon leaving the facility;
8) it is forbidden to leave the building in the same protective clothing and footwear;
9) ban of entry of unauthorised personnel into the facility;
10) disinfection of facilities and equipment according to technological requirements, using approved disinfectant in the prescribed concentration, or storage of animal feed and litter in facilities protected from access of wild birds and rodents.

Preventive culling

Not applicable (there were no confirm cases).

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Zoning for the HPAI outbreak in poultry that was set on 19 November 2020 and restrictive measures for the surveillance zone were lifted on 9 February 2021.

Regional standstill (beyond the restriction zones specified in the EU Regulation) is not implemented.

Derogations on restriction zone implementation after risk assessment

Not applicable.

Hunting

Not applicable.

B.4 Czechia

Lucie Kalášková

State Veterinary Administration

Timing of the applied prevention and control measures

Table B.4 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.4: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)

Still continuing	New occurrence of HPAI in wild birds and in poultry in EU	Regular updating of the website of the State Veterinary Administration about HPAI situation in EU: https://www.svscr.cz/zdravi-zvirat/ptaci-chripka-influenza-drubeze/vysocepatogenni-aviarni-influenza/	General public, all breeders
From 21/1/2021 to 30/4/2021	Confirmation of HPAI cases in wild birds and outbreaks in poultry in Czechia	Information letters Press releases related to the occurrence of HPAI in Czechia Regular updating of the website of the State Veterinary Administration about AI situation in Czechia: https://www.svscr.cz/zdravi-zvirat/ptaci-chripka-influenza-drubeze/ptaci-chripka-v-cr/	Poultry organisation, breeders of captive birds, private veterinarians and Regional Veterinary Administrations General public, all breeders
From 26/1/2021 to 30/4/2021	Confirmation of new cases of HPAI H5N8 in wild birds in Czechia	Veterinary measures for the whole territory of Czechia to control the spread of HPAI – ban of all gatherings of birds (e.g. fairs, exhibitions, sales, pigeon racing, competitions); commercial holdings – all species of birds to be kept inside; biosecurity measures; restriction of poultry movement	General public, all breeders

Increasing awareness of the stakeholders and the general public

The information about HPAI situation in Czechia and EU in 2021 is regularly updated on the website of the State Veterinary Administration:

https://www.svscr.cz/zdravi-zvirat/ptaci-chripka-influenza-drubeze/vysocepatogenni-aviarni-influenza/

https://www.svscr.cz/zdravi-zvirat/ptaci-chripka-influenza-drubeze/ptaci-chripka-v-cr/

Housing order

Emergency veterinary measures, which are issued by the Regional Veterinary Administration in case of the outbreak and which are binding for a defined restricted area around this outbreak (for protection and surveillance zone), stipulate also for backyard farms in protection zones biosecurity measures that aim to prevent the contact of poultry with wild birds and their subsequent possible infection.

Strengthening biosecurity measures (other than housing order)

On 26 January 2021 the State Veterinary Administration issued the veterinary measures for the whole territory of Czechia to control the spread of HPAI in connection with to occurrence of HPAI in wild birds and in poultry (see above).

Increased control (biosecurity) of poultry holdings in contact with AI affected countries were performed.

General public was informed through press on compliance of biosecurity in poultry farms, observe the current disease situation on the website of the State Veterinary Administration:

https://www.svscr.cz/zdravi-zvirat/ptaci-chripka-influenza-drubeze/ptaci-chripka-v-cr/

The veterinary measures will be lifted on 1 May 2021.

Preventive culling

It was not applied.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Regional standstill beyond the restriction zone was not applied in Czechia.

Derogations on restriction zone implementation after risk assessment

It was applied in connection with the HPAI outbreaks in poultry and it was carried out under Council Directive 2005/94/EC.

Hunting

The releasing of poultry (pheasant, mallard) and other captive birds for the restocking purpose were forbidden in restricted zones (emergency veterinary measures) established around outbreaks.

B.5 Denmark

Jonas Berggren Fabricius, Sanne Wiingreen, Mette Schebye Skriver and Pernille Dahl Nielsen

Danish Veterinary and Food Administration

Timing of the applied prevention and control measures

Table B.5 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.5: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
9/2/2021	Risk assessment	Capture of wild pheasants for restocking supplies of game birds was allowed again after a risk assessment	Poultry industry (Game bird holdings)
5/2/2021	HPAI outbreak in other captive birds in the municipality of Copenhagen	Culling of all birds at the infected holding. Due to a risk assessment, no zones were established under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
25/2/2021	HPAI outbreak in poultry (backyard) in in the municipality of Bornholm	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
3/3/2021	HPAI outbreak in poultry (backyard) in in the municipality of Bornholm	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
3/3/2021	HPAI outbreak in poultry (game birds) in the municipality of Ringsted	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km	General public, poultry industry and poultry associations

		around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	
6/3/2021	HPAI outbreak in poultry (fattening turkeys) in the municipality of Slagelse	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
8/3/2021	Outbreaks in backyard poultry holdings	Increased focus on housing recommendations, with a video posted on social media	Owners of backyard holdings with poultry and other captive birds
10/3/2021	HPAI outbreak in poultry (fattening turkeys) in the municipality of Slagelse	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
12/3/2021	HPAI outbreak in poultry (backyard) in in the municipality of Kalundborg	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
16/3/2021	HPAI outbreak in poultry (fattening turkeys) in the municipality of Slagelse	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
17/3/2021	HPAI outbreak in poultry (game birds) in the municipality of Langeland	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
17/3/2021	HPAI outbreak in poultry fattening turkeys) in the municipality of Slagelse	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of the necessary measures under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
21/3/2021	HPAI outbreak in other captive birds in the municipality Lejre	Culling of all birds at the infected holding. Due to a risk assessment, no zones were established under Council Directive 2005/94/EC	General public, poultry industry and poultry associations
21/4/2021	HPAI outbreak in poultry (fattening ducks and geese) in the municipality of Holstebro	Culling of all birds at the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km	General public, poultry industry and poultry associations

		around the holding and implementation of the necessary measures under Regulation (EU) 2016/429	

Increasing awareness of the stakeholders and the general public

The strategy from last report (XV) is still in place

DVFA has continuously informed the public and stakeholders about the situation using press releases, news and facts updates on the Danish Veterinary and Food Administration (DVFA) homepage, and Facebook. The staff of the DVFA call centre are prepared for answering questions from the public (via FAQs).

Representatives from the poultry industry participate in meetings in the AI expert group, giving the opportunity to exchange useful information and reach the stakeholders quickly.

DVFA uses the app for smartphones called 'FugleinfluenzaTip' ('Bird flu Tip') to make it easier for the public to notify the DVFA when finding dead wild birds. This app allows the public to send exact data about findings of dead wild birds including the location and a photo. The submitted data are directly transferred to the DVFA wild bird database and allocated for collection by the Veterinary Inspection Units. The AI situation in wild birds can be followed on the Danish AI database.

Due to the AI situation and experience from the AI outbreak on 16 November, DVFA decided to change the criteria for reporting a suspicion of AI. Changes in production parameters and mortality that would under normal circumstances only raise an 'early warning' of AI will now result in a suspicion and handled very quickly. Both private and official veterinarians have been informed about this including the NRL.

Criteria for an 'early warning' (now suspicion):

Event of one or more of the following incidents in the herd:

11) A decrease in intake of feed or water of more than 20% within 1 day.

12) A decrease in egg production, in addition to the normal production level, of a total of more than 5% over 2 days.

13) An excess mortality of 3% within 3 days in relation to the expected mortality for the type of poultry and age in question.

Housing order

The housing from last report (XV) is still in place.

The DVFA has followed a pre-determined strategy for implementation of measures in case of an HPAI epidemic. A rapid risk assessment performed after findings of HPAI in several wild birds in the northern part of Germany resulted in the risk level being raised from very low to high. Consequently, a housing order was implemented on 6 November 2020 applicable for the whole country. The DVFA considers Denmark as a risk area due to its small size, the geographical position with many resting migratory birds, the long coast line and wide areas with wetlands and fjords.

The housing order is applicable for all production categories including zoos, professional and non-professional poultry holdings including other captive birds. The definition of housing: poultry/other captive birds have to be kept inside or fenced under roof, net or wire. Ducks, geese and ostriches are exempt from covering if wild birds can be effectively prevented from landing in the enclosure using other methods. Enclosures ≤ 40 m^2 are also exempt from covering. Furthermore zoo birds vaccinated against AI are exempt from the requirements.

The housing order is implemented based on a national legal act. Information to the public was given through the media (press release), the DVFA homepage and Facebook.

https://www.retsinformation.dk/eli/lta/2020/1707

Strengthening biosecurity measures (other than housing order)

The strengthening from the last report (XV) are still in place.

On 6 November 2020, fairs, markets, shows or other gatherings of poultry or other captive birds were prohibited in the whole country.

Regardless of the AI situation, the following risk mitigation measures always have to be followed in all poultry farms:

- Poultry or other captive birds must be fed and watered indoors or under fixed roofs or fixed coverings, ensuring that larger wild birds cannot come into contact with the feed and water.
- Poultry and other captive birds are not allowed to have access to surface water or rainwater.
- Ponds/lakes in outdoor poultry areas have to be shielded from larger wild birds.
- Ducks and geese have to be kept physical separated from other poultry.

On 8 December 2020, Denmark imposed random checks on the cleansing and disinfection standards of foreign poultry transport vehicles and crates. The prioritised control campaign continues in Q1 of 2021 and is performed on empty foreign poultry vehicles going to Danish poultry holdings primarily in connection with partial collection of broilers for slaughter in other EU countries.

The background for this action is the ongoing epidemiological situation of HPAI in other EU countries from which the transport vehicles arrive. The aim is to minimise the potential risk of introducing AI by fecal contamination of crates being brought into the poultry houses. If the crates before these transportations had been used for the transport of broilers in the incubation phase of avian influenza (AI) there may be a risk for the introduction of avian influenza in poultry houses where only a part of the broiler population are removed. Denmark has found during earlier control campaigns that many of the crates for poultry transports were contaminated with poultry droppings.

According to Article 18 (7) in Council Directive 2009/158/EC 'The vehicles and, if they are not disposable, the containers, crates and cages shall, before loading and unloading, be cleansed and disinfected according to the instructions of the competent authority of the Member State concerned'.

New

Evaluation of the campaign is scheduled to take place in the end of Q1 and continuation of the campaign will be considered depending on the findings in question and the epidemiological situation.

Preventive culling

No preventive culling in the report period.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Regional standstill, beyond the restriction zones specified in the EU Regulation, was not applied in the report period.

Derogations on restriction zone implementation after risk assessment

Derogations on implementation of restriction zones were used during two outbreaks in other captive birds based on risk assessment under Council Directive 2005/94/EC.

Hunting

On 18 January 2021 capture of wild pheasants for restocking of game supply was temporarily stopped and at present a risk assessment is being performed to evaluate the risk.

On 12 February 2021 the capture of wild pheasants for restocking of game supply were resumed due to a risk assessment.

B.6 Estonia

Kärt Jaarma

Agriculture and Food Board

Timing of the applied prevention and control measures

Table B.6 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.6: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
12/2/2021	First wild bird (mute swan) finding	Increasing awareness, notification of the findings of dead wild birds, control checks in domestic bird farms in high-risk areas	Poultry keepers, local governments, general public, others dealing with birds such as animal rescuers, ornithologists, hunters
18/2/2021	First outbreak in poultry farm	Stamping out of all poultry on the infected holding and cleaning and disinfection of the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of measures under Council Directive 2005/94/EC	Poultry establishments in protection and surveillance zones, general public
1/3/2021	Several wild bird findings, first outbreak in poultry farm, HPAI epidemiological situation in neighbouring countries	Ban for keeping domestic birds outside	Poultry keepers, local governments, general public
29/3/2021	Second outbreak in poultry farm	Stamping out of all poultry on the infected holding and cleaning and disinfection of the infected holding. Establishment of a protection and surveillance zone of 3 and 10 km around the holding and implementation of measures under Council Directive 2005/94/EC	Poultry establishments in protection and surveillance zones, general public

Increasing awareness of the stakeholders and the general public

Press releases sent out on several occasions to raise awareness:

- 23 November 2020 – Message about awareness and strengthened biosecurity due to outbreaks in 10 countries in Europe.
- 22 January 2021 – Message about awareness and strengthened biosecurity due to HPAI findings in countries nearby.
- 11 February 2021 – Message about awareness and strengthened biosecurity due to HPAI findings in wild birds in neighbouring countries.
- 12 February 2021 – First wild bird (mute swan) finding in the capital of Estonia. Message about vigilance for poultry keepers and for public to report to the Agriculture and Food Board if wild birds are found dead.
- 19 February 2021 – Information about first outbreak of HPAI in poultry farm.

- 23 February and 26 February 2021 – Information about the ban for keeping domestic birds outside since 1 March.
- 12 March 2021 – Message about awareness and strengthened biosecurity due to HPAI findings in wild waterbirds on the north coast of Estonia.
- 30 March 2021 – Information about second outbreak of HPAI in poultry farm.
- 9 April 2021 – Online information day about HPAI for poultry keepers was organised by the Agriculture and Food Board.

Information on the website of the Agriculture and Food Board updated with the latest information and advice to poultry keepers.

Housing order

Orders and prohibitions for poultry keepers in protection and surveillance zones designated around HPAI outbreaks are set out in the Regulation of the Minister of Agriculture of 25 June 2007 on eradication of AI (implementation of Council Directive 2005/94/EC).

Ban for keeping domestic birds outside throughout the country since 1 March 2021 are set out in the Regulation of the Agriculture and Food Board. The ban for keeping domestic birds outside is in place until further notice from the Agriculture and Food Board. Information was sent out as a press release and directly to poultry keepers. The Agriculture and Food Board is responsible for official controls of the compliance of the housing order.

Strengthening biosecurity measures (other than housing order)

Further biosecurity advise is given and communicated on the website of the Agriculture and Food Board and directly to poultry keepers. Control checks of applied biosecurity measures in domestic bird farms in high-risk areas and around commercial poultry producers were carried out by Agriculture and Food Board.

Preventive culling

Not applied.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Not applied.

Derogations on restriction zone implementation after risk assessment

Not applied.

Hunting

No regulations or recommendations on hunting implemented.

B.7 Finland

Tiia Tuupanen

Finnish Food Authority

Timing of the applied prevention and control measures

Table B.7 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.7: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
February 2020 to April 2021	HPAI cases in wild birds in Finland	Increasing awareness	Keepers of poultry and captive birds, general public, hunters, veterinarians
8/2/2021 to 31/5/2021	HPAI in wild birds in neighbouring countries and in Finland	Housing order	Keepers of poultry and captive birds

Increasing awareness of the stakeholders and the general public

Information of the epidemiological situation related to AI and recommendations and guidance to keepers of poultry and other captive birds, hunters, veterinarians and general public is published on the websites of the Finnish Food Authority and shared via social media and press releases.

https://www.ruokavirasto.fi/viljelijat/elaintenpito/elainten-terveys-ja-elaintaudit/elaintaudit/

https://www.ruokavirasto.fi/viljelijat/elaintenpito/elainten-terveys-ja-elaintaudit/elaintaudit/siipikarja/lintuinfluenssa/lintuinfluenssa-suomessa/

Information is also sent by emails to official veterinarians and poultry organisations and other stakeholders.

Several meetings of the AI expert group.

Housing order

The keeping of poultry and other captive birds in the open air is prohibited from 8 February 2021 to 31 May 2021, unless the birds are protected against contact with wild birds with nets and roofs. The prohibition does not apply to zoos, racing pigeons and ratites. Requirements are in force in the whole country of Finland. Decree of the Ministry of Agriculture and Forestry 106/2021, https://www.finlex.fi/fi/laki/alkup/2021/20210106.

Strengthening biosecurity measures (other than housing order)

The following requirements are in force in the whole country (Decree of Ministry of Agriculture and Forestry 814/2017, https://www.finlex.fi/fi/laki/alkup/2017/20170814):

- The supply of feed and drinking water for poultry shall be arranged indoors or in a place where wild waterfowl or raptors cannot reach.
- When water reservoirs necessary for the welfare of poultry are present at the site, the entry of wild waterfowl and raptors shall be prevented.
- Water to poultry shall not originate in surface waters from a place where there is many wild waterfowl, unless the water before administration to poultry is heated or disinfected in such a way that possible AI virus is destroyed in treatment.
- The feed for poultry shall be stored protected from wild birds and other animals.

Preventive culling

Not applied.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Not applied.

Derogations on restriction zone implementation after risk assessment

Not applied.

Hunting

Hunting is allowed.

B.8 France

Yves Lambert, Andrea Jimenez Pellicer

(General Directorate for Food, Animal Health Office, Ministry of Agriculture and Food)

Timing of the applied prevention and control measures

Table B.8 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.8: Overview of main actions

Date	**Event that triggered action**	**Type of action taken**	**Target audience (if applicable)**
5/01/2021	Spreading of the virus into a highly poultry populated region	Limitation of all movements in the zone	Departmental decree Public
17-18/03/2021	Decrease of the number of outbreaks in the southwest	Lightening of restrictions imposed in the large south-western restricted area	Technical instruction and Departmental decree
23/04/2021	No migratory wild bird case within 1 month	National decree: moderate risk level of introduction of HPAI	

Increasing awareness of the stakeholders and the general public

Frequent communication has been done with all stakeholders via periodic status updates, live exchanges and meetings while major changes in strategy.

Press releases have been regularly written and a general presentation of the epizootic and its progress has been updated on the website of the Ministry of Agriculture.

https://agriculture.gouv.fr/influenza-aviaire-le-point-sur-la-situation-en-france

Housing order

The first outbreak of HPAI was confirmed in the Haute-Corse department on November 16, 2020. The episode concerned 3 primary outbreaks and 5 secondary outbreaks in a total of 3 departments.

The first outbreak declared in the south-west of France occurred on December 6, 2020. The disease quickly spread in a very highly populated region, especially in fathering ducks. The last outbreak in the south-west area has been confirmed on the 26th march 2021.

Some others outbreaks have occurred in the French territory outside the south-west area but very few or no secondary outbreak have been detected.

The last outbreak on France has been detected the 29th April 2021 but some suspicions still exist.

In total, 21 wild birds cases have been confirmed in France during the current epizooty.

Strengthening biosecurity measures (other than housing order)

Strengthening biosecurity measures have been established including disinfection of all animal likely transports, clinical inspection and analysis of poultry before movement and inspection of all holdings in the regulated zone (commercial and non-commercial holdings in the protective zone, commercial holdings in the surveillance zone)

Preventive culling

Into the large regulated zone of the south-west area, all poultry have been culled in a radius of 1 km around the outbreaks and within 5 km for palmipeds and open-air poultry.

Regional stand still (beyond the restriction zones specified in the EU Regulation)

Initially, the zoning established by the AI directive (and R°2016/429) was established (*a minimum* 3km and 10 km around the outbreaks for the protection and surveillance zone) in all regulated zones. Considering the progress of the epizootic event in the southwest*, it has been decided to enlarge the perimeter of the regulated zone up to 10 km from the limit of the current surveillance zone. A large regulated zone has thus been established in the south-west* within all movements of poultry and animal products origin likely to spread the disease have been drastically limited (see derogations below).

FRI13	Landes
FRI14	Lot-et-Garonne
FRI15	Pyrénées-Atlantiques
FRJ24	Gers
FRJ26	Hautes-Pyrénées

Derogations on restriction zone implementation after risk assessment

On the national territory except the South-West *, derogations have been applied according to Directive 2005/94/EC and Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 from April 21th 2021.

In the South-West, movements have been restricted drastically by prefectural orders from January 15th to March 18th. Only one day-old chicks were able to move from restricted areas to the free-disease zone.

After March 18th, galliforms can be reintroduced for repopulation in stabilised surveillance zones (no outbreak within 21 days) and derogations for:

- Movement of one day-old chicks from protection zone to the free zone
- Movement of table eggs from protection zone to a packing centre in the free zone
- Movement of hatching eggs from protection zone to a hachery in the free zone
- Movement from surveillance zone to a slaughterhouse in the free zone
- Movement of pullets from surveillance zone to an empty exploitation in the free zone
- Movement of palmipeds from surveillance zone to feeding room inside the surveillance zone only

A strengthened surveillance zone has been kept to control the introduction of all poultry in the large protection zone (old coalescent protection zone). Palmipeds will be allowed to repopulate de zone only after a 4 weeks of sanitary empty period. A 4 week delay of strengthened surveillance zone after repopulating ducks holdings will ensure the clinical surveillance of new palmipeds.

Hunting

In FRANCE, the movements of all game birds in regulated areas are prohibited in the 21 days after the last outbreak of the zone.

The movement of game birds (galliforms only) from a restricted area to a free disease zone may be subject to a derogation from the movement ban: Individual authorization and clinical examination of game birds present on the holding of origin and the performance of virological tests less than 48 hours before departure by the designated health veterinarian;

Specific conditions for transport between two farms: Transport from the protection zone is possible to a farm that does not have other poultry located in the PZ or SZ in priority.

Transport from the surveillance zone is possible to a farm that does not keep other poultry located in the national territory.

Specific conditions for introduction into the wild: Movements for introduction into the natural environment may only be authorized for game birds of the order Galliforms. No exemption to the movement ban to game birds located in the protection zone.

The ban of the movement of galliforms for introduction into the wild from a SZ to a free-disease zone may be subject to derogation based on a risk analysis on a case-by-case.

LARGE RESTRICTED ZONE OF THE SO: The releases of game birds are prohibited. According to the local risk analysis, animal hunting has temporarily been forbidden in some regions.

B.9 Greece

Sokratis Perdikaris

Ministry of Rural Development and Food
Directorate-General of Veterinary Services
Directorate of Animal Health

Timing of the applied prevention and control measures

Table B.9 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.9: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
25/11/2020	Increased number of HPAI findings in poultry and wild birds in northern and central Europe	Increasing awareness Strengthening of controls on biosecurity measures at farms Enhancement of surveillance activities	Poultry industry, backyard keepers, general public, veterinary and forestry authorities, environmental organisations, hunters, national park agencies, zoos
10/2/2021	HPAI poultry outbreaks and wild bird cases in south-eastern Europe	Increasing awareness Strengthening of controls on biosecurity measures at farms Enhancement of surveillance activities	Poultry industry, backyard keepers, general public, veterinary and forestry authorities, environmental organisations, hunters, national park agencies, zoos
1/4/2021	First report of HPAI (H5N8) in three wild birds in northern Greece (Regional Unit of Serres)	Increasing awareness Strengthening of controls on biosecurity measures at farms Enhancement of surveillance activities	Poultry industry, backyard keepers, general public, veterinary and forestry authorities, environmental organisations, hunters, national park agencies, zoos
8/4/2021 and 20/4/2021	New HPAI (H5N8) cases in wild birds in northern Greece	Increasing awareness Strengthening of controls on biosecurity measures at farms	Poultry industry, backyard keepers, general public, veterinary and forestry authorities, environmental

	(Regional Units of Florina and Kastoria)	Enhancement of surveillance activities	organisations, hunters, national park agencies, zoos

Increasing awareness of the stakeholders and the general public

In November, when the epidemiological situation of AI in Europe aggravated, the Central Competent Authority (CCA-Directorate of Animal Health/ Ministry of Rural Development and Food) issued its first relevant circular to:

14) inform official authorities (local and regional veterinary authorities, NRL, Central Forest Service etc.) about latest developments and point out the necessary actions to be taken;

15) increase awareness among stakeholders (poultry associations and all bodies actively interacting with wild birds) at national level.

Similar circulars were issued after every significant event that followed in relation to AI and in particular after wild bird findings in Greece. In response to the circulars issued by the CCA and to the epidemiological situation of AI, local and regional veterinary authorities increased awareness among stakeholders and the general public at local/regional level by releasing bulletins, communicating directly with commercial poultry farmers, visiting poultry holdings, informing hunter associations etc.

Housing order

A compulsory indoor confinement of birds in all poultry establishments within a 2 km radius from wetlands has been in place in the entire country since 2008. This permanent prevention measure was considered sufficient; therefore, a housing order was not issued at national level given the limited number of wild bird cases and the absence of poultry outbreaks.

Strengthening biosecurity measures (other than housing order)

In Greece, certain mandatory biosecurity measures have been in place since 2008 to reduce the risk of virus incursion in poultry and other captive birds. These measures (confinement within a 2 km radius from wetlands, ban of live bird open-air markets, shows and exhibitions, supply of feed and water indoors or under a shelter, use of nets, feed storage protection from wild birds, etc.) were considered suitable for the reduce of AI risk from November 2020 until May 2021. The main priority of the veterinary authorities during this period was to ensure compliance with the established biosecurity measures by increasing awareness and by intensifying official controls primarily in commercial poultry holdings.

Moreover, a handout with general information about AI and guidelines on biosecurity measures was circulated among stakeholders. It is also available for the public on the website of the Ministry of Rural Development and Food.

(http://www.minagric.gr/images/stories/docs/agrotis/poulerika/metra_bioasfaleia_pthnon200217_new.pdf)

Preventive culling

Not applied – no cases occurred in poultry so the situation did not arise.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Not applied – no cases occurred in poultry so the situation did not arise.

Derogations on restriction zone implementation after risk assessment

Not applied – no cases occurred in poultry so the situation did not arise.

Hunting

Hunting was not allowed during this period, because of the restrictive measures against SARS-CoV-2.

B.10 Hungary

Georgina Helyes

National Food Chain Safety Office

Timing of the applied prevention and control measures

Table B.10 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.10: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
13/4/2021	First poultry outbreak in Hajdú-Bihar county in 2021	Increasing awareness, release housing order, strengthening biosecurity, implement regional standstill, implement derogations on restriction zone implementation after risk assessment	Stakeholders, general public, poultry associations

Increasing awareness of the stakeholders and the general public

All information about AI is available on the website of the National Food Chain Safety Office. https://portal.nebih.gov.hu/madarinfluenza

The Chief Veterinary Officer (CVO) and head of the National Disease Control Centre has communicated the most significant information about the epidemic to the national media.

Housing order

On 25 November 2020 the 4/2020 CVO Decision entered into force which ordered the closed keeping of poultry (including backyard) in the whole country.

Strengthening biosecurity measures (other than housing order)

The 3/2017 CVO Decision about strengthening biosecurity requirements has been in force since the 2016/2017 HPAI epidemic.

From 11 November 2020:

- Checks and controls:
  - enhanced checks by the local authorities
  - on spot visits by the Central Competent Authority
  - checks with drones.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

From 11 November 2020:

- Whole territory of Hungary is considered as high-risk area (routes of migratory birds and resting places are present in all regions of Hungary).
- Compulsory sampling if transported for further keeping (excluding day-old-chicks) in waterfowl – within 72 hours, swabs – need not wait for the result.
- Compulsory sampling before the release of poultry for restocking supplies of game birds – within 72 hours, swabs – have to wait for the result.

Derogations on restriction zone implementation after risk assessment

Based on risk assessment under Council Directive 2005/94/EC, hatching eggs were transported from surveillance zone to free area of the country.

Hunting

Enhanced active and passive surveillance of wild birds since 11 November:

- Birdlife Hungary (the leading non-profit making, apolitical and charitable, nature conservation organisation in Hungary): searching for dead wild birds, cooperates in active monitoring of wild birds (oropharyngeal/tracheal or cloacal swab samples from live wild birds during bird-ringing).
- National parks: searching for dead wild birds.

B.11 Italy

Scolamacchia Francesca, Dorotea Tiziano, Mulatti Paolo

Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (Padua) – Italy

Timing of the applied prevention and control measures

Table B.11 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.11: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
20/2/2021	First poultry outbreak in a backyard holding in a region not previously affected (Friuli Venezia Giulia Region)	Control measures as provided by Council Directive 2005/94/EC: culling, disposal of carcasses, cleaning and disinfection procedures. Establishment of protection and surveillance zones (3 and 10 km). Restrictions on movements of poultry and poultry products (with derogations). Epidemiological investigation. Clinical examinations and collection of samples in protection zone	
25/2/2021	First poultry outbreak in a backyard holding in a region not previously affected (Veneto Region)	Control measures as provided by Council Directive 2005/94/EC: Culling, disposal of carcasses, cleaning and disinfection procedures. Establishment of protection and surveillance zones (3 and 10 km). Restrictions on movements of poultry and poultry products (with derogations). Epidemiological investigation. Clinical examinations and collection of samples in protection zone	

Increasing awareness of the stakeholders and the general public

Details on AI outbreaks occurred in Italy and on the epidemiological situation at the European level are provided and updated through the website of Istituto Zooprofilattico Sperimentale delle Venezie, where

the National and European Reference Laboratory for AI and Newcastle Disease has dedicated sections: https://www.izsvenezie.com/reference-laboratories/avian-influenza-newcastle-disease/italy-update/; https://www.izsvenezie.com/reference-laboratories/avian-influenza-newcastle-disease/europe-update/.

Other websites at the local/national level from various stakeholder groups and association (e.g. associations of poultry farmers, National and Regional veterinary associations, etc.) link directly to the IZSVe website for updates on AI epidemiological situation, making it possible to reach a broader audience.

Official communications by the competent authority (Ministry of Health) on a new positive event is forwarded for information to poultry farmer unions, poultry production companies and veterinary associations. Updates on the epidemiological situation are also forwarded to the Directorate for Health and Food Safety of the European Commission, and the World Organisation for Animal Health (OIE).

Housing order

Following the alert raised by EFSA, ECDC and EURL for AI and Newcastle Disease in September 2020 (https://www.efsa.europa.eu/en/news/avian-influenza-eu-alert-new-outbreaks), the Ministerial provision no. 21329 was issued on 2 October 2020. This provision implemented, among other mitigating measures, a housing order in high-risk areas for the introduction and spread of HPAI viruses (as defined to follow up on the provisions of the Implementing Decision (EU) no. 2018/1136). The housing order was extended to the whole national territory with Ministerial provision no. 25509 of 26 November 2020. With Ministerial provision no. 7071 issued on 18 March 2021, the competent authority may grant derogations to the housing order in high-risk areas only if defined measures are applied:

- The poultry holding is located more than 1 km away from staging site for wild water birds.
- A fortnightly clinical examination of the poultry and collection of tracheal or oropharyngeal swabs (30 birds per shed or group).
- Weekly collection of samples for laboratory tests on animals dead or alive with clinical signs (at least five animals).
- Appropriate application of biosecurity measures.
- Clear separation between poultry and wild birds.
- Feeding and drinking areas needed to be covered.

Strengthening biosecurity measures (other than housing order)

According to Ministerial provision no. 21329 of 2 October 2020, enhanced biosecurity measures should be applied in high-risk areas for the introduction and spread of H5/H7 HPAIV, in particular:

- implementation of proper cleaning and disinfection protocols, in particular for tools and equipment in premises where poultry is kept;
- ban on access of unauthorised personnel to the poultry premises;
- record of movement of vehicles or people entering and leaving the poultry premises;
- correct storage and disposal of carcasses;
- correct storage and disposal of manure;
- correct storage of (clean) litter, which must be adequately covered and protected from any direct and indirect contact with wild birds;
- if the farm uses surface water for watering birds, this must be properly disinfected;
- appropriate disinfection methods should be arranged at the entrance and exit of buildings that house poultry or other captive birds, and at the entrance and exit of the poultry farm.

Early detection

According to Ministerial provision no. 21329 of 2 October 2020, significant productive or sanitary changes observed in holdings must be reported immediately to the veterinary services, such as:

- decrease in feed and/or water consumption;
- decreased production of eggs;
- clinical symptoms;
- increased mortality rate.

Preventive culling

Not applied.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Not applied.

Derogations on restriction zone implementation after risk assessment

Not applied.

Hunting

No restrictions on hunting has been implemented

Additional control measures

According to Ministerial provisions no. 21329 of 2 October 2020, no. 23822 of 4 November 2020, no. 25509 of 26 November 2020 and no. 7071 of 18 March 2021, additional control measures (with derogations) have been established:

- The release of birds intended for repopulating wild game is suspended. However, in high-risk areas, the competent authority may grant derogations to this measure for welfare reasons and provided certain conditions are met:
  - a negative pre-movement laboratory test result (20 tracheal or oropharyngeal swabs per group of animals to be released);
  - a negative pre-movement laboratory test result on dead birds (at least five animals);
  - evaluation of the epidemiological situation regarding the results of active and passive surveillance activities on wild birds.
- Enhanced surveillance during fairs, bird exhibitions and any other gatherings of poultry or other captive birds.
- The use of live decoy birds belonging to the orders Anseriformes and Charadriiformes for hunting was suspended. Transportation of live decoy birds from hunting blinds to another holding where they are permanently kept, is allowed provided certain conditions are met:
  - birds have to be tested by tracheal or oropharyngeal swabs 48 hours before the transportation load (up to a maximum of 60 samples per group of animals);
  - birds have to be tested 10 days after their arrival in the permanent location;
  - whether any mortality or clinical signs is noticed, this must be reported immediately to the veterinary services.
- Information campaign for stakeholders and the general public to strengthen passive surveillance activities in wild birds.

B.12 Lithuania

Vilija Grigaliuniene, Paulius Bušauskas, Gediminas Pridotkas

State food and veterinary service of Lithuania (SFVS) and National food and veterinary risk assessment institution (NFVRAI)

Timing of the applied prevention and control measures

Table B.12 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.12: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
12/2/2021	HPAI subtype H5N8 in wild birds	On 11 February 2021, the National Food and Veterinary Risk Assessment Institute confirmed HPAI for a wild bird (mute swan) in Kėdainiai district municipality. The information about the dead wild bird was received as part of enhanced passive surveillance. The wild bird was collected and delivered to the National Reference Laboratory, the National Food and Veterinary Risk Assessment Institute (from this point forwards NFVRAI). On 11 February, the mute swan was found positive for avian influenza type A. The sequence of the HA gene in the virus, which was found in the wild bird, was similar to that of the highly pathogenic H5N8 virus, with the same highly pathogenic cleavage site (PLREKRRKR/GLF)	Government, Ministry of Agriculture of the Republic of Lithuania, Fire and Rescue Department of Lithuania, Ministry of Environment of the Republic of Lithuania, Ministry of the National Defence of the Republic of Lithuania, Lithuanian Poultry Association, Lithuanian Association of Trade Companies, Lithuanian Association of Veterinarians, Lithuanian Association of Ornithologists, general public
2/3/2021	HPAI subtype H5N8 in wild birds	On 2 March, the two mute swans were found positive for avian influenza H5N8 virus in Kaunas city and Šalčinikai district municipality. The information about the dead wild birds was received as part of enhanced passive surveillance. The wild birds were collected and delivered to the National Reference Laboratory NMVRVI	Government, Ministry of Agriculture of the Republic of Lithuania, Fire and Rescue Department of Lithuania, Ministry of Environment of the Republic of Lithuania, Ministry of the National Defence of the Republic of Lithuania, Lithuanian Poultry Association, Lithuanian Association of Trade Companies, Lithuanian Association of Veterinarians, Lithuanian Association of Ornithologists, general public

26/3/2021	HPAI subtype H7N7 in wild birds	The two dead mute swans were found dead on the river bank in Druskininkai municipality and were taken as part of passive surveillance for avian influenza. Samples were submitted to the National Reference Laboratory and the avian influenza virus subtype H7N7 was confirmed for one swan	Government, Ministry of Agriculture of the Republic of Lithuania, Fire and Rescue Department of Lithuania, Ministry of Environment of the Republic of Lithuania, Ministry of National Defence of the Republic of Lithuania, Lithuanian Poultry Association, Lithuanian Association of Trade Companies, Lithuanian Association of Veterinarians, Lithuanian Association of Ornithologists, general public
24/4/2021	HPAI subtype H5N8 in wild birds	At the riverbank seven dead mute swans were found in the Zarasai district municipality and sent as part of passive surveillance to the National Reference Laboratory. Highly pathogenic avian influenza virus H5N8 was found in two out of seven swans tested	Government, Ministry of Agriculture of the Republic of Lithuania, Fire and Rescue Department of Lithuania, Ministry of Environment of the Republic of Lithuania, Ministry of National Defence of the Republic of Lithuania, Lithuanian Poultry Association, Lithuanian Association of Trade Companies, Lithuanian Association of Veterinarians, Lithuanian Association of Ornithologists, general public
27/4/2021	HPAI subtype H5N8 in wild birds	One mute swan was found dead in Vilnius city municipality and as part of passive surveillance was submitted for AI testing. The sequence of the HA gene in the virus, which was found in the wild bird, was similar to that of the highly pathogenic H5N8 virus, with the same highly pathogenic cleavage site (PLREKRRKR/GLF)	Government, Ministry of Agriculture of the Republic of Lithuania, Fire and Rescue Department of Lithuania, Ministry of Environment of the Republic of Lithuania, Ministry of National Defence of the Republic of Lithuania, Lithuanian Poultry Association, Lithuanian Association of Trade Companies, Lithuanian Association of Veterinarians, Lithuanian Association of Ornithologists, general public
24/4/2021 to 26/4/2021	On 24–26 April 2021, in total, there were 18 outbreaks of the HPAI subtype H5N8 confirmed in Vilnius city and district (13), Širvintai district (1), Molėtai district (1), Trakai district (2) and	Based on the epidemiological investigation, all outbreaks are related to the illegal trader, which is the primary source of the infection. All poultry in the affected establishments were purchased from the illegal poultry trader at three local markets in Vilnius district municipality on 17–	Government, Ministry of Agriculture of the Republic of Lithuania, Fire and Rescue Department of Lithuania, Ministry of Environment of the Republic of Lithuania, Ministry of National Defence of the Republic of

	Elektrėnai (1) municipalities. All outbreaks were confirmed after notification of the owners due to sudden death of most poultry kept (the mortality was close to 100%)	18 April 2021. Immediately after notification of the sudden death received, on each suspected establishment the State Food and Veterinary Service (from this point forwards SFVS) imposed the preliminary restrictions and biosecurity measures and started to apply the measures detailed in Article 7 of Commission Delegated Regulation (EU) 2020/687 of 17 December 2019 supplementing Regulation (EU) 2016/429 of the European Parliament and of the Council, as regards rules for the prevention and control of certain listed diseases (from this point forwards Regulation (EU) 2020/687). The samples from the establishments that notified the death of the poultry kept were taken as part of passive surveillance and sent to the NFVRAI for testing avian influenza. The HPAI subtype H5N8 was confirmed in all samples tested. After the confirmation of the HPAI subtype H5N8 outbreaks, the SFVS imposed the measures detailed in Article 12 of Regulation (EU) 2020/687 and the preliminary cleansing and disinfection started according to Article 15 of Regulation (EU) 2020/687. Besides the strengthened surveillance activities in all types of the establishments, the strengthened control over the markets and poultry traders is imposed from Saturday, i.e. 24 April 2021 in the entire territory of the country with the increased control over the poultry traders and the origin of birds intended for local trade. In the district municipalities where the infected poultry were distributed, the trade in live poultry without permission of the SFVS is prohibited. If these outbreaks occur around the affected establishments, the SFVS has immediately established a restricted zone with the protection zone (the radius of at least 3 km) and the surveillance zone (the radius more than 10 km), which cover the entire municipality, where the outbreaks were confirmed under Article 21 of Regulation (EU) 2020/687	Lithuania, Lithuanian Poultry Association, Lithuanian Association of Trade Companies, Lithuanian Association of Veterinarians, Lithuanian Association of Ornithologists, Customs Department and law enforcement agencies, general public
27/4/2021 to 30/4/2021	On 27–30 April 2021, in total, there were 20 outbreaks of the HPAI	If these outbreaks occur around the affected establishments, the SFVS has immediately established	Government, Ministry of Agriculture of the Republic of Lithuania, Fire and

	subtype H5N8 confirmed in Vilnius city and district (15), Trakai district (3) and Prienai (1) municipalities. All outbreaks were confirmed after notification of the owners due to sudden death of mos poultry kept (the mortality was close to 100%)	a restricted zone with the protection zone (the radius of at least 3 km) and the surveillance zone (the radius more than 10 km), which cover the entire municipality, where the outbreaks were confirmed under Article 21 of Regulation (EU) 2020/687. Based on the epidemiological investigation, all outbreaks in Vilnius and Trakai are related to the illegal trader, which is the primary source of the infection. The reported outbreaks were detected in the establishments/back yards/hobby holdings or just in the holdings having the birds as decoration. Most events were reported in the city of Vilnius, and some in different regions and most detected HPAI cases are connected with one trader	Rescue Department of Lithuania, Ministry of Environment of the Republic of Lithuania, Ministry of National Defence of the Republic of Lithuania, Lithuanian Poultry Association, Lithuanian Association of Trade Companies, Lithuanian Association of Veterinarians, Lithuanian Association of Ornithologists, Customs Department and law enforcement agencies, general public

Increasing awareness of the stakeholders and the general public

SFVS informed the public and stakeholders about the situation using press releases, news and facts on SFVS homepage. The update information **of the AI situation in country on the website of the State food and veterinary service.**
https://www.arcgis.com/apps/dashboards/f0631c07d2c94b3485a0aecc983c979c

https://vmvt.maps.arcgis.com/apps/opsdashboard/index.html#/80b4542861d44fc9906982c4cdfa76be

Several meetings of the AI expert group and representatives of the poultry associations and Ministry of Agriculture aiming to keep them up to date with the epidemiological situation, present and further control measures to be enforced.

Housing order

Precautionary measures such as keeping poultry indoors, trying to separate them from wild birds and ensuring feed and water is not accessible to wild birds were also required.

Strengthening biosecurity measures (other than housing order)

Regardless of the AI situation, these measures always have to be followed in all poultry farms: poultry or other captive birds must be kept indoors or in fenced areas, ensuring that wild birds cannot come into contact with domestic birds, poultry and other captive birds must not have access to surface water, ducks and geese have to be kept physically separated from other poultry.

Besides the strengthened surveillance activities in all types of the establishments, the strengthened control over the markets and poultry traders was imposed from 24 April 2021 in the entire territory of the country with the increased control over the poultry traders and the origin of birds intended for local trade. In the district municipalities, where the infected poultry were distributed, the trade in live poultry without permission of the SFVS is prohibited.

Preventive culling

Not applied.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Not applied.

Derogations on restriction zone implementation after risk assessment

SFVS imposed the measures detailed in Regulation (EU) 2020/687.

Hunting

Not forbidden.

B.13 The Netherlands

MAH Spierenburg DVM LLM

Netherlands Food and Consumer Product Authority (NVWA), Ministry of Agriculture, Nature and Food Quality (Min LNV)

Timing of the applied prevention and control measures

Table B.13 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.13: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
20/10/2020	First HPAI-positive wild bird finding on 17 October, 1 mute swan (*Cygnus olor*) was found dead in a wetland area. On 20 October the National Reference Laboratory confirmed HPAI Virus H5N8 in the samples from the swan	Measurements for the whole country. As of 20 October 2020: 1: housing order commercial poultry confinement and housing order hobby birds and other non-commercial captive birds confinement. 2: Measures for cover and application of litter on duck holdings	e.g. poultry associations, general public, etc.

28/10/2020	First outbreak HPAI serotype H5N8-positive commercial poultry holding (parent breeding)	Measurements for protection and surveillance zone: As of 28 October 2020 culling HPAI-positive birds at commercial poultry holdings, implement protection (3 km) zones and surveillance (10 km) zones around HPAI-positive commercial poultry holdings with transport restrictions for all birds inclusive of commercial poultry and poultry products, sperm, manure and feed as well transport restrictions for domestic mammals, feed, sperm, milk and manure of these domestic mammals. Ban hunting ducks or to hunt in general in wet areas with waterfowl. Measurements for the whole country: as of 28 October 2020 the following measures were also implemented: 3: ban for visit commercial poultry holdings and other holdings or locations where birds are held. 4: mandatory visitors registration, 5: ban races and exhibitions with birds, 6: ban hunting ducks or to hunt in general in wet areas with waterfowl, 7: mandatory clinical examination of birds for transport to or from commercial poultry holdings, 8: mandatory intensive clinical examination ante mortem of ducks and turkeys at slaughterhouses, 9: using a hygiene protocol for visiting of commercial poultry holdings, 10: increasing awareness, repeal housing order (commercial poultry confinement), strengthening biosecurity, intensive wild bird monitoring	
4/11/2020	Second outbreak HPAI serotype H5N8-positive commercial poultry holding (laying hen holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
9/11/2020	Third outbreak HPAI serotype H5N8-positive commercial poultry holding (laying hen holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
13/11/2020	Fourth outbreak HPAI serotype H5N8-positive commercial poultry holding (Fattening duck holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
20/10/2020 to 15/11/2020	30 HPAI H5N8-positive wild bird findings and 4 HPAI H5N1-positive wild bird findings	Measurements for the whole country: same as above	

21/11/2020	Fifth outbreak HPAI serotype H5N8-positive commercial poultry holding (fattening chicken holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
22/11/2020	Sixth outbreak HPAI serotype H5N8-positive commercial poultry holding (laying hen chicken holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
7/12/2020	Seventh outbreak HPAI serotype H5N8-positive commercial poultry holding (mixed chicken holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
7/12/2020	Eighth outbreak HPAI serotype H5N8-positive commercial poultry holding (fattening chicken holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
14/12/2020	Ninth outbreak HPAI serotype H5N1-positive commercial poultry holding (breeding chicken holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
5/1/2021	Tenth outbreak HPAI serotype H5N8-positive commercial poultry holding (fattening turkey holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	
20/2/2021	Eleventh outbreak HPAI serotype H5N8-positive commercial poultry holding (laying hen chicken holding)	Measurements for protection and surveillance zone: same as above. Measurements for the whole country: same as above	

Increasing awareness of the stakeholders and the general public

Development of biosecurity measures during crisis in contact with poultry sector. Communication both by Ministry and poultry sector as follows: directly published on government website (www.rijksoverheid.nl): legal information/information to parliament/information for press/questions and answers/phone centre for questions from both poultry owners and general public, in direct contact with poultry advisers/communication department in close contact with press/meeting for all stakeholders and communication by media with general public.

Housing order

The housing order was implemented in mandatory national legislation on 20 October 2020 after an executed risk assessment by the Commission of animal disease experts that consists of this area described by AI experts. This Commission advise the CVO and the Minister to apply measures against HPAI. The trigger of implementing the housing order was the HPAI H5N8 wild bird finding [one mute swan (*Cygnus olor*) was found dead in a wetland area] on 20 October 2020.

Strengthening biosecurity measures (other than housing order)

We have concluded multiple years' service level agreements with suppliers who can deliver cleaning and disinfection equipment 24 hours/7 days within 4 hours after calling by Dutch government for culling at every location in the whole country.

Preventive culling

This was applied in the second outbreak HPAI serotype H5N8-positive commercial poultry holding (Laying hen holding) as 4 November 2020, there was one other commercial poultry holding in the 1 km zone (chicken breeding holding), which was preventive culled. In the first and third outbreaks there were no other commercial poultry holdings in the one kilometre radius zone around the index holdings. In the fourth outbreak there was one other poultry holding in the 1 km zone but this poultry holding was not culled because this holding was more than 500 metres from the index holding and there were no other poultry holdings in the 1 km zone of this holding and the screening test results were polymerase chain reaction (PCR) and serology AI tested negative.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

No, only the 1 km/3 km and 10 km zones (protection and surveillance zones).

Derogations on restriction zone implementation after risk assessment

No

Hunting

There is a ban implemented hunting ducks or to hunt in general in wet areas with waterfowl.

B.14 Norway

Timing of the applied prevention and control measures

Table B.14 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.14: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
26/2/2021	Confirmation of HPAI H5N8 in wild birds (2 swans) in the county of Vestland	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public
5/3/2021	Confirmation of HPAI H5N8 in wild birds (3 swans) in the county of Rogaland	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public
9/3/2021	Confirmation of HPAI H5N8 in wild birds (one goose) in the county of Viken	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public
24/3/2021	Confirmation of HPAI H5N8 in wild birds (three geese and two swans) in the counties of Viken, Oslo, Agder and Rogaland	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public

26/3/2021	Confirmation of HPAI H5N8 in wild birds (1 swan) in the county of Viken	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public
6/4/2021	Confirmation of HPAI H5N8 in wild birds (1 goose) in the county of Oslo	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public
13/4/2021	Confirmation of HPAI H5N8 in wild birds (2 swans) in the counties of Viken and Rogaland	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public
16/4/2021	Confirmation of HPAI H5N8 in wild birds (2 swans) in the counties of Vestfold an Innlandet	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public
22/4/2021	Confirmation of HPAI H5N8 in wild birds (1 seagull) in the county of Viken	Press release related to new detection of HPAI case in wild birds. Increasing awareness. Housing order. Strengthening biosecurity	Poultry associations, general public

Increasing awareness of the stakeholders and the general public

The Norwegian Food Safety Authority (Mattilsynet) has continuously informed the public and stakeholders about the situation using press releases, news and facts updates on the Mattilsynet homepage.

Housing order

The high-risk area is defined in the regulation published here in Norwegian: https://lovdata.no/forskrift/2005-12-05-1417.

All counties in mainland Norway have been considered high-risk area for HPAI H5N8. The short version of the implications are:

- Keeping poultry and other birds in captivity outdoors is prohibited.
- Using outdoor water reservoirs for poultry or other captive birds is prohibited.
- Keeping ducks and geese together with other poultry species is prohibited.
- Collecting poultry or other birds in captivity at markets, shows or exhibitions or in connection with cultural events is prohibited.
- Using decoys of the orders ducks (Anseriformes) and waders, gulls and auks (Charadriiformes) is prohibited.
- Releasing bird game is prohibited.
- Animal owners must report the animal husbandry to Mattilsynet. The animal owner's name and address and the number of poultry and other captive birds must be reported.
- Carrier pigeons must be permanently marked.

- Suppling poultry or other captive birds with drinking water from surface water reservoirs not protected against wild birds and other animals is prohibited. (If biosecurity measures have been taken to prevent the transmission of HPAI viruses, it is nevertheless permitted to supply poultry and other captive birds with surface water to which wild waterfowl have access, provided the water is treated to ensure inactivation of AI viruses.)
- Keeping feed for poultry or other birds in captivity unprotected from wild birds and other animals is prohibited.

Most of these have some kind of leniency regulation with certain demands, but they are not reproduced here.

Strengthening biosecurity measures (other than housing order)

To keep commercial poultry farmers alert, Mattilsynet have given guidance about the importance of an updated biosecurity plan.

Preventive culling

Not applicable.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Not applicable.

Derogations on restriction zone implementation after risk assessment

Not applicable.

Hunting

A hunting ban was laid down from 14 December 2020 until further notice for hunting of: cormorants, crows, ravens, Blackbilled Magpie, Eurasian Wigeon, Greylag Goose, Canada Goose, Muscovy Duck, Pink-footed Goose, Eurasian Teal. Common hunting prohibited. The hunting ban regulation is published here in Norwegian: https://lovdata.no/LTI/forskrift/2020-12-14-2728

B. 15 Poland

Katarzyna Wawrzak and Magdalena Gawędzka

General Veterinary Inspectorate

Timing of the applied prevention and control measures

Table B.15 provides a timeline of the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.15: Overview of main actions

Δατε	Εωεντ τηατ τριγγερεδ αχτιον	Τψπε οφ αχτιον τακεν	Ταργετ αυδιενχε (ιφ αππλιχαβλε)
18.01.2021	EFSA opinion on the assessment of the control measures of the category A diseases of Animal Health Law	Verification of the Guidelines on the conditions for issuing the decision for the movement of poultry from a protection or surveillance area for slaughter, handling and labeling of meat obtained from these animals,	Veterinary Inspection, poultry keepers, poultry associations

		and handling of by-products new livestock products	
24.02.2021	Confirmation of HPAI outbreak in a ZOO in Warsaw	Derogation on establishing protection and surveillance zones	
23.03.2021	First outbreak in 2021 in Mazowieckie voivodship in district of Żuromin (district with the highest number of poultry in Mazowieckie voivodship)	Establishing restricted zone in Mławski, Żuromiński and Sierpecki districts in Mazowieckie region - ban on organizing fairs, exhibitions, shows or competitions where poultry or other birds are collected and releasing poultry or other birds for the purpose of restocking game-birds	General public
03.04.2021	First information about complications with disposal of a very large number of carcasses	Efforts to organize alternative ways to cope with bird corpses (animal roosts, composting)	Veterinary Inspection, poultry keepers, general public
16.04.2021	Information about dynamic of HPAI spread in Mazowieckie cluster	Preventive culling of birds in 1km in Mazowieckie cluster	Veterinary Inspection, poultry keepers
23.04.2021	Prohibition of pigeon flights in Kujawsko-Pomorskie voivodship	Prohibition of pigeon flights on the territory of other voivodships	Veterinary Inspection, pigeon keepers, general public
27.04.2021	Conference with NRL and poultry (geese) associations	Guidelines for minimum biosecurity requirements for releasing geese to outdoor runs	Veterinary Inspection, geese keepers
	A very large number of samples for HPAI diagnostics	Actions to adapt official veterinary laboratories to HPAI testing in cooperation with NRL	

Increasing awareness of the stakeholders and the general public

Information published on the website of the General Veterinary Inspectorate: https://www.wetgiw.gov.pl/nadzor-weterynaryjny/grypa-ptakow

Housing order

Orders and prohibitions for poultry breeders in protection and risk zones designated around HPAI outbreaks are set out in the Regulation of the Minister of Agriculture and Rural Development of 18 December 2007 on eradication of AI (implementation of Council Directive 2005/94/EC).

Requirements in the field of biosecurity applicable to poultry breeders throughout the country are set out in the Regulation of the Minister of Agriculture and Rural Development of 4 April 2017 on the ordinance of measures related to the occurrence of HPAI. This regulation imposes the following obligations on breeders:

- An order to keep poultry in a way that limits its contact with wild birds.
- Reporting to the District Veterinary Officer places where poultry or other birds are kept, excluding birds kept permanently in living quarters.
- Keeping the poultry in a way that excludes its access to water bodies to which wild birds have access.
- Storing bird feed in a way that prevents contact with wild birds and their droppings.

- Feeding and watering poultry and captive birds in a manner that protects feed and water from access by wild birds and their droppings.
- Laying disinfection mats in front of the entrances and exits of livestock buildings in which poultry is kept, in a number ensuring the security of entrances and exits from these buildings, for farms where poultry is kept in a non-running system.
- Use by persons entering livestock buildings in which poultry is kept, protective clothing and safety footwear, intended for use only in the given building, for farms where poultry are kept in a non-running system.
- Personal hygiene rules applied by persons performing poultry-handling operations, including washing hands before entering livestock buildings.
- Cleaning and disinfection of equipment and tools used for handling poultry before each use.
- Abstentions by persons who have participated in hunting birds in the last 72 hours from carrying out poultry-handling activities.
- Carrying out daily inspections of poultry flocks and keeping records containing, in particular, information on the number of dead birds, decrease in feed intake or lay.
- A ban on watering poultry and birds kept by humans with water from tanks to which wild birds have access.
- A ban on bringing (on foot or by vehicle) to the holding where poultry is kept, corpses of wild birds or carcasses of game birds.

Strengthening biosecurity measures (other than housing order)

The Regulation of the Minister of Agriculture and Rural Development of 4 April 2017 for the ordinance of measures related to the occurrence of HPAI introductions into the territory of the Republic of Poland, among other measures, an order to keep the poultry in a way that limits its contact with wild birds or to store feed for birds in a way that prevents contact with wild birds and their droppings. The measures specified in the provisions of this Regulation are also applied during the outbreak of HPAI in the territory of the Republic of Poland.

In addition, information on AI is available on the website of the CVO (link: https://www.wetgiw.gov.pl/nadzor-weterynaryjny/grypa-ptakow), including a description of the biosecurity rules (https://www.wetgiw.gov.pl/nadzor-weterynaryjny/zasady-ochrony-drobiu-przed-grypa-ptakow).

CVO ordered local veterinary authorities to issue regulations with additional biosecurity measures as acts of local law, depending on current situation on site. These measures cover the following:

a) forbidding pigeon flights, including: regular flights, flights of postal pigeons, flights of racing pigeons (sprint and training flights)
b) minimum biosecurity requirements for releasing geese to outdoor runs, which were developed as guidelines, based on the version of 2017

Moreover, due to the very dynamic spread of HPAI in Mazowieckie region, additional bans were put in place in Sierpecki, Żuromiński and Mławski districts (whole territories were included in the restricted zone). It was forbidden to:

a) organize fairs, exhibitions, shows or competitions where poultry or other birds are collected, release poultry or other birds for the purpose of restocking game-birds

Preventive culling

Under the Regulation of the Minister of Agriculture and Rural Development of 18 December 2007 on eradication of AI, slaughter/preventive killing of poultry may be implemented in a protection zone, i.e. 3 km around the HPAI outbreak. The competent authority to decide on this matter is the District Veterinary Officer. Decisions for the slaughter/preventive killing of poultry, related to the occurrence of HPAI in a given protection zone, are taken based on a risk assessment, which takes into account, among

other things, the following areas: the specificity of poultry production in a given district together with the number of commercial/non-commercial farms, possible pathways of the pathogen spread in the environment and potential ways of entering the farm, among others the manner of its protection, and topographic conditions of the area, infrastructure and all other circumstances affecting decision taking in the matter in question.

Within the period covered by the report, preventive culling was carried out by Veterinary Inspection in Lubuskie, Mazowieckie, Opolskie, Podkarpackie, Pomorskie, Śląskie, Świetokrzyskie and Wielkopolskie. Birds were culled in holdings recognized by district veterinary offices as high risk eg. because of poor biosecurity measures implemented, or in contact holdings. In Mazowieckie region there is very high production concentration which contributed to a very dynamic HPAI virus spread, therefore preventive culling was carried out in 1km radius around the outbreaks.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

In the period covered by the report a regional standstill was not applied.

Derogations on restriction zone implementation after risk assessment

Under the Regulation of the Minister of Agriculture and Rural Development of 18 December 2007 on eradication of AI, derogations on restriction zone implementation may be implemented if HPAI is confirmed in other birds kept in a non-commercial holding, a zoo, a circus, a pet shop, a wildlife park or in a fenced area where other birds are kept or reared for purposes related to shows, education or the protection and conservation of endangered species or officially registered rare breeds of poultry or other captive birds and conducting basic or applied scientific research, provided such derogations do not prevent disease control.

In the period covered by the report derogation was granted in HPAI outbreak confirmed in Carolina duck (*Aix sponsa*) kept in a ZOO in the city of Warsaw, Mazowieckie region. Outbreak was located in a city centre, with no poultry production in 10 km. The ZOO implemented proper procedures in case of HPAI outbreak and minimalized risk of spread of the disease.

Hunting

Due to restrictions implemented due to COVID-19 pandemic, hunting is limited. Collective hunts are not performed.

B.16 Slovakia

Vilem Kopriva, Martin Chudy

State Veterinary and Food Administration of the Slovak Republic

Timing of the applied prevention and control measures

Table B.16 provides a timeline on the main events that triggered actions in relation to the selected prevention and control measures. More information on the actions taken is provided in the sections below.

Table B.16: Overview of main actions

Date	Event that triggered action	Type of action taken	Target audience (if applicable)
21.04.2021	First poultry outbreak	All relevant measures ordered by DVFA according to EU and Slovak national legislation for outbreak, protection zone and surveillance zone	Stakeholders, general public, private vets

Increasing awareness of the stakeholders and the general public

https://www.svps.sk/zvierata/choroby_chripka.asp

Other ways of providing information are through the media, municipalities, etc.

Housing order

Special emergency veterinary measures of the CVO of the Slovak Republic due to HPAI AI are published on the website:

https://www.svps.sk/zvierata/mno_4373_05.asp

Strengthening biosecurity measures (other than housing order)

Checks on poultry health for AI (including compliance with biosecurity measures) have been ordered by State Veterinary and Food Administration (SVFA) to DVFAs in relation to commercial poultry farms, not for backyard holdings. This started in December 2013.

Preventive culling

This was not applied.

Regional standstill (beyond the restriction zones specified in the EU Regulation)

Regional standstill beyond the restriction zones was not applied.

Derogations on restriction zone implementation after risk assessment

Derogations on restriction zone implementations after risk assessment was not applied.

Hunting

Not prohibited.

Annex C – Data on wild bird

Table C.1: Highly pathogenic avian influenza notifications in wild birds in Europe from 24 February to 14 May 2020. On one single reported detection of HPAI in wild birds, more than one bird might be involved. For 31 notifications the wild bird species was unknown or mixed, those notification are not included in the table. Source: ADNS and OIE (20.05.2020)

Category of wild bird species	Wild bird species	Number of HPAI detections where the wild bird species was reported
Waterfowl	Swan (*Cygnus sp*)	224
	Greylag goose (*Anser anser*)	190
	Mute swan (*Cygnus olor*)	156
	Anserinae	57
	Barnacle goose (*Branta leucopsis*)	56
	Whooper swan (*Cygnus cygnus*)	48
	Mallard (*Anas platyrhynchos*)	17
	Canada goose (*Branta canadensis*)	11
	Black swan (*Cignus atratus*)	10
	Brant goose (*Branta leucopsis*)	7
	Pink footed goose (*Anser brachyrhynchus*)	6
	Coomon merganser (*Mergus merganser*)	2
	Eurasian coot (*Fulica atra*)	2
	Greater white-fronted goose (*Anser albifrons*)	2
	Charadriidae	1
	Common goldeneye (*Bucephala clangula*)	1
	Common guillemot (*Uria aalge*)	1
	Gadwall (*Mareca strepera*)	1
	Goose	1
	Greater scaup (*Aythya marila*)	1
	Merganser	1
Raptor	Common buzzard (*Buteo buteo*)	81
	Accipitriformes	28
	Northern goshawk (*Accipiter gentilis*)	10
	Peregrine falcon (*Falco peregrinus*)	10
	Eurasian eagle-owl (*Bubo bubo*)	6
	Eurasian sparrowhawk (*Accipiter nisus*)	2
	Strigiformes	2
	Tawny owl (*Strix alauco*)	2
	Common kestrel (*Falco tinnunculus*)	1
	Marsh harrier (*Circus aeruginosus*)	1
	White-tailed eagle (*Haliaeetus albicilla*)	1
Other wild bird species	Grey heron (*Ardea cinerea*)	16
	Gull	14

	European herring gull (*Larus argentatus*)	13
	White stork (Ciconia ciconia)	7
	Cormorant	6
	Common gull (*Larus canus*)	5
	Great black-backed gull (*Larus marinus*)	4
	Common pheasant (Phasianus colchicus)	2
	Western jackdaw (Corvus monedula)	2
	Black-headed gull (*Larus ridibundus*)	1
	Common raven (Corvus corax)	1
	Common wood pigeon (*Columba palumbus*)	1
	Corvidae	1
	Eurasian jay (*Garrulus glandarius*)	1
	Eurasian magpie (*Pica pica*)	1
	Eurasian woodcock (*Scolopax rusticola*)	1
	Fringillidae	1
	Great cormorant (*Phalacrocorax carbo*)	1
	Red knot (*Calidris canutus*)	1
	Passer sp	1
	Water rail (Rallus aquaticus)	1
Total		1,020