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Commission



# Annual Report



Animal &  
Plant Health  
Agency

on surveillance  
for avian influenza in  
poultry and in wild birds in  
Member States of the  
European Union  
in 2017



**EUROPEAN COMMISSION**  
HEALTH AND FOOD SAFETY DIRECTORATE-GENERAL  
Directorate G – Veterinary and International Affairs  
**G3 - Official controls and eradication of diseases in animals**

# **Annual Report on surveillance for avian influenza in poultry and wild birds in Member States of the European Union in 2017**



**Animal &  
Plant Health  
Agency**

**EUROPEAN UNION REFERENCE LABORATORY FOR AVIAN INFLUENZA**

## About the report

The work of EU Member States' veterinary administrations, veterinary laboratories and others (such as ornithologists, bird watching organisations and hunters) involved in the sampling, laboratory testing and gathering of data for the avian influenza surveys in poultry and wild birds is specifically acknowledged.

This report was prepared by the European Union Reference Laboratory for Avian Influenza, Animal and Plant Health Agency, Weybridge, Addlestone, Surrey, KT15 3NB, United Kingdom, according to its work programme.

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The European Commission is responsible for the evaluation and approval of Member States' avian influenza surveillance programmes in poultry and wild birds. For more information on this matter please consult the Commission's website on Funding of Animal Health Measures:

[http://ec.europa.eu/food/animals/animal-diseases/control-measures/avian-influenza/index\\_en.htm](http://ec.europa.eu/food/animals/animal-diseases/control-measures/avian-influenza/index_en.htm)

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The European Commission collects the surveillance data from MS via an online reporting system and is responsible for the final revision of the annual report on surveillance for avian influenza in poultry in the European Union and its publication on the Commission's website:

[http://ec.europa.eu/food/animal/diseases/controlmeasures/avian/eu\\_resp\\_surveillance\\_en.htm](http://ec.europa.eu/food/animal/diseases/controlmeasures/avian/eu_resp_surveillance_en.htm)

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# 1 EXECUTIVE SUMMARY

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## Background

Avian Influenza (AI) is a highly contagious viral infection, which can affect all species of birds. Highly Pathogenic Avian Influenza (HPAI) viruses can spread rapidly, causing serious disease with high mortality in many bird species. To date all HPAI viruses have been of H5 or H7 subtypes. The on-going goose/Guangdong H5 HPAI epidemic has affected 79 countries across Asia, Africa, Europe and North America since 1996, resulting in the loss of hundreds of millions of birds and causing major socio-economic impacts. Strengthened surveillance in the veterinary sector not only provides opportunities for earlier intervention and control but also benefits public health where these viruses (i.e. H7N9 LPAI) carry zoonotic threat including in the absence of disease in some poultry species.

Low Pathogenicity Avian Influenza (LPAI) viruses usually cause only mild disease in poultry, however, LPAI strains of haemagglutinin subtype H5 or H7 have the potential to mutate to HPAI viruses whilst circulating in domestic poultry populations. Birds of the Orders Anseriformes (ducks, geese and swans) and Charadriiformes (waders and gulls) are the major reservoirs for LPAI viruses. Historically (prior to c2005), HPAI infections had been rarely observed in wild birds and were almost exclusively associated with poultry outbreaks. However, wild birds have been proven to have a role in the transboundary spread of some viral lineages including the continuing pan-continental outbreaks of Eurasian (goose/Guangdong) lineage H5 HPAI.

In recent years, reported infection of wild birds in Europe has been dominated by H5N8 HPAI (clade 2.3.4.4). This subtype was initially observed in Europe in late 2014 and early 2015, when infection with clade 2.3.4.4A occurred in poultry holdings in five MS; Germany, the Netherlands, the United Kingdom, Italy and Hungary.

In 2016 re-emergence of HPAI H5N8 and subsequent secondary re-assortant virus subtypes (H5N5 and H5N6 arising from co-circulation with Eurasian viruses) were reported in both poultry and wild bird populations across Europe with a total of 23 MS affected by the epizootic to the end of 2017. This H5 HPAI (clade 2.3.4.4B) virus was associated with significant clinical disease in both infected wild bird and poultry populations. The clinical impact on wild birds with the clade 2.3.4.4B was markedly more severe enabling effective detection through dead bird surveillance programmes. In December 2017 a new variant of H5 HPAI (H5N6) was reported in wild bird populations across northern Europe. These detections continue to highlight the constant evolution of HPAI lineages within global and European wild bird populations, and the need for early warning systems to detect ongoing threats to poultry populations and public health.

In 2003 the European Union (EU) introduced an annual serological survey in poultry to detect subclinical or prior infection with AI of subtypes H5 and H7 and complement early detection systems. Wild bird surveillance and the reporting of the results have been compulsory since 2005 in the EU. This report describes the sampling and test results of these surveillance activities in the EU in 2017.

## Timing and mandate

The present survey was conducted between January and December 2017 according to Council Directive 2005/94/EC on Community measures to control avian influenza and guidelines laid down in Commission Decision 2010/367/EU.

## Poultry survey participation (Section 4.1.1)

Twenty-seven Member States (MS) participated in the poultry survey during 2017. Eleven MS followed a risk-based sampling approach in poultry (compared to 10 in 2016 and 11 MS in 2015). In total, 16,836 EU holdings were sampled (which compares to 18,138 in 2016 and 21,867 in 2015). In addition, one non-EU country, Switzerland, submitted data for 93 holdings.

The most frequently sampled poultry category in 2017 was Laying Hens (Conventional and Free-Range), making up 30.9% of the total holdings sampled by EU MS, followed by Backyard Flocks (14.7% of EU holdings sampled), and Chicken Breeders (12.1% of EU holdings sampled). The least sampled poultry category was Ratites (0.9% of total poultry EU holdings sampled) reflecting the low number of Ratite holdings compared to other poultry holding types across the EU. Italy

and the Netherlands sampled the most poultry holdings among MS, together sampling 36.7% (6,186 holdings) of the total holdings sampled in 2017.

#### **Poultry survey results (Section 4.1.2)**

In the 2017 EU serological survey for avian influenza in poultry, evidence of previous infection with H5 or H7 avian influenza according to Directive 2005/94/EC was detected in 71 holdings (0.42% of total EU holdings sampled), across ten MS. Sixty-one holdings were reported by MS as serologically positive for subtype H5 and ten were reported for subtype H7. The detection rate of H5/H7 seropositive holdings was greatest in Farmed Game Birds (waterfowl) (16 H5/H7 seropositive holdings/151 sampled, 10.6%), followed by Backyard Flocks (14 H5/H7 seropositive holdings/2,478 sampled, 0.08%) and Fattening Ducks (11 H5/H7 seropositive holdings/1,214, 2.2%). In comparison, the detection rate of H5/H7 seropositive holdings was greatest in Breeder Ducks in 2016 (74 H5/H7 seropositive holdings/632 sampled, 11.7%).

#### **Holdings seropositive for H5 (Section 4.1.2.1)**

In 2017, 61 poultry holdings (0.36% of total EU holdings sampled) were reported by MS as serologically positive for influenza A virus subtype H5. One poultry holding was H5 seropositive in two poultry categories; this holding was counted in each of the poultry categories, but only once in the total number of H5 seropositive holdings by MS. Additionally, six holdings tested H5 seropositive on two occasions during the 2017 reporting year, whilst a final holding tested H5 seropositive on three occasions. The number of H5 seropositive holdings reported by MS in 2017 was less than in 2016 (124 holdings; 0.68% of total EU holdings sampled), but greater than 2015 (33 holdings; 0.15% of total EU holdings sampled). Of the 61 H5 seropositive poultry holdings reported by MS in 2017, 59 holdings underwent follow-up testing for the presence of active infection, and 24 of these (24/59, 40.7%) tested virologically positive (by PCR and in some cases virus isolation as well) for subtype H5.

#### **Holdings seropositive for H7 (Section 4.1.2.2)**

In 2017, ten poultry holdings (0.06% of total EU holdings sampled) were reported by MS as serologically positive for influenza A virus subtype H7. This was comparable to ten and seven holdings seropositive for H7 in 2016 (0.06% of total EU holdings sampled) and 2015 (0.03% of total EU holdings sampled), respectively. Of the ten H7 seropositive poultry holdings reported by MS in 2017, nine underwent follow-up testing for the presence of active infection, one of which (1/9, 11.1%) tested virologically positive (by PCR and virus isolation) for subtype H7.

#### **Poultry survey discussion (Section 5.1)**

The poultry survey continues to improve knowledge on which sectors of the poultry industry are more likely to be infected by H5 or H7 avian influenza viruses (e.g. Farmed Game Birds (waterfowl) and identified other sectors which are consistently less likely to be affected (e.g. Broilers (even those considered at heightened risk) and Turkey Breeders). The results are consistent with those of previous years in demonstrating continual risk for spread of LPAI viruses into certain production sectors although extensive spread to other sectors is less frequent. The sampling regimes among MS are diverse with different degrees of targeting and testing frequencies. Hence differences in between-flock detection rates for poultry categories or MS need to be interpreted with great caution. In particular, those MS undertaking risk-based sampling may experience higher seropositive detection rates than those using representative sampling. The ongoing review of the results of avian influenza surveillance, together with the global picture of avian influenza and scientific research in this field, will further improve AI disease prevention whilst ensuring development of resource efficient programmes consistent with the overall objectives.

The follow-up epidemiological investigations and further laboratory testing in response to the detection of seropositive holdings highlights the utility of the survey in providing case detection for presence of active infection in the apparent absence of clinical indicators. This mandatory programme is an invaluable complement to other programmes for the possible early detection of infection with AI viruses that may not otherwise be readily detected by scanning surveillance in poultry (e.g. H5 HPAI (2.3.4.4 clade) in domestic waterfowl). Epidemiological follow-up testing in 2017 were noticeably higher (40.7% compared to 5.9% in 2016 and 31% in 2015) for subtype H5.

Notification to the European Commission and OIE follows detection of current infection with H5 or H7 avian influenza virus on any holdings as appropriate.

### 2017 Poultry key facts:

- Total number of EU holdings sampled = 16,836 (27 MS); plus 93 holdings from non-EU country, Switzerland.
- Eleven MS followed a risk-based sampling approach in poultry.
- Seventy-one poultry holdings were reported by MS as serologically positive for subtypes H5 or H7 (0.42% of total EU holdings sampled), across 10 MS. Sixty-one were seropositive for H5 (0.36% of total EU holdings sampled) and ten were seropositive for H7 (0.06% of total EU holdings sampled).
- The detection rate of H5/H7 seropositive holdings was greatest in Farmed Game Birds (waterfowl) (16 H5/H7 seropositive holdings/151 sampled, 10.6%), followed by Backyard Flocks (14 H5/H7 seropositive holdings/2,478 sampled, 0.08%) and Fattening Ducks (11 H5/H7 seropositive holdings/1,214, 2.2%).
- Of the 61 H5 seropositive poultry holdings reported by MS, 59 holdings underwent follow-up testing for the presence of active infection, and 24 of these (24/59, 40.7%) tested virologically positive (by PCR and in some cases virus isolation as well) for subtype H5.
- Of the ten H7 seropositive poultry holdings reported by MS, nine underwent follow-up testing for the presence of active infection, and one of these (1/9, 11.1%) tested virologically positive for subtype H7.

### Wild bird survey participation (Section 4.2.1)

According to the guidelines (EC 2010), implementation of passive surveillance in wild birds (found dead, injured and live with clinical signs) is compulsory and hence EU co-financed. Data on active surveillance has only been included in the present report from the 15 MS that chose to submit data from their national surveys.

A total of 19,543 wild birds, from 27 MS of the European Union and one non-Member State (Switzerland) were collected and tested via passive surveillance during the 2017 survey. The birds sampled belonged to 21 different Orders; with the top three Orders sampled being Anseriformes (34.1%), Falconiformes (18.3%) and Pelecaniformes (14.6%). At least 275 species were sampled and of which 71.1% of the birds identified to species level were from the defined 'Target Species' list in 2017. The top three species sampled were Mute Swan (*Cygnus olor* – 10.6%), Mallard (*Anas platyrhynchos* – 8.9%) and Grey Heron (*Ardea cinerea* – 8.6%).

In addition, a total of 8,195 birds sampled by active surveillance were voluntarily reported from 15 MS and Switzerland.

### Wild bird survey results (Section 4.2.2 and 4.2.3)

In 2017, HPAI H5 was detected in 1,904 wild birds through passive surveillance. The majority of cases were reported in the first quarter of 2017 (Jan-Mar) and represent a continuation of the epizootic event initially detected in October 2016. For birds sampled in 2017, where the full subtype was determined: 1,509 cases of HPAI H5N8, 29 cases of HPAI H5N5 and six cases of HPAI H5N6 were reported. A further 360 HPAI H5 detections were reported where the neuraminidase subtype was not determined (HPAI H5Nx). Overall, HPAI was detected by 24 Member States and Switzerland in 10 Orders and at least 74 species or genus aggregates. Germany (n=729) had the highest number of detections of HPAI H5, followed by Hungary (n=182). HPAI H5 was most commonly detected in swan species; Mute Swans (*Cygnus olor*) (n=797/1,904, 41.9%), unspecified swans (*Cygnus sp.*) (n=317/1,904, 16.6%) and Whooper Swans (*Cygnus cygnus*) (n=125/1,904, 6.6%). Although the majority of HPAI H5 detections were made in the first quarter of 2017, in December six detections of HPAI H5N6 were reported for the

first time in the Netherlands (n=5) and Switzerland (n=1), in five Mute Swans (*Cygnus olor*) and one Tufted Duck (*Aythya fuligula*).

LPAI viruses of subtype H5 (n=15) and H7 (n=1) were detected in wild birds sampled via passive surveillance in 2017.

### **Wild bird survey discussion (Section 5.2)**

Highly pathogenic H5 virus (H5N8, H5N6, H5N5) was reported in Europe in late 2016 on multiple occasions in poultry and wild birds highlighting the changeable nature of the epidemiology of avian influenza viruses. The H5 HPAI cases detected in 2017 represent a continuation of the 2016 epizootic and are a recurrence of the subtype first seen in Europe in late 2014 and early 2015. This new incursion was also associated with increased levels of wild bird mortality compared to the 2014 variant. There is definitive evidence for the ability of wild birds to transfer H5 HPAI from one area to another over relatively large distances (The Global Consortium for H5N8 and related influenza viruses, 2016). However the exact role and particular species involved in the epidemiology of H5 HPAI is still unclear.

There is evidence for wild birds playing a role in the 2014 introduction of H5N8 HPAI (clade 2.3.4.4A) to Europe (The Global Consortium for H5N8 and related influenza viruses, 2016; Verhagen *et al.* 2015), North America (Lee *et al.* 2015) and parts of Asia. In 2016, the geospatial and temporal distribution of cases in poultry and wild birds confirms the role that migratory waterbird species had in the introduction of virus. Additional insights into the epidemiology of the 2016/17 HPAI H5 outbreaks and the role of wild birds can be found in the EFSA Scientific Opinion on Avian Influenza as well as the quarterly EFSA Avian Influenza overviews.

Further evolutionary events resulting in changes in the virus and increased knowledge of the role of wild birds illustrates the ongoing risk for further incursion of these viruses to the EU.

The EU survey provides detection of AI incidents in wild birds, independent of outbreaks in poultry, illustrating the value and role of wild bird surveillance as a potential early detection and monitoring system for the presence of HPAI (goose/Guangdong lineage of viruses) in the EU.

Only limited inferences can be made by direct comparisons of detections in different MS, species and years. The non-random nature of the sampling, variable extent of sampling by MS, and the lack of identification of some sample birds to a species, means that the proportion positive observed in a species, MS or time period cannot be assumed to be the true prevalence in the population sampled.

## 2017 Wild Bird key facts

### Passive surveillance:

- Total birds sampled = 19,543 (27 MS and Switzerland)
- HPAI H5 detected in 1,904 birds, specifically
  - HPAI H5N8 detected in 1,509 birds
    - 24 Member States and Switzerland
    - 51 species from 9 Orders
    - Most detections made Jan-Mar
  - HPAI H5N5 detected in 29 birds
    - 8 Member States
    - 9 species from 5 Orders
    - Most detections made Jan-Mar
  - HPAI H5N6 in five birds
    - All in the Netherlands
    - 2 species from 1 order
    - All detections in December
- LPAI H5 detected in 14 birds
  - 5 Member States
  - 6 species from 3 Orders
  - Most detections made Jan-Mar
- LPAI H7 detected in one Mallard (*Anas platyrhynchos*) in Germany in January.

### Active surveillance:

- Total birds sampled voluntarily reported = 8,195 (15 MS and Switzerland)
- HPAI H5N8 detected in 12 birds
  - Germany (10) and Slovakia (2)
  - 5 from 2 Orders
  - Most detections made Jan-Mar
- LPAI H5 detected in 32 birds
  - 3 Member States
  - 7 species from the Order Anseriformes
  - Most detections made Sept-Nov
- LPAI H7 detected in 1 bird by Belgium



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## ABBREVIATIONS AND GLOSSARY

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**Table 1 Key to Member State abbreviations**

<b>Abb.</b>	<b>Country</b>
AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovak Republic
UK	United Kingdom
CH*	Switzerland

\*Non-EU country

**Table 2a Key to poultry category abbreviations**

Poultry species and production categories included in the poultry survey, as referenced in Commission Decision 2010/367/EU (EC 2010).

Abb.	Category
CB	Chicken Breeders
LH	Conventional Laying Hens
FR LH	Free-range Laying Hens
B	Broilers (at heightened risk)
FT	Fattening Turkeys
TB	Turkey Breeders
FD	Fattening Ducks
BD	Breeder Ducks
FG	Fattening Geese
BG	Breeder Geese
BYF	Backyard Flocks
FGB-G	Farmed Game Birds (gallinaceous)
FGB-W	Farmed Game Birds (waterfowl)
R	Ratites
O	Others

**Table 2b Poultry species and production categories**

Species	Production Category			
	Eggs	Meat	Breeding	Various
Chickens	Conventional Laying Hens Free-range Laying Hens	Broilers (at heightened risk)	Chicken Breeders	
Turkeys		Fattening Turkeys	Turkey Breeders	
Ducks		Fattening Ducks	Breeder Ducks	
Geese		Fattening Geese	Breeder Geese	
Backyard Flocks				Backyard Flocks
Game Birds				Farmed Game Birds (gallinaceous) Farmed Game Birds (waterfowl)
Ratites				Ratites
Others				Others

**ADNS:** Animal Disease Notification System  
[http://ec.europa.eu/food/animal/diseases/adns/index\\_en.htm](http://ec.europa.eu/food/animal/diseases/adns/index_en.htm)

**AI:** Avian Influenza as defined in Directive 2005/94/EC (EC 2005)

**EURL:** European Union Reference Laboratory for Avian Influenza, Animal and Plant Health Agency-Weybridge

**DG SANTE:** Directorate General for Health and Food Safety, European Commission

**EC:** European Commission

**EU:** European Union

**HPAI:** Highly Pathogenic Avian Influenza

**HPAIV:** Highly Pathogenic Avian Influenza virus

**LPAI:** Low Pathogenicity Avian Influenza defined as LPAI caused by AI viruses of the H5 and H7 subtype according to Directive 2005/94/EC (EC 2005)

**LPAIV:** Low Pathogenicity Avian Influenza virus of the H5 and H7 subtype

**LPAIV of 'other subtype':** Low Pathogenicity Avian Influenza virus of subtype other than H5 or H7

**MS:** Member State(s)

**NUTS:** Nomenclature of Units for Territorial Statistics. For example, at NUTS 3 level this refers to a region, district, county, municipal or unitary authority (depending on the MS).

**PCR:** Polymerase chain reaction is a laboratory methodology that acts through the amplification of specific viral nucleic acid from clinical specimens.

**Positive poultry holding:** For the purpose of this report a poultry holding is considered positive if at least one sample from that holding tested positive on either serology or PCR or viral isolation.

**Poultry holding:** A facility used for the rearing or keeping of breeding or productive poultry, as defined in Council Directive 2009/158/EC (EC 2009). For the purposes of avian influenza surveillance, this may include facilities that only contain poultry during certain months of the year (i.e. poultry do not need to be present all year round).

**TS:** Target species. Wild birds, in particular migratory waterbirds, that have been shown to be at a higher risk of becoming infected with, and transmitting the HPAI H5N1 virus, as referenced in Commission Decision 2010/367/EU (EC 2010).

**VI:** Virus isolation is a laboratory methodology that enables the propagation of infectious virus directly from clinical specimens.

**VI NP:** Virus isolation not performed

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## 2 PURPOSE OF REPORT AND STRUCTURE

### 2.1 Purpose of Report

The aim of this report is to describe the sampling and test results of the avian influenza surveillance conducted in 2017 by EU MS according to Council Directive 2005/94/EC on Community measures to control avian influenza and guidelines laid down in Commission Decision 2010/367/EU. This provides EU MS and third countries with insight to the epidemiological situation of avian influenza and the surveillance activities conducted across Europe.

This report does not however intend to offer a critical discussion of the surveillance system nor provide evidence for epidemiological patterns or trends.

### 2.2 Structure of Report

This report is structured as follows:

- The Executive Summary provides an outline of the main findings and conclusions that can be drawn from these.
- The Introduction gives information on the objectives and framework for the surveillance carried out by the MS and also provides links to the Commission Decisions on which the surveillance is based.
- The Results section contains information on the results of the 2017 poultry survey and wild bird passive surveillance activities, including sampling effort and test results in MS.
- The Discussion section provides a summary of the findings and information on their importance in relation to the objectives of the survey.
- The Methods section includes information on the survey design, data received from the MS and methods of analysis of the data.
- The Annexes contain additional detailed tables on the sampling effort and test results of the poultry and wild bird surveys, including sampling effort and test results of wild bird active surveillance data, voluntarily submitted by MS.

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## 3 INTRODUCTION

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Avian Influenza (AI) is a highly contagious viral infection, which can affect all species of birds. Highly Pathogenic Avian Influenza (HPAI) viruses can spread rapidly, causing significant disease and mortality in many bird species. The ongoing H5 HPAI epidemic has, to date, affected 79 countries across Asia, Africa and Europe, resulting in the loss of hundreds of millions of birds and causing major socio-economic impacts.

Low Pathogenicity Avian Influenza (LPAI) can be any one of the haemagglutinin subtypes H1 to H16 and usually causes only mild disease in poultry. LPAI viruses of the H5 and H7 subtypes have the potential to mutate to highly pathogenic strains while circulating within domestic poultry populations.

Wild birds of the Orders Anseriformes and Charadriiformes are considered major reservoirs for LPAI viruses. Historically, HPAI infections have been rarely observed in wild birds and are almost exclusively associated with poultry outbreaks. However, during the H5 HPAI epidemic, wild birds have been implicated in the spread of the HPAI virus (EFSA 2014; Verhagen *et al.* 2015).

The Scientific Committee on Animal Health and Animal Welfare (SCAHAW 2000) recommended the implementation of serological surveys of poultry populations in MS in order to detect the presence of LPAI viruses of H5 and H7 subtypes. Surveys for avian influenza in poultry and wild birds in MS were first carried out in 2003 under Commission Decision 2002/649/EC (EC 2002).

Wild bird surveillance and the reporting of the results became compulsory in the EU in 2005. Decision 2005/726/EC (EC 2005) produced a first list of 'higher risk species'. Directive 2005/94/EC (EC 2006a) subsequently provided a better legal basis to carry out surveillance programmes in poultry and wild birds. Harmonised guidelines with more detailed requirements for wild bird surveillance were introduced in 2007 (EC 2007). These programmes were aimed at identifying the risk of introduction of AI viruses (LPAI and HPAI) into domestic poultry. In 2006 and 2007, application of this system was demonstrated when H5N1 HPAI activity was relatively widespread in wild birds and incursions to poultry were limited and controlled (Hesterberg *et al.* 2009).

Since 2008 the number of detections of H5N1 HPAI in Europe has reduced. Clade 2.2 viruses and their derivatives appear to have diminished from wild birds globally, while clade 2.3.2 viruses and their derivatives have been reported from wild birds more recently including in the EU (Bulgaria in 2010, and Bulgaria and Romania in 2015). Infection of wild birds in Europe was also observed with H5 HPAI clade 2.3.4.4A in late 2014 and early 2015, when infection also occurred in poultry holdings in Germany, the Netherlands, the United Kingdom, Italy and Hungary. Wild birds have been implicated in carrying the H5 HPAI clade 2.3.4.4A virus to Europe (EFSA 2014; Verhagen *et al.* 2015). The recent H5 HPAI clade 2.3.4.4B epizootic in late 2016 represents a continuation of the events of late 2014 and early 2015 with a significantly increased prevalence in wild bird populations in 2016/17 and significant outbreaks in poultry holdings across Europe. The geospatial and temporal distribution of cases in poultry and wild birds confirms the role migratory waterbird species had in the introduction of virus.

The most recent European Commission guidelines (EC 2010) on surveillance for avian influenza in wild birds (see below) includes a list of "Target Species" that incorporates knowledge in the late 2000s of the number of detections of H5N1 HPAI in the EU surveillance programme and findings on the epidemiology of this virus in wild birds. This list is under constant review, and following the significant increase in H5 HPAI detections within Europe during winter 2016/17, the European Food Safety Authority published a scientific report providing further guidance to attune wild bird surveillance to susceptible European species for the detection of H5 HPAI by passive surveillance (EFSA 2017).

### 3.1 Objectives of the Surveillance

#### 3.1.1 Poultry

The objectives of the surveillance programme for avian influenza in poultry (as described in Commission Decision 2010/367/EU; EC 2010) are to inform the competent authority of circulating

avian influenza virus with a view to controlling the disease in accordance with Directive 2005/94/EC (EC 2005) by the annual detection through active surveillance for:

“(a) low pathogenicity avian influenza (LPAI) of subtypes H5 and H7 in gallinaceous birds (chickens, turkeys, guinea fowl, pheasants, partridges and quails) and ratites thereby complementing other existing early detection systems.

(b) LPAI of subtypes H5 and H7 and highly pathogenic avian influenza (HPAI) in domestic waterfowl (ducks, geese and mallards for re-stocking supplies of game).”

### 3.1.2 Wild birds

The objective of EU wild bird AI surveillance, according to Commission Decision 2010/367/EU (EC 2010), is the timely detection of HPAI of the subtype H5N1 in wild birds in order to protect poultry in poultry holdings and safeguard veterinary public health. It is also stated that:

“(a) A risk-based surveillance (RBS) shall be implemented as a ‘passive’ surveillance system by laboratory investigation of moribund wild birds or birds found dead and it shall be specifically directed towards water bird species.

(b) Wild birds, in particular migratory waterbirds that have been shown to be at a higher risk of becoming infected with and transmitting the HPAI H5N1 virus shall be specifically targeted (‘target species’ (TS)).

(c) Areas close to the sea, lakes and waterways where birds were found dead; and in particular when these areas are in close proximity to poultry holdings, especially in areas where there is a high density of poultry holdings, shall be targeted.

(d) Close cooperation with epidemiologists and ornithologists and the competent authority for nature conservation shall be ensured in the preparation of the surveillance programme, assisting in species identification and optimising sampling adapted to the national situation.

(e) If the epidemiological situation for the HPAI H5N1 virus so requires, surveillance activities shall be enhanced by awareness raising and active searching and monitoring for dead or moribund wild birds, in particular for those belonging to TS. This could be triggered by the detection of the HPAI H5N1 virus in poultry and/or wild birds in neighbouring Member States and third countries or in countries which are linked via the movement of migratory wild birds, in particular those of TS, to the Member State concerned. In that case the specific migration patterns and wild bird species, which may vary in different Member States shall be taken into account.”

## 3.2 Framework of Reporting

Directive 2005/94/EC (EC 2005) on Community measures to control avian influenza established in its Article 4 the legal basis for the obligatory conduct of surveillance programmes in poultry and wild bird populations. Both surveillance programmes must be carried out following harmonised guidelines which were laid down in 2010/367/EU (EC 2010).

Surveillance programmes of the MS are evaluated and approved for co-financing by Commission’s procedures that are detailed on the Commission’s website:

[http://ec.europa.eu/dgs/health\\_food-safety/funding/cff/animal\\_health/vet\\_progs\\_en.htm](http://ec.europa.eu/dgs/health_food-safety/funding/cff/animal_health/vet_progs_en.htm)

Samples were tested in accordance with the Diagnostic Manual for avian influenza as set out in Decision 2006/437/EC (EC 2006b). Data with sample results were submitted to the European Commission at the end of each semester period. Data extraction, validation and analysis were carried out by the European reference laboratory for Avian Influenza (Animal Plant Health Agency, United Kingdom) and through consultation with the different MS. Final results and the report were internally peer reviewed by APHA experts, the EU Commission and by MSs' animal health delegates at the meeting of the Standing Committee on Plants, Animals, Food and Feed (September 2017).

Previous Annual Reports and more information on surveillance for avian influenza in poultry and wild birds can be found at:

[http://ec.europa.eu/food/animal/diseases/controlmeasures/avian/eu\\_resp\\_surveillance\\_en.htm](http://ec.europa.eu/food/animal/diseases/controlmeasures/avian/eu_resp_surveillance_en.htm)

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## 4 RESULTS

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### 4.1 Poultry

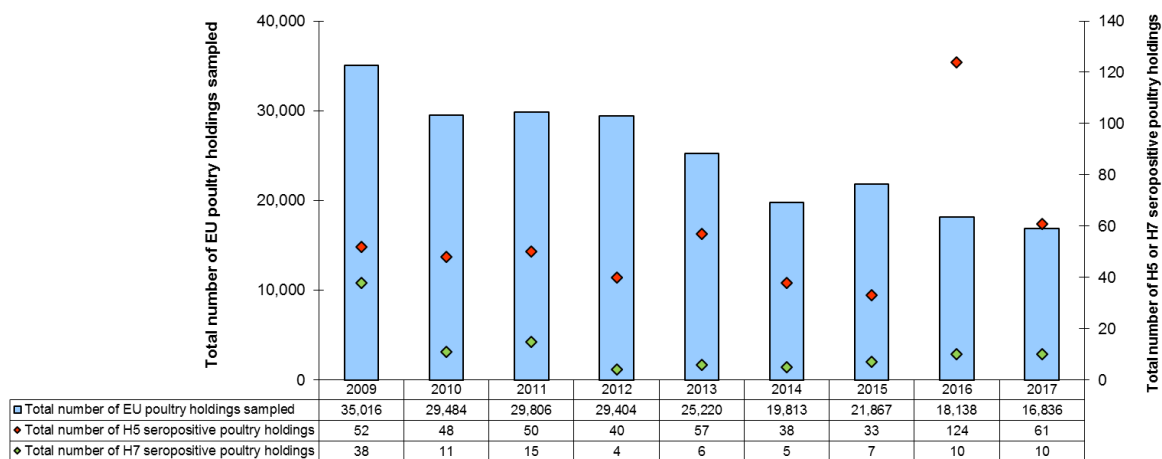
#### 4.1.1 Poultry holdings sampled

All totals and overall proportions refer to 27 MS (No surveillance data was reported from Malta for the 2017 period).

- In 2017, a total of 739,212 poultry holdings among all MS were reported from regions where sampling took place. Of these, 16,836 holdings (2.3%) were sampled by the MS in their approved surveillance programmes. In addition, one non-EU country, Switzerland, submitted data for 93 holdings. Information on the number of EU poultry holdings sampled in previous survey years is shown in [Table 3](#) and [Figure 1](#).
- Of the 27 MS undertaking AI serological surveillance in poultry in 2017, 11 MS (BE, BG, DE, DK, ES, FR, IT, LU, NL, RO and UK) carried out a risk-based sampling approach, as described in Commission Decision (EC 2010). For more information on the risk-based surveillance approaches used by these MS, please see [Table 20](#). Ten and 11 MS followed a risk-based sampling approach in 2016 and 2015, respectively.
- There was considerable variation in the number of poultry holdings sampled among MS, varying from 11 holdings in Lithuania to 3,375 holdings in the Netherlands (Table 4). The Netherlands and Italy together sampled the most holdings (6,186 holdings) among MS, together sampling 36.7% of the total holdings sampled in 2017. Nineteen MS sampled more holdings when compared to 2015 (AT, CZ, DE, DK, EE, EL, ES, HR, IE, LT, LU, LV, NL, PL, PT, RO, SE, SK and UK), while eight MS (BE, BG, CY, FL, FR, HU, IT and SL) sampled fewer holdings. Overall, the total numbers of holdings sampled was the lowest since 2008 (Table 1, Figure 1). Some MS sampled individual holdings more than once during the period of the survey and hence the total reported number of holdings sampled during the survey exceeded the total number of holdings present for MS in certain poultry categories (Table 4).
- Laying Hen (Conventional and Free-range) holdings were sampled in all 27 MS. This category was the most frequently sampled poultry category, making up 30.9% (5,204 of 16,851) of the total holdings sampled by EU MS in 2017, with most being sampled in the Netherlands (1,784 holdings) and Italy (789 holdings).
- Twenty-three MS sampled Chicken Breeders (12.1% of total EU holdings sampled); 25 MS sampled Fattening Turkeys and Turkey Breeders (10.6% of total EU holdings sampled); 22 MS sampled Farmed Game Birds (gallinaceous) and Farmed Game Birds (waterfowl) (4.6% of total EU holdings sampled); 21 MS sampled Fattening Ducks and Breeder Ducks (9.4% of total EU holdings sampled); 16 MS sampled Fattening Geese and Breeder Geese (4.0% of total EU holdings sampled); 14 MS sampled Broilers (at heightened risk) (6.8% of total EU holdings sampled); 12 MS sampled Ratites (0.9% of total EU holdings sampled) and Backyard Flocks (14.7% of total EU holdings sampled), and 7 MS sampled Other poultry flocks (6.2% of total EU holdings sampled) - further details are given in Section 4.1.3 (Poultry categories).
- The total number of poultry holdings (from regions where sampling took place) and the number sampled by MS, reported to the survey in 2017, are displayed by poultry category in [Table 4](#).

**Table 3 Total number of EU poultry holdings sampled and the percentage found H5 or H7 seropositive, from 2008 to 2017**

Year	Total number of EU poultry holdings sampled	H5/H7 seropositive poultry holdings		H5 seropositive poultry holdings		H7 seropositive poultry holdings	
		Total number of seropositive poultry holdings	% of total number of EU poultry holdings sampled	Total number of seropositive poultry holdings	% of total number of EU poultry holdings sampled	Total number of seropositive poultry holdings	% of total number of EU poultry holdings sampled
2008	34,985	72	0.21	52	0.15	21	0.06
2009	35,016	90	0.26	52	0.15	38	0.11
2010	29,484	59	0.20	48	0.16	11	0.04
2011	29,806	65	0.22	50	0.17	15	0.05
2012	29,404	43	0.15	40	0.14	4	0.01
2013	25,220	63	0.25	57	0.23	6	0.02
2014	19,813	43	0.22	38	0.19	5	0.03
2015	21,867	40	0.18	33	0.15	7	0.03
2016	18,138	134	0.74	124	0.68	10	0.06
2017	16,836	71	0.42	61	0.36	10	0.06



**Figure 1 Total number of EU poultry holdings sampled and found H5 or H7 seropositive, from 2009 to 2017**



**Table 4 Number of poultry holdings sampled and total number of poultry holdings in regions where sampling took place, by poultry category, across Member States, reported to the survey in 2017**

The total number of poultry holdings (from regions where sampling took place) is displayed in parentheses.

	Number of poultry holdings sampled (total number of poultry holdings reported in regions where sampling took place)											
	Chicken Breeders	Conventional Laying Hens and Free-range Laying Hens	Broilers (at heightened risk)	Fattening Turkeys and Turkey breeders	Fattening Ducks and Breeder Ducks	Fattening Geese and Breeder Geese	Backyard Flocks	Farmed Game Birds (gallinaceous and waterfowl)	Ratites	Others	Total Holdings sampled and percentage of EU total	Total Holdings reported and percentage of EU total
AT	37 (101)	125 (1,898)		60 (145)	25 (19)	65 (65)			10 (10)		322	2,238
BE	201 (204)	364 (249)		52 (38)	20 (23)			22 (16)		6 (8)	665	538
BG	11 (11)	67 (104)	8 (4)	2 (2)	276 (200)		119 (120,038)	6 (6)		2 (2)	491	120,367
CY	9 (9)	36 (37)	4 (4)	6 (7)			51 (1,247)	3 (5)			109	1,309
CZ		69 (148)		43 (59)	73 (73)	19 (19)		47 (47)			251	346
DE	22 (1,123)	209 (5,819)	19 (2,621)	133 (1,132)	177 (813)	126 (1883)		4 (971)	27 (479)	30 (15,082)	747	29,923
DK	269 (194)	224 (161)	35 (65)	23 (58)	19 (91)	6 (15)		36 (88)			612	674
EE		40 (40)						1 (1)			41	41
EL	47 (86)	104 (550)	29 (36)	23 (45)				14 (17)	3 (5)	50 (144)	270	883
ES	118 (403)	148 (1,000)	1 (1,034)	69 (642)	50 (49)	14 (13)	27 (8,117)	273 (611)	27 (50)	105 (4,761)	832	16,680
FI	35 (58)	84 (462)	2 (2)	39 (44)	3 (6)	2 (5)		13 (21)	3 (3)		181	601
FR	68 (564)	105 (4,173)		109 (955)	445 (7,189)	82 (176)		105 (392)			914	13,449
HR	47 (8,932)	39 (16,434)	10 (6,232)	3 (2,444)	12 (2,952)	7 (1,513)	147 (26,708)	7 (24)			272	65,239
HU	46 (113)	79 (419)		76 (306)	84 (289)	96 (337)	495 (227,092)	36 (76)	9 (12)		921	228,644
IE	63 (67)	166 (225)	58 (66)	112 (137)	20 (15)	3 (7)		6 (3)			428	520
IT	243 (210)	789 (817)		619 (792)	79 (72)	19 (23)	190 (111)	10 (9)	14 (16)	848 (672)	2,811	2,722
LT		2 (3)	2 (2)	1 (1)	1 (1)		5 (5)				11	12
LU		8 (8)	3 (3)				21 (500)		2 (1)		34	512
LV	1 (1)	33 (33)		3 (3)	1 (1)	1 (1)	60 (3,783)				99	3,822
MT												
NL	562 (281)	1,784 (891)	880 (274)	81 (41)	68 (43)						3,375	1,530
PL	56 (488)	114 (712)		82 (251)	116 (378)	173 (1,224)		41 (99)	32 (75)		614	3,227
PT	76 (79)	131 (152)	65 (229)	63 (131)	24 (17)		72 (237,000)	44 (41)	8 (7)		483	237,656
RO	64 (41)	212 (206)		31 (16)	5 (5)		1,205 (1,205)	14 (8)		1 (1)	1,532	1,482
SE	31 (31)	111 (380)	23 (32)	19 (20)	1 (1)	5 (5)		15 (15)	2 (2)		207	486
SI	7 (7)	60 (141)		43 (43)			86 (4,154)	6 (6)			202	4,351
SK	12 (12)	50 (60)		17 (22)	6 (6)	4 (5)		19 (18)	7 (10)		115	133
UK	12 (124)	51 (978)		61 (277)	75 (203)	46 (93)		52 (152)			297	1,827
<b>Total holdings;</b>	<b>2,037</b>	<b>5,204</b>	<b>1,139</b>	<b>1,770</b>	<b>1,580</b>	<b>668</b>	<b>2,478</b>	<b>774</b>	<b>144</b>	<b>1,042</b>	<b>16,836</b>	<b>739,212</b>
<b>% of EU total</b>	<b>12.1%</b>	<b>30.9%</b>	<b>6.8%</b>	<b>10.5%</b>	<b>9.4%</b>	<b>4.0%</b>	<b>14.7%</b>	<b>4.6%</b>	<b>0.9%</b>	<b>6.2%</b>		
CH		68 (1,890)		25 (70)							93	1,960

Percentages for the total number of poultry holdings sampled and total number of poultry holdings (from regions where sampling took place) are calculated as a percentage of the EU totals reported to the survey.

#### 4.1.1.1 Summary – poultry holdings sampled

- In 2017, a total of 16,836 holdings were sampled by EU MS in their approved surveillance programmes. In addition, one non-EU country, Switzerland, submitted data for 93 holdings.
- Ten MS followed a risk-based sampling approach in poultry.
- The number of holdings sampled by MS varied from 11 holdings in Lithuania to 3,375 holdings in the Netherlands. Italy and the Netherlands sampled the most holdings among MS, together sampling 36.7% (6,186 holdings) of the total holdings sampled in 2017.
- The most frequently sampled poultry category in 2017 was Laying Hens (Conventional and Free-range combined), making up 30.9% of the total holdings sampled by EU MS in 2017, followed by Backyard Flocks (14.7% of EU holdings sampled), and Chicken Breeders (12.1% of EU holdings sampled). The least sampled poultry category was Ratites, making up just 0.9% of total holdings sampled in the EU in 2017.

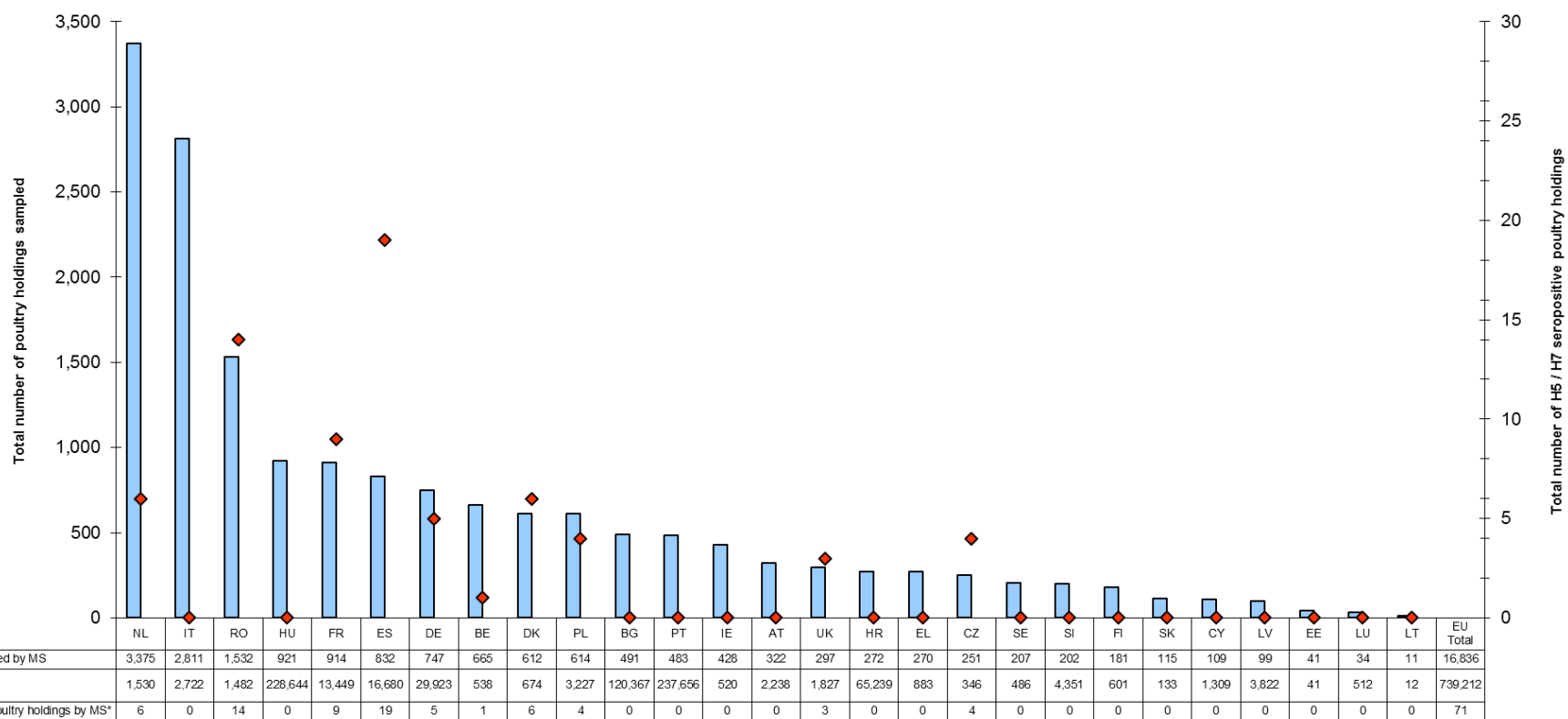
#### 4.1.2 Poultry laboratory results

- Serological testing: In 2017, 71 poultry holdings were reported by MS as serologically positive for influenza A virus subtypes H5 and H7 (0.42% of EU holdings sampled) ([Figures 2, 3, 4](#)), including 61 of subtype H5 and ten of subtype H7. Information on the number of poultry holdings found seropositive for H5 or H7 across EU MS in previous survey years is shown in [Table 3](#) and [Figure 1](#).
- Virological testing: Twenty-five poultry holdings tested virologically positive (by PCR and in some cases by virus isolation as well) for influenza A virus subtypes H5 and H7 ([Table 5](#)). This included 24 for subtype H5 (all of which were also H5 seropositive) and one for subtype H7 (also H7 seropositive).

By MS: Overall, 10 MS reported H5 or H7 seropositive poultry holdings in 2017 ([Figures 4 and 5](#)) - Belgium, the Czech Republic, Denmark, France, Germany, the Netherlands, Poland, Romania, Spain and the United Kingdom. Nine of these MS also reported H5 or H7 seropositive poultry holdings in 2016 (BE, CZ, DE, DK, FR, NL, PL, ES and UK).

The non-EU country, Switzerland, did not detect any positive poultry holdings in 2017, as was the case in 2016 and 2015.

**Figure 2 Total number of poultry holdings sampled and found seropositive for influenza A virus subtypes H5 and H7, by Member State, reported to the survey in 2017**



**\*Notes on total number of H5 / H7 seropositive holdings by MS**

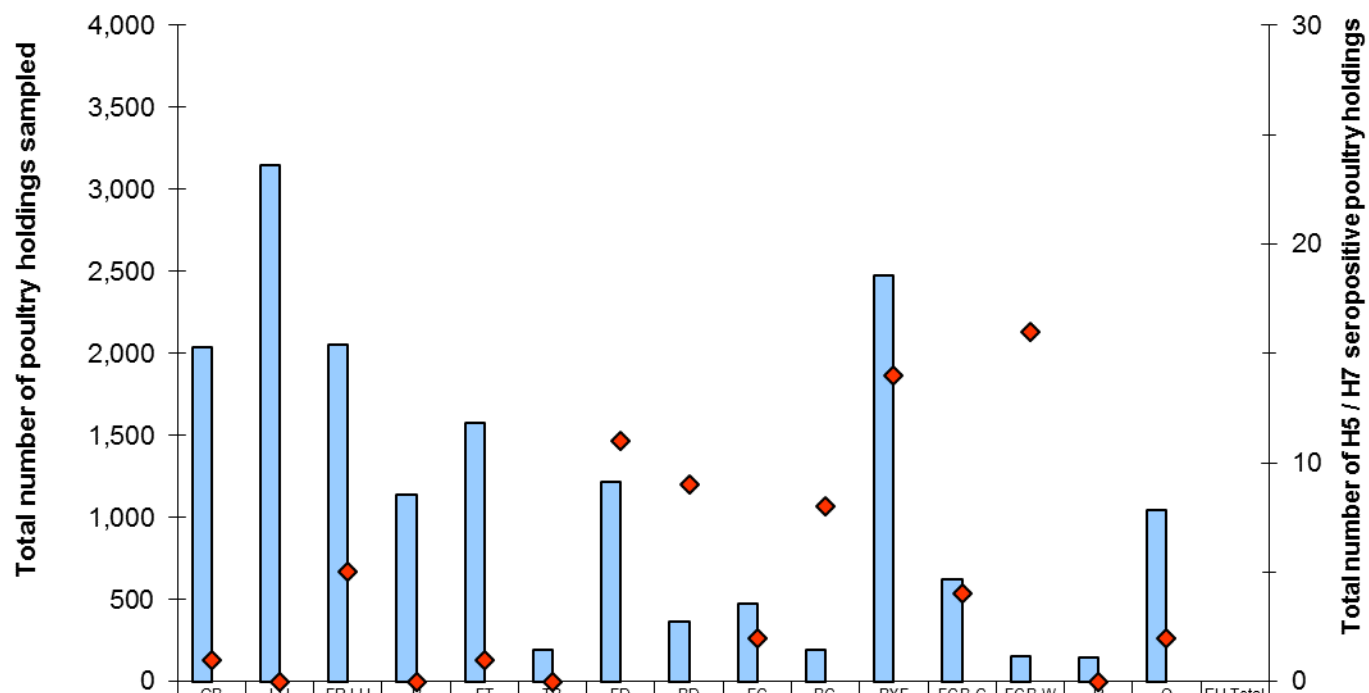
CZ: One holding was H5 seropositive in both the Breeder Geese and Breeder Duck categories; it is only counted once in the total number of H5/H7 seropositive holdings for CZ.

DK: One holding was H7 seropositive in both Farmed Game Bird (gallinaceous) and Farmed Game Bird (waterfowl) categories; it is only counted once in the total number of H5/H7 seropositive holdings for DK.

FR: One holding was H5 seropositive on three occasions, whilst another was H5 seropositive twice. Both holdings are only counted once in the total number of H5/H7 seropositive holdings for FR.

RO: Five holdings were H5 seropositive on two occasions; each are only counted once in the total number of H5/H7 seropositive holdings for RO.

**Figure 3 Total number of poultry holdings sampled and found seropositive for influenza A virus subtypes H5 and H7, by poultry category, in Member States, reported to the survey in 2017**



■ Total number of poultry holdings sampled	2,037	3,150	2,054	1,139	1,577	193	1,214	366	475	193	2,478	623	151	144	1,042	16,836
Total number of poultry holdings (in regions where sampling took place)	13,139	28,561	7,539	10,604	6,354	1,257	10,991	1,455	4,522	862	629,960	2,352	276	667	20,670	739,212
◆ Total number of H5 / H7 seropositive poultry holdings by poultry category*	1	0	5	0	1	0	11	9	2	8	14	4	16	0	2	73

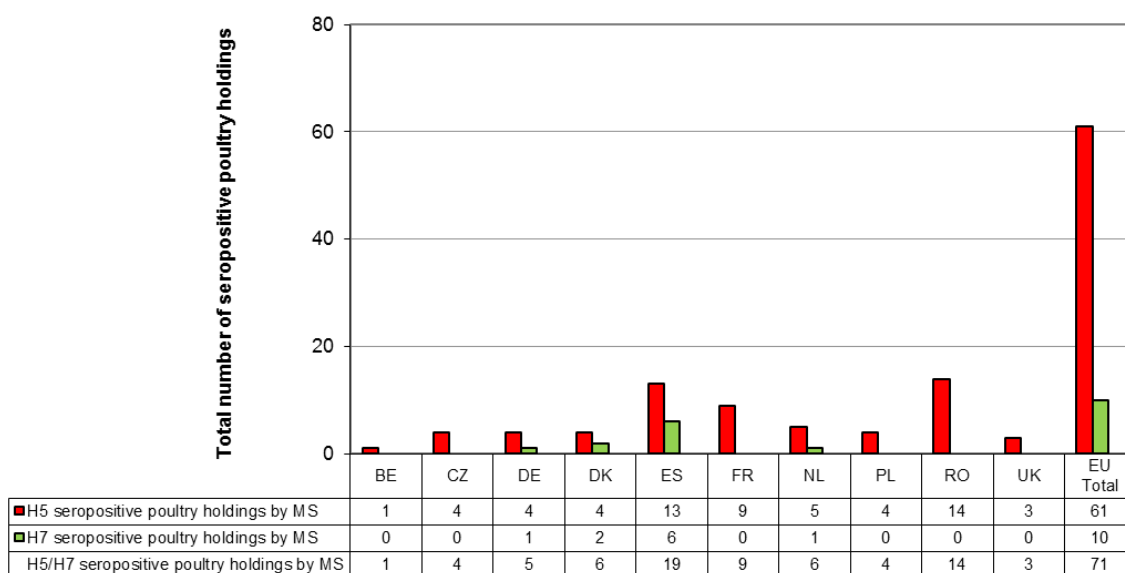
\*Notes on total number of H5 / H7 seropositive holdings by poultry category

One holding (from CZ) was H5 seropositive in both the BG and BD categories and is counted in each category.

One holding (from DK) was H7 seropositive in both the FGB-G and FGB-W categories and is counted in each category.

See Abbreviations and Glossary and Section 6.1.1 Survey Design for the abbreviations of poultry categories.

**Figure 4 Total number of H5 and H7 serologically positive poultry holdings, by Member State, reported to the survey in 2017**



CZ: One holding was H5 seropositive in both the Breeder Geese and Breeder Duck categories; it is only counted once in the total number of H5/H7 seropositive holdings for CZ.

DK: One holding was H7 seropositive in both Farmed Game Bird (gallinaceous) and Farmed Game Bird (waterfowl) categories; it is only counted once in the total number of H5/H7 seropositive holdings for DK.

FR: One holding was H5 seropositive on three occasions, whilst another was H5 seropositive twice. Both holdings are only counted once in the total number of H5/H7 seropositive holdings for FR.

RO: Five holdings were H5 seropositive on two occasions; each are only counted once in the total number of H5/H7 seropositive holdings for RO.

#### 4.1.2.1 H5 avian influenza

- In 2017, 61 poultry holdings (0.36% of total EU holdings sampled) were reported by MS as serologically positive for influenza A virus subtype H5 (Figure 4, Table 5). One poultry holding was H5 seropositive in two poultry categories. Additionally, six holdings tested H5 seropositive on two occasions during the 2017 reporting year, whilst a final holding tested H5 seropositive on three occasions; these holdings were counted in each of the poultry categories (total = 70 H5 seropositives), but in the total number of H5 seropositive holdings by MS they were only counted once (total = 61 H5 seropositive holdings). Information on the number of poultry holdings found seropositive for H5 across EU MS in previous survey years is shown in Table 3 and Figure 1.
- Epidemiological follow-up investigations: Of the 61 poultry holdings reported by MS to be H5 seropositive in 2017, 59 holdings underwent follow-up testing for the presence of active infection, and 24 of these (24/59, 40.7%) tested virologically positive (by PCR and in some cases virus isolation as well) for subtype H5. For more information on the epidemiological follow-up investigations, please see Table 6.
- By MS: H5 seropositive poultry holdings were reported from ten MS (BE, CZ, DE, DK, ES, FR, NL, PL, RO and UK) (Figures 4 and 5, Table 5). In addition, eight holdings from Germany tested PCR positive for H5 (and serology positive for influenza A virus of undetermined subtype). A high proportion of the H5 seropositive holdings were found in Romania (14/61, 23.0%) and Spain (13/61, 21.3%). France had the greatest proportion on H5 seropositive holdings in both 2016 (85/124, 68.5%) and 2015 (16/33, 48.5%).
- By poultry category: A high proportion of the H5 seropositive holdings were Backyard Flocks (14/61, 23%), followed by Fattening Ducks (11/61, 18%), Breeder Ducks (9/61, 14.8%) and Farmed Game Birds (waterfowl) (9/61, 14.8%) (Tables 7 and 8). In 2016, the highest number of holdings positive for H5 subtype by serology was Breeder Ducks (74/126, 58.7%) and Farmed Game Birds (waterfowl) (10/126, 7.9%), and in 2015, was

Breeder Geese (13/33, 39.4%), followed by Fattening Ducks (7/33, 21.2%), and Breeder Ducks (6/33, 18.2%).

#### 4.1.2.2 H7 avian influenza

- In 2017, ten poultry holdings (0.06% of total EU holdings sampled) were reported by MS as serologically positive for influenza A virus subtype H7 ([Figure 4](#)). Information on the number of poultry holdings found seropositive for H7 across EU MS in previous survey years is shown in [Table 3](#) and [Figure 1](#).
- Epidemiological follow-up investigations: Of the ten poultry holdings reported to be H7 seropositive in 2017, nine underwent follow-up testing for the presence of active infection and one of these (1/9, 11.1%) tested virologically positive (by PCR and virus isolation) for subtype H7. For more information on the epidemiological follow-up investigations, please see [Table 6](#).
- By MS: H7 seropositive holdings were reported from four MS ([Figures 4 and 5](#)), including Denmark (2/10, 20.0%), Germany (1/10, 10.0%), the Netherlands (1/10, 10.0%) and Spain (6/10, 60.0%). In 2016, H7 seropositive holdings were reported from five MS, including Denmark (3/10, 30.0%), Germany (1/10, 10%), Italy (1/10, 10%), the Netherlands (2/10, 20%) and Spain (3/10, 30%), while in 2015, H7 seropositive holdings were reported from five MS, including Denmark (2/7, 28.6%), Hungary (1/7, 14.3%), Italy (1/7, 14.3%), the Netherlands (2/7, 28.6%) and Poland (1/7, 14.3%).
- By poultry category: H7 seropositive holdings were found in Free-range Laying Hens (1/10, 10.0%), Farmed Game Birds (waterfowl) (8/10, 70.0%), Farmed Game Birds (gallinaceous) (1/10, 10%) and Others (1/10, 10%) ([Table 7 and 8](#)). In 2016 H7 seropositive holdings were found in Free-range Laying Hens (4/10, 40.0%), Farmed Game Birds (waterfowl) (4/10, 40.0%), Conventional Laying Hens (1/10, 10%) and Others (1/10, 10%), while in 2015, H7 seropositive holdings were found in Free-range Laying Hens (3/7, 42.9%), Breeder Geese (2/7, 28.6%), Backyard Flocks (1/7, 14.3%), and Farmed Game Birds (waterfowl) (1/7, 14.3%).

#### 4.1.2.3 Other avian influenza subtypes

- The identification of avian influenza subtypes other than H5 or H7 is not compulsory according to the surveillance guidelines (EC 2010) and the definition for avian influenza provided in Directive 2005/94/EC (EC 2005). It will also depend on the laboratory method used.
- However, as part of the 2017 survey, the following subtypes other than H5 or H7 were reported:
  - 92 holdings seropositive for influenza A virus of undetermined subtype, including:
    - two Free-Range Laying Hen and two Conventional Laying Hen holdings from Greece; and
    - 69 holdings from Spain (one Backyard Flock, four Chicken Breeders, ten Farmed Game Birds (gallinaceous), 25 Farmed Game Birds (waterfowl), eight Fattening Ducks, three Fattening Turkeys, four Free-Range Laying Hen, six Conventional Laying Hens and eight Others); and
    - 19 holdings from Germany (four Breeder Ducks (three of which were H5 PCR positive), four Fattening Ducks (two also H5 PCR positive), six Fattening Turkeys (of which two were also H5 PCR positive, one H9 PCR positive and one PCR positive for influenza A of undetermined subtype), two Turkey Breeders (one also H5 PCR positive), one Breeder Geese, one Conventional Laying Hen (also PCR positive for Influenza A of undetermined subtype), and one Other.
- As part of the 2016 survey, the following subtypes other than H5 or H7 reported, included:
  - three H9 seropositive Fattening Turkey holdings from Germany; and

- 104 holdings seropositive for influenza A virus of undetermined subtype, including:
  - one Backyard Flock holding from Croatia, which was also virologically positive for influenza A subtype H5 by PCR and influenza A virus of undetermined subtype by virus isolation;
  - 13 holdings from Germany (one Conventional Laying Hens, three Fattening Turkeys, one Turkey Breeders, four Fattening Ducks (one of which was also PCR and virus isolation positive for subtype H6), two Fattening Geese, one Breeder Geese, and one Others (which was also PCR positive for influenza A)); and
  - 90 holdings from Spain (six Chicken Breeders, three Conventional Laying Hens, four Free-range Laying Hens, three Fattening Turkeys, ten Fattening Ducks (one of which was also PCR positive for influenza A virus of undetermined subtype), one Backyard Flocks, nine Farmed Game Birds (gallinaceous), 49 Farmed Game Birds (waterfowl), and five Others).
- As part of the 2015 survey, the following subtypes other than H5 or H7 reported, included:
  - 11 H1 seropositive holdings from Spain (one Chicken Breeders, one Conventional Laying Hens, seven Fattening Ducks (two of which were also PCR positive for influenza A), one Farmed Game Birds (gallinaceous) and one Farmed Game Birds (waterfowl));
  - two H6 seropositive holdings from Spain (one Farmed Game Birds (waterfowl), and one Others, which was also seropositive for H10);
  - eight H9 seropositive holdings from Germany (one Free-range Laying Hens, six Fattening Turkeys and one Turkey Breeders);
  - one H10 seropositive Other holding from Spain (which was also seropositive for H6); and
  - 20 holdings seropositive for influenza A of undetermined subtype from Germany (one Free-range Laying Hens, one Broilers (at heightened risk), six Fattening Turkeys, one Turkey Breeders, four Fattening Ducks, six Fattening Geese and one Others).

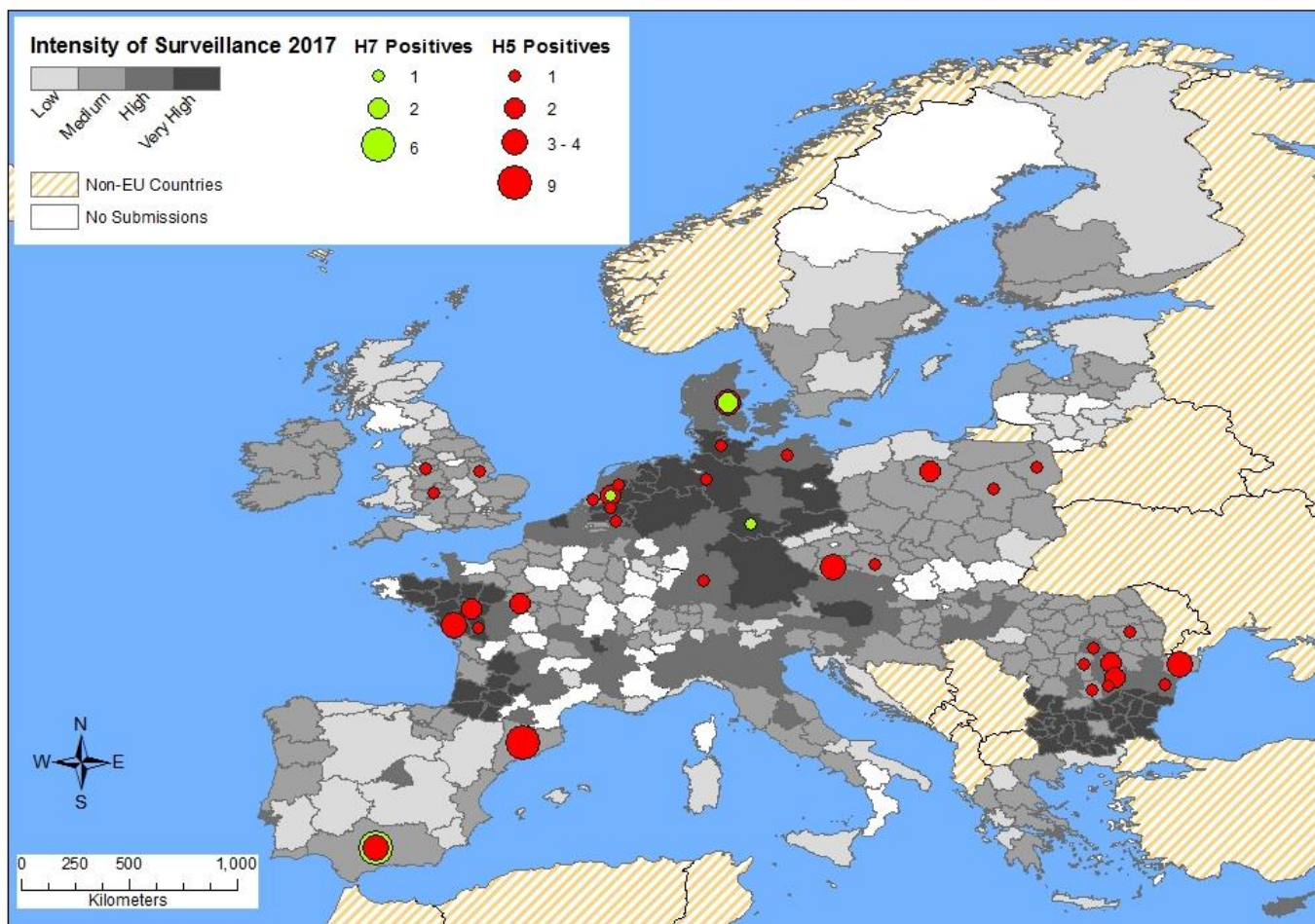
#### 4.1.2.4 Summary – poultry laboratory results

- A total of 71 poultry holdings were reported by MS as serologically positive for influenza A virus subtypes H5 or H7 (0.42% of EU holdings sampled); 61 for subtype H5 (0.36% of total EU holdings sampled) and ten for subtype H7 (0.06% of total EU holdings sampled).
- H5 seropositive poultry holdings were reported from ten MS (BE, CZ, DE, DK, ES, FR, NL, PL, RO and UK) with high proportion of the H5 seropositive holdings were found in Romania (14/61, 23.0%) and Spain (13/61, 21.3%). The poultry categories with the most H5 seropositive detections were Backyard Flocks (14/61, 23%), followed by Fattening Ducks (11/61, 18%), Breeder Ducks (9/61, 14.8%) and Farmed Game Birds (waterfowl) (9/61, 14.8%) (N.B. Two poultry holdings were H5 seropositive in two poultry categories; these holdings were counted in each of the poultry categories (total = 63 H5 seropositive holdings), but in the total number of H5 seropositive holdings by MS (total = 61 H5 seropositive holdings), they were only counted once).
- Of the 61 H5 seropositive poultry holdings reported by MS, 59 holdings underwent follow-up testing for the presence of active infection, and 24 of these (24/59, 40.7%) tested virologically positive for subtype H5.
- H7 seropositive holdings were reported from four MS (Figures 4 and 5), including Denmark (2/10, 20.0%), Germany (1/10, 10.0%), the Netherlands (1/10, 10.0%) and Spain (6/10, 60.0%) and were detected in Free-range Laying Hens (1/10, 10.0%), Farmed Game Birds (waterfowl) (7/10, 70%), Farmed Game Birds (gallinaceous) (1/10, 10%) and Others (1/10, 10%).
- Of the ten H7 seropositive poultry holdings reported by MS, nine underwent follow-up testing for the presence of active infection, and one of these (1/9, 11.1%) tested virologically positive for subtype H7.



**Figure 5 Map of the intensity of sampling in the EU AI poultry survey and holdings testing serologically positive for H5 and H7 in 2017**

The classification of intensity of surveillance is grouped by holdings sampled per 100 km<sup>2</sup>  
Low: up to 10, Medium: 11 - 100, High: 101 - 500, Very high: >500



**Table 5 Number of serological and virological H5 and H7 positive poultry holdings, by Member State, reported to the survey in 2017**

MS	Total H5/H7 seropositive poultry holdings	Number of H5 seropositive poultry holdings	Number of H5 PCR/VI positive poultry holdings	Number of H7 seropositive poultry holdings	Number of H7 PCR/VI positive poultry holdings	Total poultry holdings sampled	Total poultry holdings reported (in regions where sampling took place)
AT	0	0	0	0	0	322	2,238
BE	1	1	0	0	0	665	538
BG	0	0	0	0	0	491	120,367
CY	0	0	0	0	0	109	1,309
CZ	4	4	0	0	0	251	346
DE	5	3	1	1	0	747	29,923
DK	6	4	0	2	0	612	674
EE	0	0	0	0	0	41	41
EL	0	0	0	0	0	270	883
ES	19	4	9	6	0	832	16,680
FI	0	0	0	0	0	181	601
FR	9	9	0	0	0	914	13,449
HR	0	0	0	0	0	272	65,239
HU	0	0	0	0	0	921	228,644
IE	0	0	0	0	0	428	520
IT	0	0	0	0	0	2,811	2,722
LT	0	0	0	0	0	11	12
LU	0	0	0	0	0	34	512
LV	0	0	0	0	0	99	3,822
NL	6	3	2	0	1	3,375	1,530
PL	4	4	0	0	0	614	3,227
PT	0	0	0	0	0	483	237,656
RO	14	2	12	0	0	1,532	1,482
SE	0	0	0	0	0	207	486
SI	0	0	0	0	0	202	4,351
SK	0	0	0	0	0	115	133
UK	3	3	0	0	0	297	1,827
<b>EU Total</b>	<b>71</b>	<b>37</b>	<b>24</b>	<b>9</b>	<b>1</b>	<b>16,836</b>	<b>739,212</b>
<b>CH</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>93</b>	<b>1,960</b>

\*CZ: One holding was H5 seropositive in both the BG and BD categories; it is only counted once in the total number of H5 seropositive holdings for CZ.

\*\*DK: One holding was H5 seropositive in both the FGB-G and FGB-W categories; it is only counted once in the total number of H5 seropositive holdings for DK.

Notes on virological data and subtypes other than H5 or H7

DE: One of the H5 seropositive holdings was also PCR/VI positive for subtype H5. Nineteen holdings were seropositive for influenza A virus (8 were also PCR positive for subtype H5; one PCR positive for subtype H9 and two PCR positive for Influenza A virus).

ES: Nine of the H5 seropositive holdings were also PCR positive for subtype H5. Sixty-nine holdings were seropositive for influenza A virus.

NL: Two of the H5 seropositive holdings were also PCR/VI positive for subtype H5, while one of the H7 seropositive holdings was PCR/VI positive for subtype H7.

RO: Fourteen of the H5 seropositive holdings were also PCR/VI positive for subtype H5.

**Table 6 Information on epidemiological follow-up investigations at poultry holdings following a H5 or H7 seropositive result, reported by MS to the survey in 2017**

H5 seropositive poultry holdings	Number of poultry holdings	% of total number of H5 seropositive poultry holdings
<b>Following H5 seropositive result, epidemiological follow-up visit 'Done'</b>	<b>59</b>	<b>96.7</b>
Done: H5 detected by virological testing	24	39.3
Done: No detection by virological testing	35	57.4
<b>Following H5 seropositive result, epidemiological follow-up visit 'Not done'</b>	<b>2</b>	<b>3.3</b>
Not done: Sampling at slaughter	0	0.0
Not done: Birds slaughtered/killed	2	3.3
<b>Total number of H5 seropositive poultry holdings (by MS)</b>	<b>61</b>	
H7 seropositive poultry holdings	Number of poultry holdings	% of total number of H7 seropositive poultry holdings
<b>Following H7 seropositive result, epidemiological follow-up visit 'Done'</b>	<b>9</b>	<b>90</b>
Done: H7 detected by virological testing	1	10.0
Done: No detection by virological testing	8	80.0
<b>Following H7 seropositive result, epidemiological follow-up visit 'Not done'</b>	<b>1</b>	<b>10</b>
<b>Total number of H7 seropositive poultry holdings (by MS)</b>	<b>10</b>	

#### 4.1.3 Poultry categories

Table 7 shows the total number of poultry holdings sampled and the number found to be seropositive for subtypes H5 and H7 by poultry category reported to the survey in 2017 and 2016. The number of poultry holdings found serologically positive for subtypes H5 or H7 by poultry category across MS reported to the survey in 2017 is also displayed in Figure 6. This information is also shown in Table 8, along with the number of holdings sampled by poultry category across MS in 2017.

#### Descriptive results of the 2017 poultry survey by poultry category

Detailed tables displaying the number of poultry holdings reported (from regions where sampling took place), holdings sampled and holdings testing positive by poultry category across MS are shown in Section 8.1.1 Annex I.

##### 4.1.3.1 Chicken Breeders

- Chicken Breeder holdings made up 12.1% of total holdings sampled in the EU in 2017. This compares to 13.7% in 2016 and 25.5% in 2015.
- Chicken Breeder holdings were sampled in 23 MS, the same as in 2016 and 2015. The number of holdings sampled varied from one holding (LV) to 562 (NL).
- In 2017, one Chicken Breeder holding from the Netherlands tested serologically and virologically (PCR and virus isolation) positive for Influenza A subtype H5. Additionally, four holdings from Spain were reported to be seropositive for influenza A virus of undetermined subtype.
- In 2016, no Chicken Breeder holdings were found to be seropositive for influenza A virus subtypes H5 or H7. However, six holdings from Spain were reported to be seropositive for influenza A virus of undetermined subtype.

Similarly, in 2015, no Chicken Breeder holdings were found to be seropositive for influenza A virus subtypes H5 or H7. However, one holding from Spain was reported to be seropositive for influenza A virus subtype H1.

**Table 7 Total number of H5 and H7 seropositive and sampled holdings, reported to the survey in 2017 and 2016, by poultry category**

Poultry category	H5		H7	
	2017	2016	2017	2016
	Seropositive / sampled	Seropositive / sampled	Seropositive / sampled	Seropositive / sampled
Chicken Breeders	1 / 2,037	0 / 2,482	0 / 2,037	0 / 2,482
Conventional Laying Hens and Free-range Laying Hens	4 / 5,204	5 / 5,248	1 / 5,024	5 / 5,248
Broilers (at heightened risk)	0 / 1,139	0 / 1,163	0 / 1,139	0 / 1,163
Fattening Turkeys and Turkey Breeders	1 / 1,785	1 / 2,330	0 / 1,785	0 / 2,330
Fattening and Breeder Ducks	20 / 1,580	83 / 1,608	0 / 1,580	0 / 1,608
Fattening and Breeder Geese*	10 / 668	24 / 722	0 / 668	0 / 722
Backyard Flocks	14 / 2,478	0 / 2,502	0 / 2,478	0 / 2,502
Farmed Game Birds (gallinaceous and waterfowl)**	11 / 774	10 / 1,002	9 / 744	4 / 1,002
Ratites	0 / 144	0 / 139	0 / 144	0 / 139
Others	1 / 1,042	3 / 942	1 / 1,042	1 / 942
<b>EU Total</b>	<b>62 / 16,836</b>	<b>126 / 18,138</b>	<b>11 / 16,836</b>	<b>10 / 18,138</b>

\*BG & BD: One holding was H5 seropositive in both the BG and BD categories and is counted in each category.

\*\*FGB-G & FGB-W: One holding was H7 seropositive in both the FGB-G and FGB-W categories and is counted in each category.

2017 notes on virological data and subtypes other than H5 or H7 (not shown in table)

CB: The H5 seropositive holding was also PCR/M positive for H5. Four CB holdings tested seropositive for Influenza A virus.

LH & FR LH: For FR LH, one H7 seropositive holding was also PCR/M positive for H7. Additionally, four FR LH and nine LH holdings tested seropositive for influenza A virus, one of which was PCR positive for influenza A.

FT & TB: For FT, the H5 seropositive holding was also PCR positive for H5. Ten FT holdings tested seropositive for influenza A, two of which were PCR positive for H5, one for H9 and one for influenza A virus. Two TB holdings were seropositive for influenza A virus, one of which was PCR positive for H5.

FD & BD: For FD, nine H5 seropositive holdings were PCR positive for H5. Thirteen FD holdings were seropositive for influenza A virus, two of which were also PCR positive for H5. One BD holding tested seropositive for influenza A virus. One H5 seropositive BD holding also tested PCR/M positive for subtype H5. Additionally, four holdings were seropositive for influenza A virus, three of which were PCR positive for H5.

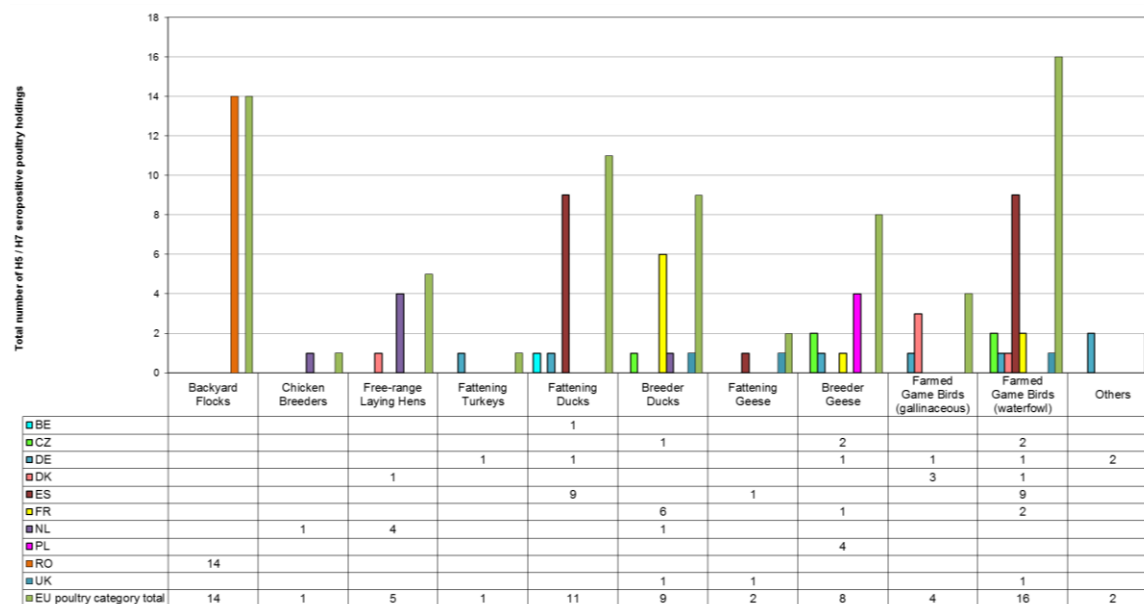
FG & BG: Two FG and one BG holdings were seropositive for influenza A virus.

BYF: Twelve of the H5 seropositive holdings were PCR/M positive for H5. One BYF holding tested seropositive for Influenza A virus.

FGB-G & FGB-W: Ten FGB-G and 25 FGB-W holdings were seropositive for influenza A virus.

O: Nine holdings tested seropositive for influenza A virus.

**Figure 6 Total number of poultry holdings found serologically positive for influenza A virus subtypes H5 and H7, by poultry category, across Member States, reported to the survey in 2017**



CZ: One holding was H5 seropositive in both the Breeder Geese and Breeder Duck categories and is counted in each category.

DK: One holding was H7 seropositive in both the Farmed Game Birds (gallinaceous) and Farmed Game Birds (waterfowl) categories and is counted in each category.

#### 4.1.3.2 Conventional Laying Hens and Free-range Laying Hens

- Overall, Laying Hen holdings (Conventional and Free-range combined) made up 30.9% of the total holdings sampled in the EU in 2017. Conventional holdings made up 18.7% of the total holdings sampled, which compares to 19.2% in 2016 and 16.5% in 2015. Free-range Laying Hen holdings made up 12.2% of the total holdings sampled, compared to 9.8% in 2016 and 12.4% in 2015.
- Conventional Laying Hen holdings were sampled in 26 MS (DK did not sample this category). In comparison, in 2016 and 2015, Conventional Laying Hens were sampled in 27 and 28 MS, respectively. The number of holdings sampled varied from two holdings (LT) to 904 (NL). A total of 19 MS sampled Free-range Laying Hens, plus Switzerland. This was also the case in 2016 and 2015 (19 MS, plus Switzerland). The number of holdings sampled varied from four holdings (LU) to 880 (NL).
- In 2017, no Conventional Laying Hen holdings were found to seropositive for influenza A subtype H5 or H7. However, nine holdings were seropositive for influenza A virus (one of which was also PCR positive). Four Free-range Laying Hen holdings tested seropositive for influenza A virus subtype H5, and one holding tested seropositive (also PCR/VI positive) for influenza A subtype H7. Additionally, six holdings tested seropositive for influenza A virus of undetermined subtype.

In 2016, two Conventional Laying Hen holdings were found to be serologically and virologically positive for influenza A virus subtype H5, and one was seropositive for the H7 subtype. In addition, four Conventional Laying Hen holdings were reported to be seropositive for influenza A virus of undetermined subtype. For Free-range Laying Hen holdings, three were seropositive for the H5 subtype (two were also PCR and virus isolation positive for H5) and four were seropositive for the H7 subtype (two were also PCR and virus isolation positive for H7). In addition, four Free-range Laying Hen holdings were reported to be seropositive for influenza A virus of undetermined subtype.

In 2015, no Conventional Laying Hen holdings were found to be seropositive for influenza A virus subtypes H5 or H7, although one holding was found to be seropositive for subtype H1. For Free-range Laying Hen holdings one holding was seropositive for the H5 subtype (which was also PCR and virus isolation positive for H5) and three were seropositive for the H7 subtype (two were also PCR and virus isolation positive for H7). In addition, one Free-range Laying Hen holding was seropositive for the H9 subtype and one was seropositive for influenza A of undetermined subtype.

- Two MS detected H5 or H7 seropositive holdings from Laying Hens in 2017; Denmark in Free-range Laying hens and the Netherlands in Conventional and Free-range Laying Hens (including one holding that was serologically and virologically positive for H7 in the FR LH category). In addition, Germany, Greece and Spain reported Laying Hen holdings seropositive for influenza A of undetermined subtype.

Three MS detected H5 or H7 seropositive holdings from Laying Hens in 2016; Germany in Conventional Laying Hens, Denmark in Free-range Laying Hens, and the Netherlands in Conventional and Free-range Laying Hens (including one holding that was serologically and virologically positive for H5 in both categories). In addition Germany and Spain reported Laying Hen holdings seropositive for influenza A virus of undetermined subtype.

In 2015, two MS detected influenza A virus H5 or H7 seropositive Free-range Laying Hen holdings (DK and NL). In addition, a Conventional Laying Hen holding seropositive for influenza A virus subtype H1 was reported from Spain, while Free-range Laying Hen holdings seropositive for influenza A virus of the H9 subtype and of undetermined subtype.

#### 4.1.3.3 Broilers (at heightened risk)

- This category includes broilers when (i) they are kept in significant numbers in free-range production and (ii) they are considered to pose a higher risk of infection with avian influenza. In 2017, Broiler (at heightened risk) holdings made up 6.8% of total holdings sampled in the EU. This compares to 6.4% in 2016 and 5.7% in 2015.
- Broilers (at heightened risk) were sampled in 14 MS in 2017. This compares to 14 and 13 MS in 2016 and 2015, respectively. The number of holdings sampled varied from one holding (in ES) to 880 (NL).
- In 2017, no Broiler (at heightened risk) holdings were found to be seropositive for influenza A virus subtypes H5 or H7.

Similarly, in 2016, no Broiler (at heightened risk) holdings were found to be seropositive for influenza A virus subtypes H5 or H7. In 2015, one holding from Germany was found to be seropositive for influenza A virus of undetermined subtype.

#### 4.1.3.4 Fattening Turkeys and Turkey Breeders

- Overall, Turkey holdings (Fattening and Breeder combined) made up 10.6% of the total holdings sampled in the EU in 2017. Fattening Turkey holdings made up 9.4% of the total holdings sampled in the EU in 2016, which compares to 11.6% in 2016 and 10.5% in 2015. Turkey Breeder holdings made up 1.2% of total holdings sampled in the EU in 2017, which compares to 1.6% in 2016 and 0.9% in 2015.
- Fattening Turkey holdings were sampled in 25 MS, plus Switzerland. This compares to 23 and 22 MS, plus Switzerland, in 2015 and 2016, respectively. The number of holdings sampled varied from one holding (BG, HR and LT) to 572 (IT). A total of 14 MS sampled Turkey Breeder holdings, compared to 13 MS in both 2016 and 2015. The number of holdings sampled varied from one holding (BG and IE) to 57 (FR).
- In 2017, one Fattening Turkey holding (from DE) tested serologically and PCR positive for influenza A virus subtype H5. In addition, 7 Fattening Turkey holdings (from DE) were

reported to be seropositive for influenza A virus (one also PCR positive for subtype H9, and another PCR positive for influenza A virus) and 3 holdings (from ES) tested serologically positive for influenza A virus of undetermined subtype. No Turkey Breeder holdings were reported to be seropositive for influenza A virus subtype H5 or H7. However, two holdings (from DE) tested seropositive for influenza A virus, one of which was also PCR positive for influenza A virus subtype H5.

In 2016, one Fattening Turkey holding (from DE) was found to be serologically and PCR positive for influenza A virus subtype H5. In addition, three Fattening Turkey holdings (from DE) were reported to be seropositive for influenza A virus subtype H9, and a further six (three from DE and three from ES) were seropositive for influenza A virus of undetermined subtype. Also one Turkey Breeder holding (from DE) was reported to be seropositive for influenza A virus of undetermined subtype.

In 2015, no Turkey (Fattening or Breeder) holdings were reported to the survey as seropositive for influenza A virus subtypes H5 or H7. However, six Fattening Turkey holdings from Germany were found to be seropositive for influenza A virus subtype H9 and a further six were seropositive for influenza A virus of undetermined subtype. Also two Turkey Breeder holdings from Germany were found to be seropositive for influenza A virus, one of the H9 subtype and one of undetermined subtype.

#### 4.1.3.5 Fattening Ducks and Breeder Ducks

- Overall, Duck holdings (Fattening and Breeder combined) made up 9.4% of the total holdings sampled in the EU in 2017. Fattening Duck holdings made up 7.2% of those sampled, which compares to 5.4% in 2016 and 3.9% in 2015. Breeder Ducks made up 2.2% of the total holdings sampled, compared to 3.5% and 1.4% in 2016 and 2015, respectively.
- Fattening Duck holdings were sampled from 22 MS, compared to 20 MS in the two preceding years. The number of holdings sampled varied from one holding (LT, LV and SK) to 260 (FR). A total of 13 MS sampled Breeder Duck holdings, compared to 13 and 14 MS in 2016 and 2015 respectively. The number of holdings sampled varied from one holding (BG and SK) to 185 (FR).
- A total of 20 Duck holdings were found to be seropositive for influenza A virus subtype H5 in 2017. This accounted for 27.4% (20/73) of all the H5/H7 seropositive holdings, reported by poultry category, to the survey in 2017, and 28.2% (20/71) of the H5 seropositive holdings. Eleven of these were Fattening Duck holdings (nine of which were also PCR positive for H5), and nine were Breeder Duck holdings (one of which was PCR/VI positive for H5). In addition, 13 Fattening Duck holdings were reported to be seropositive for influenza A virus of undetermined subtype (2 of which were PCR positive for H5). Four Breeder Duck holdings were reported to be seropositive for influenza A virus of undetermined subtype (3 of which were also PCR positive for H5).

In 2016, 83 Duck holdings were found to be seropositive for influenza A virus subtype H5. Of these, nine were Fattening Duck holdings (two were also PCR positive for H5 and one was also PCR positive for influenza A virus of undetermined subtype) and 74 were Breeder Duck holdings. The detection rate in Breeder Ducks (74 H5/H7 seropositive holdings/632 sampled, 11.7%) was the highest of the poultry categories surveyed in 2016. In addition, a further 14 Fattening Duck holdings were reported to be seropositive for influenza A virus of undetermined subtype (one was also PCR and virus isolation positive for H6 and one was PCR positive for influenza A virus of undetermined subtype).

In 2015, 13 Duck holdings were found to be seropositive for influenza A virus subtype H5, including seven Fattening Duck holdings (three were also PCR positive for H5) and six Breeder Duck holdings; this accounted for 39.4% (13/33) of the H5 seropositive holdings reported to the survey in 2015. In addition, a further seven Fattening Duck holdings were found to be seropositive for influenza A virus subtype H1 (two were also PCR positive for influenza A of undetermined subtype), and another four were seropositive for influenza A virus of undetermined subtype.

- Seven MS detected influenza A subtype H5 seropositive holdings in 2017; Belgium, Germany and Spain in Fattening Ducks, and Czech Republic, France, the Netherlands and the UK in Breeder Ducks. Fattening Duck holdings seropositive for influenza A virus of undetermined subtype were reported from Germany (two of which were PCR positive for H5) and Spain. Four Breeder Duck holdings, from Germany, tested serologically positive for influenza A virus of undetermined subtype (three were also PCR positive for H5).

Five MS detected influenza A subtype H5 seropositive holdings in 2016; Belgium and Germany in Fattening Ducks, the Czech Republic and the United Kingdom in Breeder Ducks, and France in both Fattening and Breeder Ducks. In addition, Fattening Duck holdings, seropositive for influenza A virus of undetermined subtype were reported from Spain and Germany (one of the holdings from DE was also PCR and virus isolation positive for the H6 subtype).

In 2015, three MS detected influenza A virus subtype H5 seropositive holdings; Belgium and Germany in Fattening Ducks, and France in both Fattening Ducks and Breeder Ducks.

#### 4.1.3.6 Fattening Geese and Breeder Geese

- Overall, Geese holdings (Fattening and Breeder combined) made up 4.0% of the total holdings sampled in the EU in 2017. Fattening Geese holdings made up 2.8% of those sampled, compared to 2.5% in 2016 and 1.8% in 2015. Breeder Geese made up 2.2% of the total holdings sampled, compared to 1.5% in 2016 and 1.0% 2015.
- Fattening Geese were sampled in 16 MS, which compares to 17 MS in 2016 and 14 MS in 2015. The number of holdings sampled varied from one holding (HR and LV) to 115 (DE). Nine MS sampled Breeder Geese holdings, compared to 11 in 2016 and ten in 2015. The number of holdings sampled varied from one holding (ES) to 80 (PL).
- In 2017, ten Geese holdings tested seropositive for influenza A virus subtype H5. Two were from Fattening Geese holdings and eight from Breeder Geese holdings. The detection rate in Breeder Geese was the second highest of the poultry categories surveyed in 2017 (8 H5 seropositive holdings/193 sampled, 4.15%). In addition, a single Breeder Geese holding was reported as seropositive for influenza A virus of an undetermined subtype.

Overall, 24 Geese holdings were found to be seropositive for influenza A virus subtype H5 in 2016. This accounted for 17.6% (24/136) of all the H5/H7 seropositive holdings, reported by poultry category, to the survey in 2016, and 19.0% (24/126) of the H5 seropositive holdings. Of the 24 H5 seropositive Geese holdings, six were Fattening Geese and 18 were Breeder Geese holdings. The detection rate in Breeder Geese (18 H5/H7 seropositive holdings/265 sampled, 6.8%) was the third highest of the poultry categories surveyed in 2016, after Breeder Ducks (74 H5/H7 seropositive holdings/632 sampled, 11.7%) and Farmed Game Birds (waterfowl) (14 H5/H7 seropositive holdings/187 sampled 7.5%). In addition, a further two Fattening Geese and one Breeder Geese holdings were reported to be seropositive for influenza A virus of undetermined subtype.

In 2015, 16 Geese holdings were found to be seropositive for influenza A virus subtypes H5 or H7, accounting for 40% (16/40) of all the H5/H7 seropositive holdings reported to the survey in 2015. This included one H5 seropositive Fattening Geese holding, and 13 H5 seropositive (one was also PCR positive for H5) and two H7 seropositive Breeder Geese holdings. The H5/H7 detection rate in Breeder Geese (15 H5/H7 seropositive holdings/210 sampled, 7.1%) was the highest of the poultry categories surveyed in 2015. In addition in 2015, a further six Fattening Geese holdings were found to be seropositive for influenza A virus of undetermined subtype.

- Six MS detected influenza A virus subtype H5 seropositive Geese holdings in 2017; Czech Republic, Germany, France, Poland in Breeder Geese, and Spain and the UK in



Fattening Geese. One of the H5 seropositive Breeder Geese holdings from the Czech Republic was also H5 seropositive in the Duck Breeder category. Two Breeder Geese holdings from Germany were seropositive for influenza A virus of undetermined subtype (one of which was also PCR positive for influenza A virus).

Six MS detected influenza A virus subtype H5 seropositive Geese holdings in 2016; Spain and the United Kingdom in Fattening Geese, the Czech Republic, France and Poland in Breeder Geese, and Germany in both Fattening and Breeder Geese. One of the H5 seropositive Breeder Geese holdings from the Czech Republic was also H5 seropositive in the Farmed Game Birds (waterfowl) category. In addition, Germany reported Geese holdings seropositive for influenza A virus of undetermined subtype.

In 2015, four MS detected influenza A virus subtype H5 or H7 seropositive Geese holdings; Finland in Fattening Geese, and France, Hungary and Poland in Breeder Geese. In addition, Fattening Geese holdings seropositive for influenza A virus of undetermined subtype were reported from Germany.

In 2014, Geese holdings found to be seropositive for influenza A virus subtypes H5 or H7 were reported from three MS (FI, FR and PL).

#### 4.1.3.7 Backyard Flocks

- Backyard Flocks is the largest poultry category reported to the EU with 629,960 holdings reported in regions where sampling took place (629,960/739,212, 85.2% of EU total). Backyard Flocks made up 14.7% of total holding sampled in the EU in 2017, compared to 13.8% in 2016 and 10.3% in 2015.
- Backyard Flocks were sampled in 12 MS, compared to 11 MS in 2016 and 13 MS in 2015. The number of holdings sampled varied from 5 (LT) to 1,205 (RO). Two MS sampled the majority of Backyard Flock holdings: Romania (1,205 holdings, 48.6%) and Hungary (495 holdings, 20.0%).
- In 2017, 14 Backyard Flock holdings, from Romania, were found to be seropositive for influenza A virus subtype H5. Twelve of these holdings also tested PCR/VI positive for H5. Additionally, one Backyard Flock holding tested seropositive for influenza A virus.

In 2016, no Backyard Flock holdings were found to be seropositive for influenza A virus subtypes H5 or H7. However, one Backyard Flock holding, from Croatia, tested serologically positive for influenza A virus of undetermined subtype, and virologically positive for influenza A subtype H5 by PCR and influenza A virus of undetermined subtype by virus isolation. In addition, one Backyard Flock holding, from Spain, tested serologically positive for influenza A virus of undetermined subtype.

In 2015, one Backyard Flock holding, from Croatia, tested seropositive for influenza A virus subtype H5, and one Backyard Flock holding, from Italy, tested serologically and virologically (PCR and virus isolation) positive for influenza A virus subtype H7.

#### 4.1.3.8 Farmed Game Birds (gallinaceous and waterfowl)

- Overall, Farmed Game Birds (gallinaceous and waterfowl combined) made up 4.6% of the total holdings sampled in the EU in 2017. Farmed Game Birds (gallinaceous) made up 3.7% of those sampled, compared to 4.5% in 2016 and 3.3% in 2015. Farmed Game Birds (waterfowl) made up 0.9% of the total holdings sampled, comparable to 1.0% in 2016 and 2015.
- Farmed Game Bird (gallinaceous) holdings were sampled in 22 MS, which compares to 20 MS in 2016 and 21 MS in 2015. The number of holdings sampled varied from one holding (EE) to 178 (ES). A total of 11 MS sampled Farmed Game Bird (waterfowl)

holdings, compared to 11 and 12 MS in 2016 and 2015, respectively. The number of holdings sampled varied from one holding (PT and SI) to 95 (ES).

- In 2017, two Farmed Game Bird (gallinaceous) holdings were found to be seropositive for influenza A virus subtypes H5 and two were found to be seropositive for H7. Additionally, ten Farmed Game Bird (gallinaceous) holdings, from Spain, were reported to be serologically positive for influenza A virus of undetermined subtype. For Farmed Game birds (waterfowl), nine holdings (from CZ, DK, ES, FR and the UK) were seropositive for the H5 subtype, and seven (from DK and ES) were seropositive for the H7 subtype. The detection rate in Farmed Game Bird (gallinaceous) (16 H5 seropositive holdings/151 sampled, 10.6%) was the highest of the poultry categories surveyed in 2017. One holding was H7 seropositive in both Farmed Game Bird (gallinaceous and waterfowl) categories. In addition, 25 Farmed Game Bird (waterfowl) holdings, from Spain, were reported to be serologically positive for influenza A virus of undetermined subtype.

In 2016, no Farmed Game Bird (gallinaceous) holdings were found to be seropositive for influenza A virus subtypes H5 or H7. However, nine Farmed Game Bird (gallinaceous) holdings, from Spain, were reported to be serologically positive for influenza A virus of undetermined subtype. For Farmed Game Birds (waterfowl), ten holdings (from CZ, DK and ES) were seropositive for the H5 subtype and four (from DK and ES) were seropositive for the H7 subtype. The H5 seropositive Farmed Game Bird (waterfowl) holding from the Czech Republic was also H5 seropositive in the Breeder Geese category. The detection rate in Farmed Game Birds (waterfowl) (14 H5/H7 seropositive holdings/187 sampled 7.5%) was the second highest of the poultry categories surveyed in 2016, after Breeder Ducks (74 H5/H7 seropositive holdings/632 sampled, 11.7%). In addition, 49 Farmed Game Birds (waterfowl) holdings, from Spain, were reported to be serologically positive for influenza A virus of undetermined subtype.

In 2015, one Farmed Game Bird (waterfowl) holding, from Denmark, was found to be seropositive for influenza A virus subtype H7. In addition, a further three Farmed Game Bird holdings from Spain were found to be seropositive for influenza A virus, including two of the H1 subtype (one in FGB-G and one in FGB-W) and one of the H6 subtype (in FGB-W).

#### 4.1.3.9 Ratites

- Ratite holdings made up just 0.9% of total holdings sampled in the EU in 2016, which compares to 0.8% in 2016 and 0.6% in 2015.
- Ratite holdings were sampled in 12 MS 13 MS, which compares to 13 MS in 2016 and 12 MS in 2015. The number of holdings sampled varied from two holdings (LU and SE) to 32 (PL).
- In 2017, no Ratite holdings were found to be seropositive for influenza A virus subtypes H5 or H7.

Similarly, in 2016 and 2015, no positive Ratite holdings were reported to the survey.

#### 4.1.3.10 Others

- Other holdings made up 6.2% of total holdings sampled in the EU in 2017, which compares to 5.2% in 2016 and 5.5% in 2015.
- Where details were provided, the types of poultry reported in this category included: mixed species reared and sold for use as backyard poultry, guinea fowl, quail, growers, pigeons, zoo, and other non-domestic species. For more information on this, please see [Table 21](#).

- Other holdings were sampled in seven MS in 2017 (BE, BG, DE, EL, ES, IT and RO), which compares to 11 MS in 2016 and eight MS in 2015. The number of holdings sampled varied from one holding (RO) to 848 (IT). As in 2016 and 2015, Italy sampled the majority of Other holdings (848/1,042, 81.4%).
- In 2017, two Other holdings, from Germany, were seropositive for influenza A virus subtypes H5 and H7 (one holding each). Additionally, nine holdings (eight from Spain and one from Germany) were reported as seropositive for influenza A virus of undetermined subtype.

In 2016, four Other holdings, from three MS (DE, ES and IT), were found to be seropositive for influenza A virus subtypes H5 and H7, including three for the H5 subtype (one was also PCR positive for H5), and one for the H7 subtype (which was also PCR and virus isolation positive for H7). In addition, one Other (grower) holding, which did not undergo serological testing, tested PCR and virus isolation positive for subtype H5. Furthermore, six Other holdings were reported to be seropositive for influenza A virus of undetermined subtype (one of which was also PCR positive for influenza A virus of undetermined subtype).

In 2015, four Other holdings from two MS (DE and IT) were found to be seropositive for influenza A virus subtype H5. Three of these were also virologically positive for H5 (two were PCR and virus isolation positive for H5 and one was PCR positive for H5/virus isolation not performed). In addition, one holding from Spain was found to be seropositive for influenza A virus subtypes H6 and H10, and another holding from Germany was seropositive for influenza A virus of undetermined subtype.

**Table 8 Total number of poultry holdings sampled and those found H5 or H7 seropositive, by poultry category, across Member States, reported to the survey in 2017**

The number of seropositive poultry holdings is displayed in parentheses.

Member States	Chicken Breeders	Conventional Laying Hens	Free-range Laying Hens	Broilers (at heightened risk)	Fattening Turkeys	Turkey Breeders	Fattening Ducks	Breeder Ducks	Fattening Geese	Breeder Geese	Backyard Flocks	Farmed Game Birds (gallinaceous)	Farmed Game Birds (waterfowl)	Rattles	Others	Total
AT	37	63	62		60		25		65					10		2,238
BE	201	175	189		52		20 (1)					22			6	538
BG	11	67		4	1	1	275	1			119	6			2	120,367
CY	9	23	13	4	6						51	3				1,309
CZ*		53	16		43		49	24 (1)	10	9 (2)		37	10 (2)			346
DE	22	100	109	19	115 (1)	18	154 (1)	23	115	11 (1)		4		27	30 (1)	29,923
DK**	269		224 (1)	35	23		19		6			27 (2)	9 (1)			674
EE		40										1				41
EL	47	64	40	29	20	3						14		3	50	883
ES	118	77	71	1	60	9	50 (9)		13 (1)	1	27	178	95 (3)	27	105	16,680
FI	35	48	36	2	36	3	3		2			10	3	3		601
FR	68	39	66		52	57	260	185 (6)	55	27 (1)		92				13,449
HR	47	39		10	1	2	6	6	1	6	147	7				65,239
HU	46	59	20		51	25	58	26	53	43	495	32	4	9		228,644
IE	63	36	130	58	111	1	20		3			6				520
IT	243	726	63		572	47	67	12	10	9	190	10		14	848	2,722
LT		2		2	1		1				5					12
LU		4	4	3							21			2		512
LV	1	33			3		1		1		60					3,822
NL	562 (1)	904	880 (1)	880 (3)	880		81	48	20 (1)							1,530
PL	56	72	42		60	22	85	31	93	80 (4)		39	2	32		3,227
PT	76	95	36	65	63		21	3			72	43	1	8		237,656
RO	64	212			31		3	2			1,205 (14)	14			1	1,482
SE	31	68	43	23	16	3	1		5			13	2	2		486
SI	7	60			43						86	5	1			4,351
SK	12	50			10	7	5	1	4			19		7		133
UK	12	41	10		51	10	43	32 (1)	39 (1)	7		41	11 (1)			1,827
<b>EU Total</b>	<b>2,037</b>	<b>3,150</b>	<b>2,054</b>	<b>1,139</b>	<b>1,562</b>	<b>208</b>	<b>1,214</b>	<b>366</b>	<b>475</b>	<b>193</b>	<b>2,478</b>	<b>623</b>	<b>151</b>	<b>144</b>	<b>1,042</b>	<b>739,212</b>
Total H5/H7 seropositive holdings	1	0	5	0	1	0	11	9	2	8	14	4	16	0	2	73
% positive	0.05%	0.00%	0.24%	0%	0.06%	0%	0.91%	2.46%	0.42%	4.15%	1%	0.50%	10.60%	0%	0.19%	0.01%
CH			68		25											93

\*CZ: One holding was H5 seropositive in both the BG and BD categories and is counted in each category.

\*\*DK: One holding was H7 seropositive in both the FGB-G and FGB-W categories and is counted in each category.

     Seropositive H5           Seropositive H7

Notes on virological data and subtypes other than H5 or H7 (not shown in table)

DE: One of the H5 seropositive holdings was also PCR/M positive for subtype H5. Nineteen holdings were seropositive for influenza A virus (nine were also PCR positive for subtype H5; one PCR positive for subtype H9 and two PCR positive for Influenza A virus).

ES: Nine of the H5 seropositive holdings were also PCR positive for subtype H5. Sixty-nine holdings were seropositive for influenza A virus

NL: Two of the H5 seropositive holdings were also PCR/M positive for subtype H5, while one of the H7 seropositive holdings was PCR/M positive for subtype H7.

RO: Fourteen of the H5 seropositive holdings were also PCR/M positive for subtype H5.

#### 4.1.3.11 Summary – poultry categories

- Poultry categories sampled: The most frequently sampled poultry category was Laying Hens (Conventional and Free-range), making up 30.9% of the total holdings sampled by EU MS in 2017, followed by Backyard Flocks (14.7% of EU holdings sampled), and Chicken Breeders (12.1% of EU holdings sampled). In 2016, the most sampled poultry categories were also Laying Hens, followed by Backyard Flocks and Chicken Breeders, while in 2015, the most sampled poultry categories were Laying Hens (Conventional and Free-range), followed by Chicken Breeders, and then Turkeys (Fattening and Breeder).

In 2017, compared to 2016, there was an increase in the number of holdings sampled from four categories: Free-range Laying Hens (+16.2%), Fattening Ducks (+24.4%), Ratites (+3.6%) and Others (+10.6%); while all the other poultry categories saw a decrease in the number of holdings sampled.

- H5 avian influenza: In 2017, the poultry category with the highest number of holdings positive for the H5 subtype by serology was Backyard Flocks (14/62, 22.6) followed by and Fattening Ducks (11/62, 17.7%).

The highest number of holdings positive for the H5 subtype by serology in 2016 Breeder Ducks (74/126, 58.7%), followed by Breeder Geese (18/126, 14.3%), and Farmed Game Birds (waterfowl) (10/126, 7.9%).

- H7 avian influenza: In 2017, the poultry categories with the highest number of holdings positive for the H7 subtype by serology were Farmed Game Birds (waterfowl) (7/11, 63.6%), followed by Free-range Laying Hens, Farmed Game Birds (gallinaceous) and Others (all 1/11, 9.1%).

The highest number of holdings positive for the H7 subtype by serology in 2016 were Free-range Laying Hens (4/10, 40.0%) and Farmed Game Birds (waterfowl) (4/10, 40.0%), followed by Conventional Laying Hens (1/10, 10.0%) and Others (1/10, 10.0%).

## 4.2 Wild Birds

### 4.2.1 Sampling by passive surveillance

#### 4.2.1.1 Overview

Birds sampled by passive surveillance were reported as “found dead”, “injured” or “live with clinical signs”. During 2017, 19,543 birds were sampled by passive surveillance, which represents a 54.3% increase from 2016 and 200.0% increase over the average for the five year period 2011-2015. This includes 19,381 birds sampled by EU MS and 162 birds sampled by Switzerland, the one contributing non-MS, [Table 9](#).

In total, 27 EU MS submitted passive surveillance data in 2017, with Malta being the only country with no submissions. The MS with the highest number of birds tested was Germany (n = 8,533), which contributed 44.0% of the whole EU passive surveillance effort. Italy (n = 2,019) and the United Kingdom (n = 1,194) also sampled over 1,000 birds each and contributed a large proportion of the 2017 passive surveillance effort (16.6% combined). Just six MS each sampled fewer than 100 dead or moribund birds in 2017, down from 11 MS submitting fewer than 100 birds in 2016.

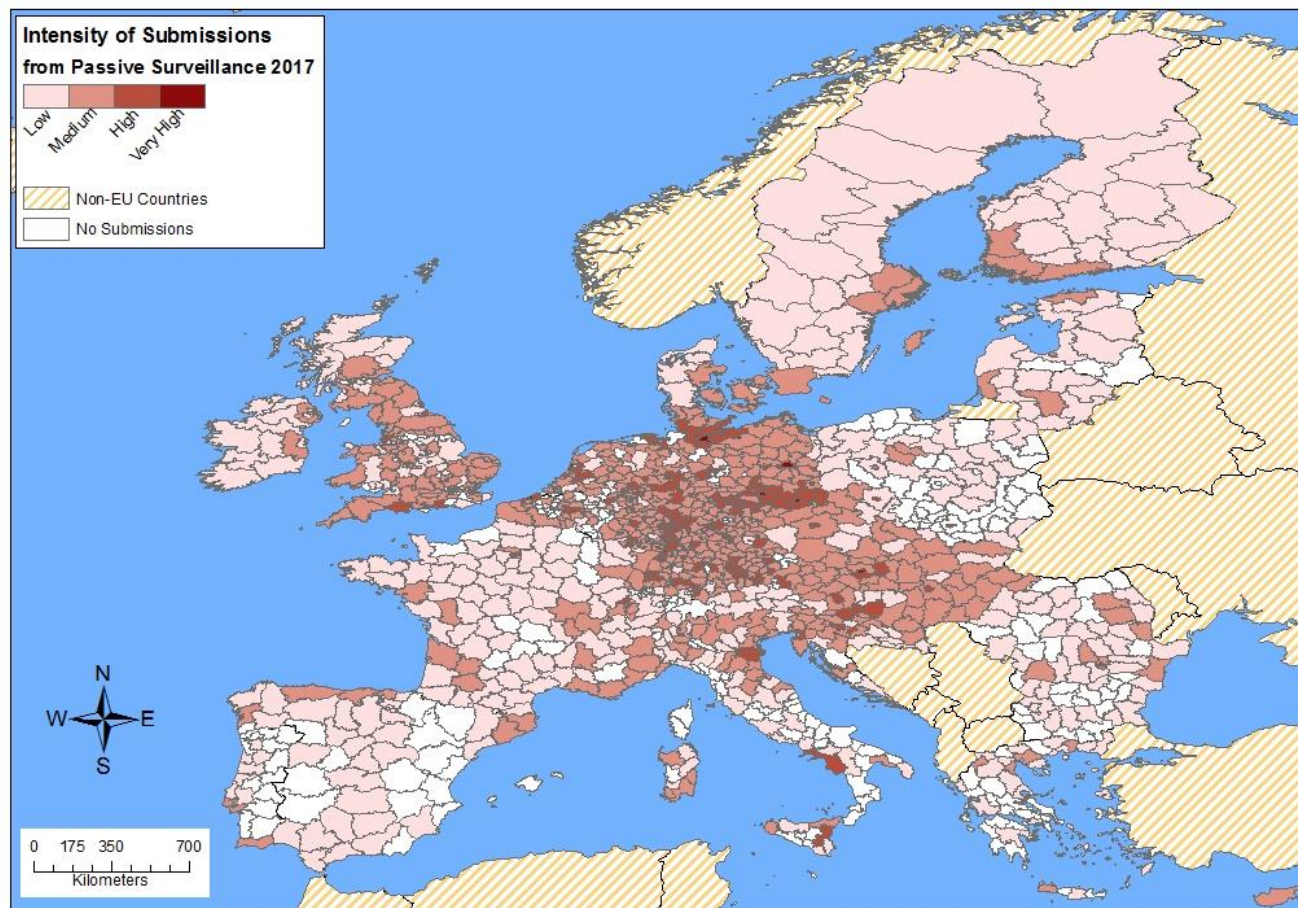
**Table 9 Birds sampled by passive surveillance in 2017, 2016 and previous five year (2011-2015) average by EU Member States – Non-MS data included**

Member State	Number of wild birds sampled by passive surveillance		
	2017	2016	5 year average (2011-2015)
DE	8,533	5,861	1,334
IT	2,019	1,899	1,146
UK	1,194	537	526
AT	897	201	110
FR	766	190	89
HU	703	960	1,152
SI	556	151	116
RO	528	275	213
SK	513	32	21
NL	509	536	209
SE	452	354	234
ES	370	264	487
BE	367	280	228
CZ	330	89	74
FI	316	208	99
HR	279	116	41
PL	209	85	30
DK	154	204	22
IE	137	25	30
LT	131	22	13
CY	117	124	107
EL	90	16	52
LU	61	2	12
PT	54	116	86
BG	47	9	18
EE	38	5	9
LV	11	3	2
<b>EU Total</b>	<b>19,381</b>	<b>12,564</b>	<b>6,460</b>
CH	162	264	12

#### 4.2.1.2 Geographical targeting

**Figure 7 Map of the intensity of sampling by passive surveillance across Member States in 2017 – Non-MS data included**

The classification of sampling intensity is grouped by number of submissions per 100 km<sup>2</sup>.  
Low: >0 and ≤25, Medium: >25 and ≤250, High: >250 and ≤2500, Very High: >2500

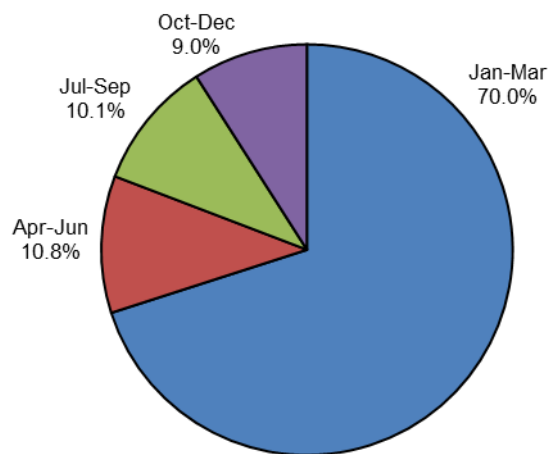


### 4.2.1.3 Seasonal targeting

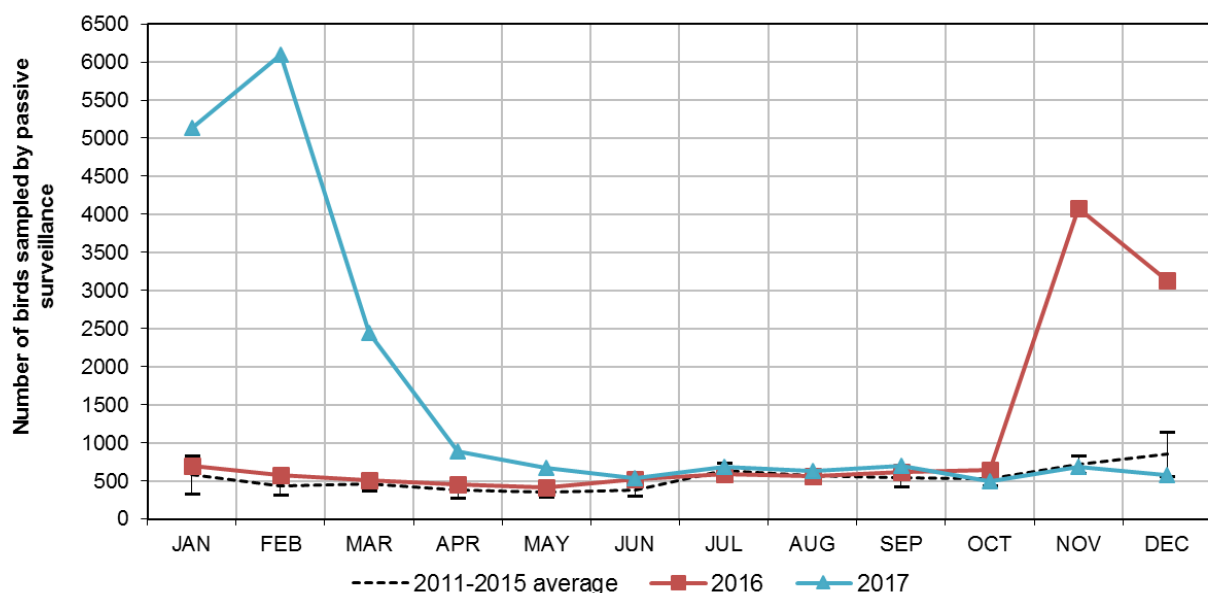
In 2017 the majority of wild bird passive surveillance was carried out by EU MS in the first quarter (Jan-Mar) (70.0%) (Figure 8). This is in contrast with 2016, when the majority of passively collected wild bird submissions were reported in the last quarter of the year (Oct-Dec) (Figure 9). In both 2016 and 2017 the frequency of passive surveillance activity was directly associated with the presence of HPAI incursions within the European continent, demonstrating the flexibility of the current system.

Figure 10 displays the percentage of birds sampled by MS in each quarter. Seasonal targeting was similar between MS. Twenty four of the 27 MS carried out the majority of their sampling in the first quarter; while Estonia and Finland carried out most of their sampling in the second quarter (57.9% and 39.2%, respectively). Furthermore, Cyprus carried out the majority of their passive surveillance in the fourth quarter (46.2%). Although most MS carried out the bulk of their passive surveillance in the winter, four MS did test more birds during the summer months (Estonia 65.8%, Finland 65.8%, Belgium 51.5%, and the Netherlands 52.8%) (Figure 10).

**Figure 8 Percentage of birds sampled by passive surveillance in each quarter of 2017 for Member States – EU-data only**

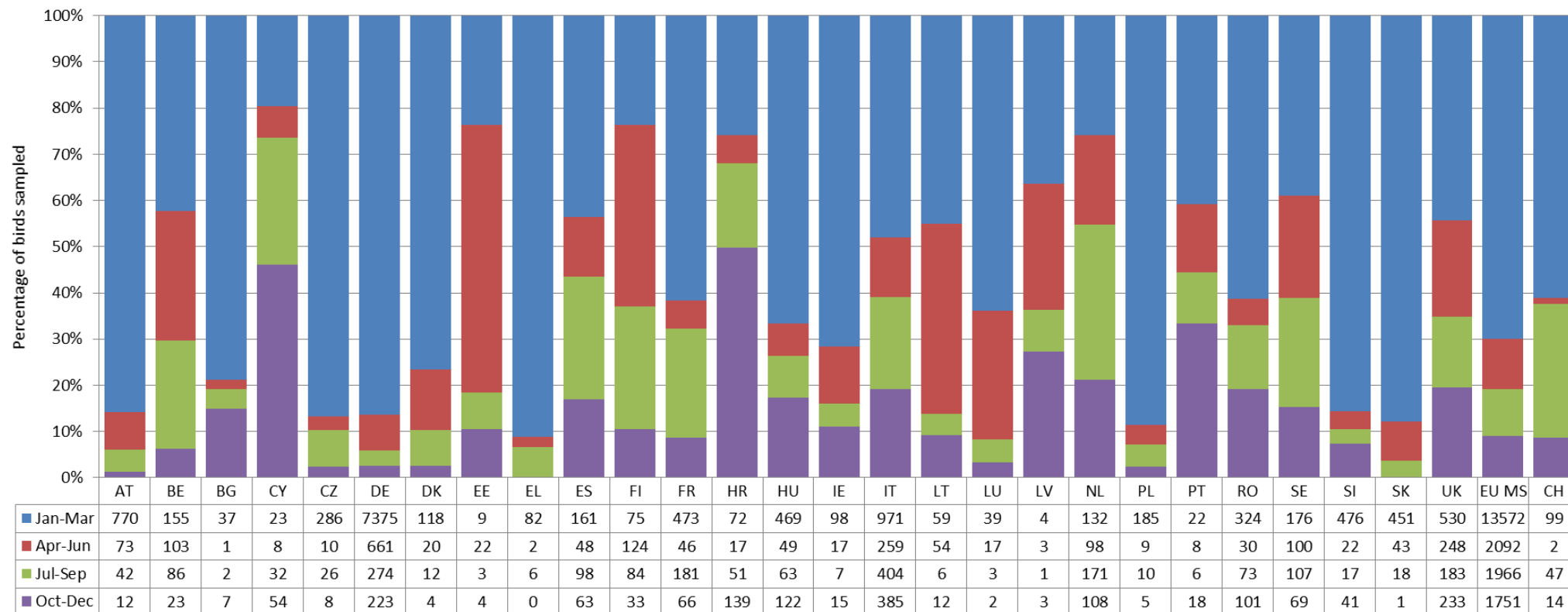


**Figure 9 Temporal distribution of the number of birds sampled by passive surveillance during 2017, 2016 and the past 5 year average (2011-2015) – Non-MS data included**





**Figure 10 Percentage of all birds sampled by passive surveillance in 2017, by quarter and MS. Raw numbers of birds sampled by quarter and MS are shown in the table below – Non-MS data included**



#### 4.2.1.4 Targeting of bird species

In total, 19,543 birds of 21 Orders and at least 275 species were sampled by passive surveillance in 2017. [Table 10](#) displays the ten most frequently sampled Orders. As in 2006-2016, Anseriformes (ducks, geese and swans) were most commonly sampled by passive surveillance, with 34.1% of reported birds belonging to this Order. In 2017 Falconiformes (falcons) replaced Passeriformes (perching birds) as the second most commonly sampled Order; the proportion of Falconiformes increased from 14.4% in 2016 to 18.3% in 2017, while the proportion of Passeriformes decreased from 17.0% in 2016 to fourth place at 11.7% in 2017. Pelecaniformes (herons, ibises and pelicans) was the third most commonly sampled Order, accounting for 14.6% of passively sampled wild birds.

[Table 11](#) displays the top 15 species sampled by passive surveillance in 2017.

The species was reported as 'unknown' for 55 (0.3%) of the 19,543 birds sampled, this is similar to the 2016 survey (n=52, 0.4%).

A total of 1,793 (14.2%) of birds were not identified to species level (identified only to genus or family level). This involved birds in the genera of *Buteo* (n=800), *Cygnus* (n=772), *Anas* and *Mareca* (n=425), *Sturnus* (n=416), *Columba* (n=313), *Larus* (n=309), *Ardea* (n=262), *Corvus* (n=175), *Anser* (n=151), *Falco* (n=100), *Accipiter* (n=50), *Turdus* (n=44), *Phalacrocorax* (n=25), *Ciconia* (n=21), *Egretta* (n=15), *Passer* (n=14), *Milvus* (n=10) and others (with less than 10 birds).

In 2017, the most commonly sampled species were Mute Swans (*Cygnus olor*) (n=2,064), followed by Mallards (*Anas platyrhynchos*) (n=1,734) and Grey Heron (*Ardea cinerea*) (n=1,673). 2017 is the first year Grey Heron have been one of the three most commonly sampled species, and the proportion of birds sampled in this species increased from 2.0% in 2016 to 8.6% in 2017. Mallards (*Anas platyrhynchos*) and Mute Swans (*Cygnus olor*) have both been sampled in high numbers since the surveillance began in 2006. Of the 11 most frequently sampled species in 2017 (excluding genus aggregates), 10 were Target Species (TS). [Table 11](#) also indicates that the top 15 species or genera aggregates account for over half of all birds tested by passive surveillance in 2017 (n=11,702/19,543, 59.9%).

**Table 10 Wild bird Orders most frequently sampled by passive surveillance in 2017 compared to 2016 – Non-MS data included**

Order	Number sampled in 2017	% of 2017 passive surveillance (total n=19,543)	Number sampled in 2016	% of 2016 passive surveillance (total n=12,828)
Anseriformes	6,672	34.1%	4,118	32.1%
Falconiformes	3,571	18.3%	1,826	14.2%
Pelecaniformes	2,844	14.6%	539	4.2%
Passeriformes	2,293	11.7%	2,146	16.70%
Charadriiformes	1,380	7.1%	1,454	11.3%
Columbiformes	876	4.5%	1,060	8.3%
Strigiformes	654	3.3%	474	3.7%
Gruiformes	465	2.4%	311	2.4%
Galliformes	273	1.4%	519	4.0%
Ciconiiformes	138	0.7%	77	0.6%
<b>Total (Top 10 Orders only)</b>	<b>19,166</b>	<b>98.1%</b>		

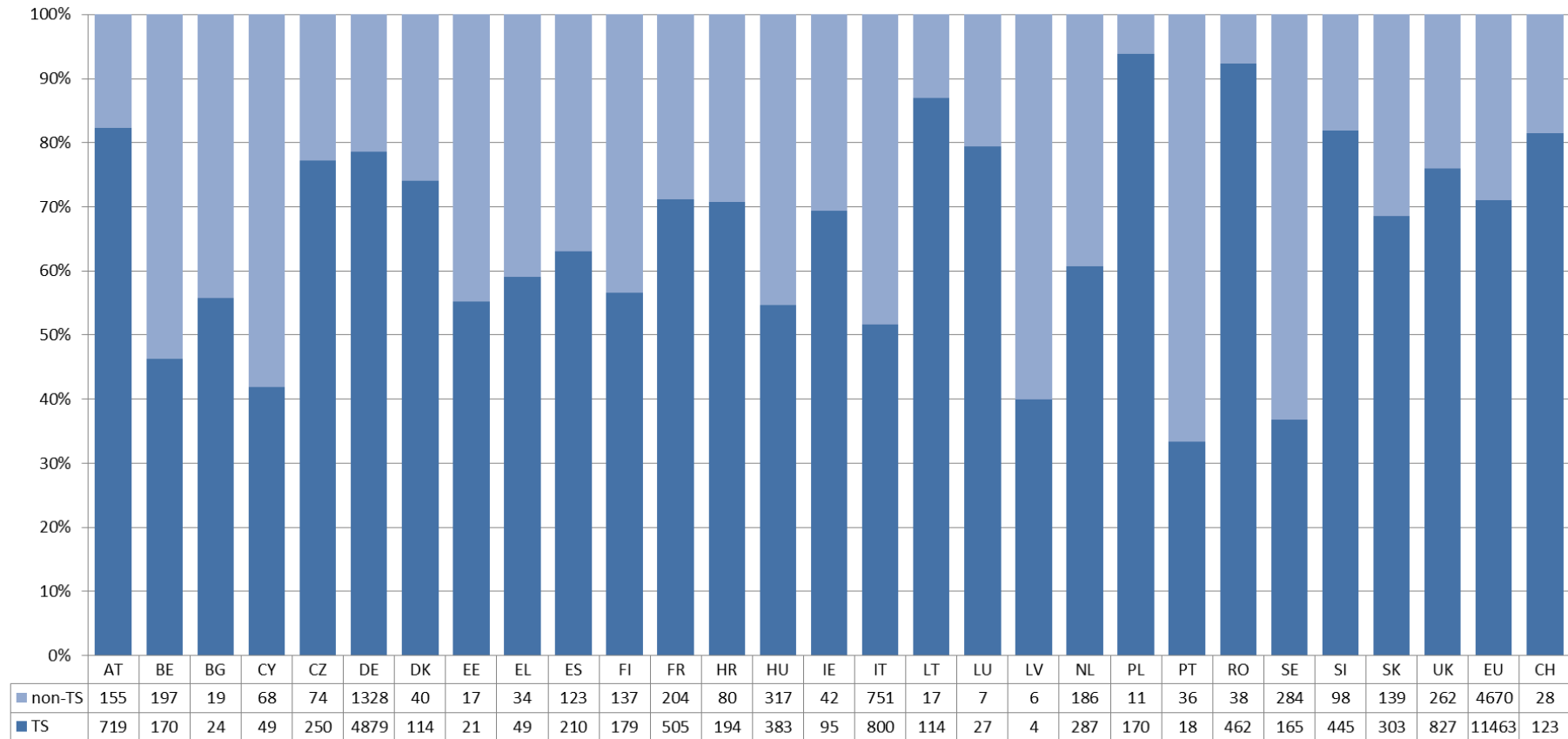
**Table 11 Wild bird species most frequently sampled by passive surveillance in 2017, compared to 2016 – Non-MS data included**

Species*	Number sampled in 2017	% of 2017 passive surveillance (total n=19,543)	Number sampled in 2016	% of 2016 passive surveillance (total n=12,828)
<b>Cygnus olor</b>	2,064	10.6%	555	4.3%
<b>Anas platyrhynchos</b>	1,734	8.9%	1,092	8.5%
<b>Ardea cinerea</b>	1,673	8.6%	254	2.0%
<b>Buteo buteo</b>	1,249	6.4%	548	4.3%
<i>Buteo sp.</i>	800	4.1%	217	1.7%
<b>Cygnus sp.</b>	772	4.0%	320	2.5%
<b>Falco tinnunculus</b>	432	2.2%	291	2.3%
<i>Anas and Mareca sp.</i>	425	2.2%	362	2.8%
<i>Sturnus sp.</i>	416	2.1%	2	0.02%
<b>Phalacrocorax carbo</b>	406	2.1%	143	1.1%
<b>Cygnus cygnus</b>	366	1.9%	138	1.1%
<b>Larus ridibundus</b>	354	1.8%	241	1.9%
<b>Fulica atra</b>	345	1.8%	164	1.3%
<i>Turdus merula</i>	334	1.7%	435	3.4%
<b>Anas crecca</b>	332	1.7%	347	2.7%
<b>Total (Top 15 species only)</b>	<b>11,702</b>	<b>59.9%</b>		

\*Target species indicated with bold text.

The total number of birds sampled from the Target Species list and birds that were not Target Species (when considering birds reported to full species level only) are shown in [Figure 11](#). Over two thirds (71.1 %) of the fully speciated birds tested in 2017 belong to the Target Species list. This is an increase in Target Species sampling compared to 2016 (47.6%) and 2015 (49.4%). In 2017 22 MSs submitted over half of their samples from bird species on the Target Species list, compared to only 16 MSs in 2016.

**Figure 11 Proportion of TS and non-TS sampled by passive surveillance in 2017, by Member State – Non-MS data included**



Note: 3,259 birds (16.7%) were not identified to full species level and could not be classified as Target Species or non-Target Species.

## 4.2.2 Highly Pathogenic Avian Influenza Positives

### 4.2.2.1 Overview of HPAI results

In 2017, highly pathogenic avian influenza (HPAI) was detected in 1,904 birds by 23 MS (n=1,889) and Switzerland (n=15), the one reporting non-MS (Table 12). HPAI H5N8 (clade 2.3.4.4b) was reported by 23 MS in 1,495 wild birds. This includes 1,478 detections confirmed as HPAI H5N8 by full laboratory testing, as well as 17 detections of H5N8 that are assumed to be HPAI due to the epidemiological situation in the reporting member states. These 'assumed HPAI' H5N8 detections were reported by Germany (n=13), Greece (n=2) and Slovenia (n=2). In addition, Switzerland reported 14 HPAI H5N8 positives, eight of which were confirmed HPAI H5N8 by laboratory testing, and six of which were confirmed H5N8 but assumed HPAI due to the confirmed presence of HPAI H5N8 within Switzerland at the same time. Twenty-nine birds were also confirmed as subtype HPAI H5N5 (clade 2.3.4.4b) by eight MS (Table 12).

Furthermore, six detections of HPAI H5N6 (closely related to clade 2.3.4.4b) were reported in Europe in 2017. The first reports were made in two Mute Swans (*Cygnus olor*) and one Tufted Duck (*Aythya fuligula*) by the Netherlands on 9<sup>th</sup> December 2017. These were followed by two more Mute Swans (*Cygnus olor*) in the Netherlands on the 14<sup>th</sup> and 19<sup>th</sup> December, and one Mute Swan (*Cygnus olor*) sampled on the 18<sup>th</sup> December in Switzerland.

HPAI H5 where the N type was not determined was reported for 303 birds and HPAI where the H type was not determined was reported for 57 birds. For the purpose of this report, all 360 birds are presented as HPAI H5Nx.

**Table 12 Total number of wild birds sampled by passive surveillance with the number and proportion positive for all HPAI H5, and the number reported positive for HPAI H5N8, HPAI H5N6, HPAI H5N5 and HPAI H5Nx by Member States in 2017 – Non-MS data included**

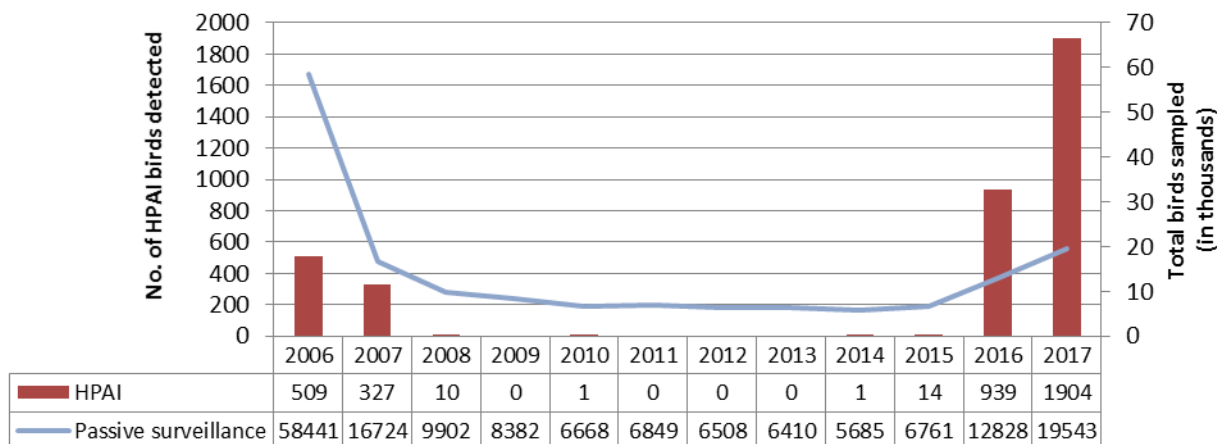
Member State	Number of Birds Sampled	Total number of HPAI H5 detections	% HPAI H5 (proportion of total sampled)	Number of HPAI H5N8 detections	Number of HPAI H5N6 detections	Number of HPAI H5N5 detections	Number of HPAI H5Nx detections
AT	897	134	14.9%	127	-	1	6
BE	367	6	1.6%	6	-	-	-
BG	47	14	29.8%	14	-	-	-
CY	117	1	0.9%	1	-	-	-
CZ	330	51	15.5%	51	-	-	-
DE	8,533	729	8.5%	455	-	15	259
DK	154	17	11.0%	17	-	-	-
EL	90	13	14.4%	12	-	1	-
ES	370	3	0.8%	3	-	-	1
FI	316	7	2.2%	6	-	-	19
FR	766	66	8.6%	47	-	-	-
HR	279	23	8.2%	23	-	-	-
HU	703	182	25.9%	180	-	2	-
IE	137	11	8.0%	11	-	-	-
IT	2,019	15	0.7%	14	-	1	-
LT	131	13	9.9%	12	-	-	1
NL	509	26	5.1%	16	5	1	4
PL	209	102	48.8%	97	-	5	-
PT	54	1	1.9%	1	-	-	-
RO	528	162	30.7%	143	-	-	19
SE	452	39	8.6%	-	-	-	39
SI	556	172	30.9%	169	-	3	-
SK	513	80	15.6%	70	-	-	10
UK	1,194	22	1.8%	20	-	-	2
<b>EU Total</b>	<b>19,381</b>	<b>1,889</b>	<b>9.7%</b>	<b>1,495</b>	<b>5</b>	<b>29</b>	<b>360</b>
CH	162	15	9.3%	14	1	-	-

Overall, HPAI of any subtype was detected in 9.7% of birds tested by passive surveillance amongst EU MS. Poland (48.8%) reported the highest proportion of HPAI positive detections, followed by Slovenia (30.9%) and Romania (30.7%); while Austria, Bulgaria, the Czech Republic, Greece, Hungary, Slovakia and Denmark also reported HPAI in more than 10% of birds sampled. When considering detections of HPAI H5N8, 7.7% of birds tested via the

passive surveillance programme were confirmed positive for this subtype within MS. HPAI H5N5 was detected at a very low level (0.1%), while detections of HPAI H5N6 were even lower, at 0.03% in 2017.

Figure 12 shows the number wild birds sampled by passive surveillance and the number of those birds reported positive for HPAI in each year between 2006 and 2017. When considering passive surveillance data submitted by both MS and Non-MS, in 2017 9.7% (n=1,904/19,543) of birds were found positive for HPAI, while in 2016 7.3% (n=939/12,828) of birds were reported positive. This compares to 0.9% (n=509/58,441) of birds reported as HPAI positive in 2006 and 2.0% (n=327/16,724) in 2007.

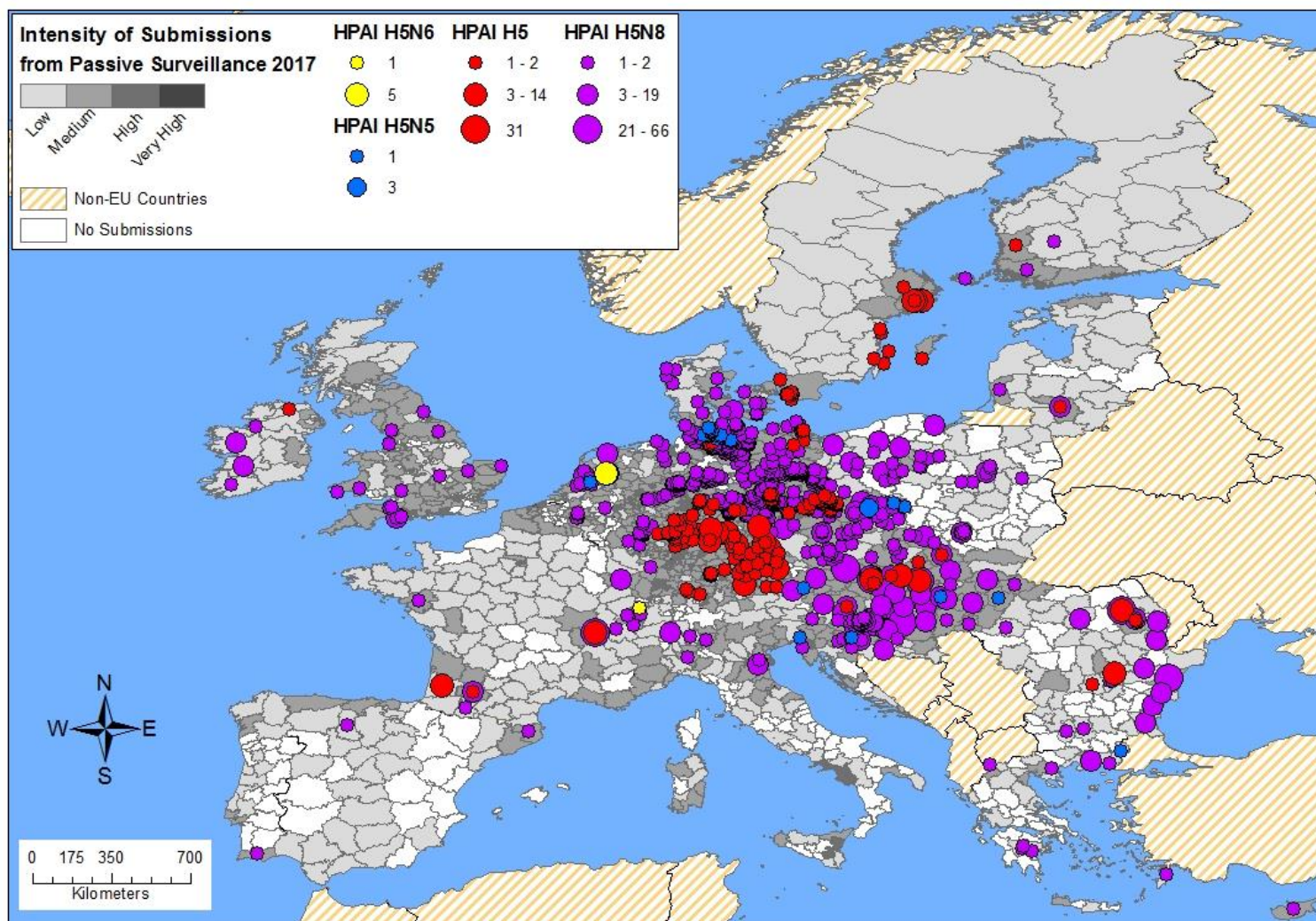
**Figure 12 Number of HPAI infected birds detected and total birds sampled by passive surveillance, 2006-2017 – Non-MS data included**



#### 4.2.2.2 Geographical distribution of HPAI detections

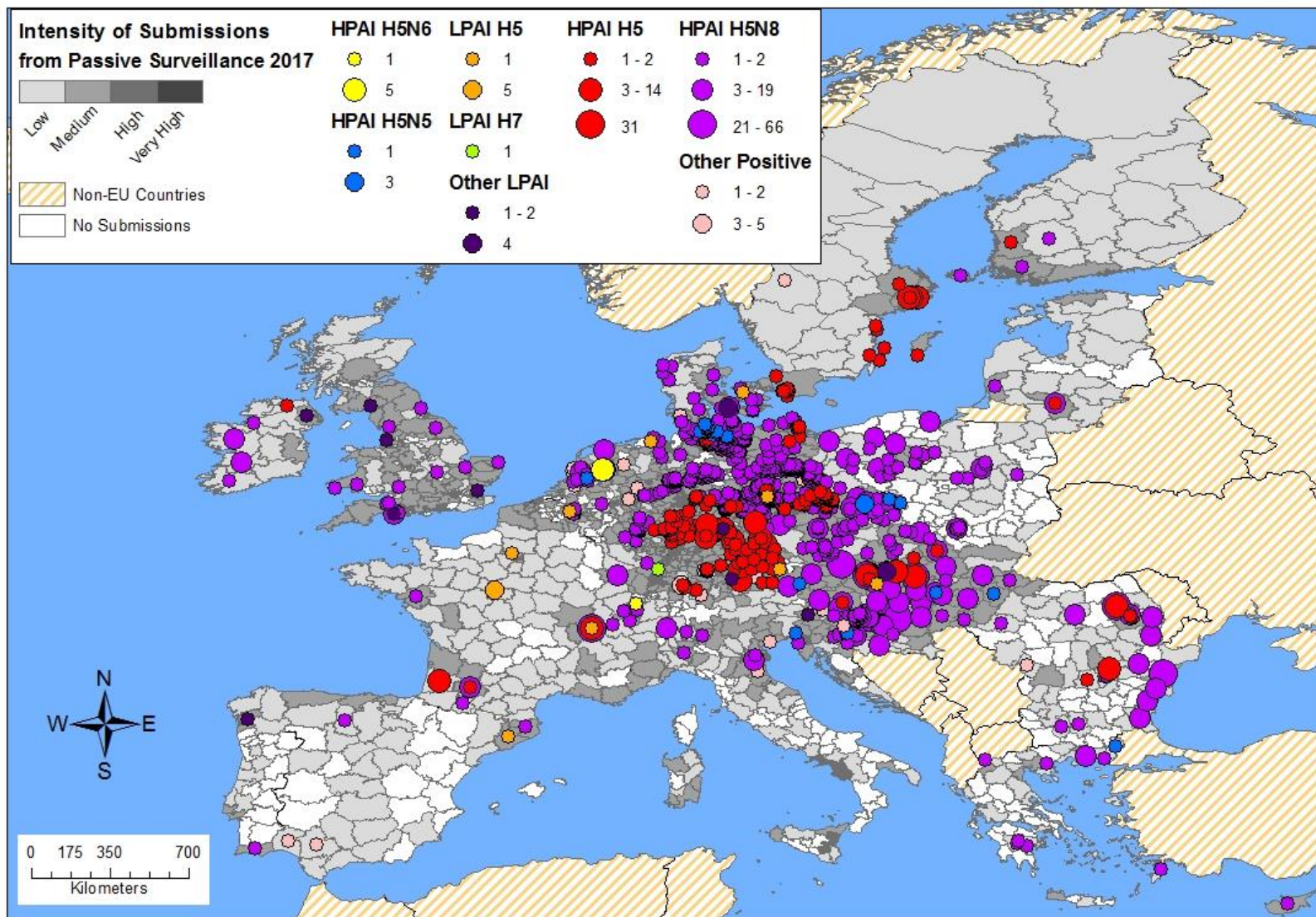
**Figure 13a Intensity of sample submission from passive surveillance and distribution of HPAI detections in wild birds in EU MS in 2017 – Non-MS data included**

The classification of sampling intensity is grouped by number of submissions per 100 km<sup>2</sup>.  
 Low: >0 and ≤25, Medium: >25 and ≤250, High: >250 and ≤2500, Very High: >2500



**Figure 13b Intensity of sample submission from passive surveillance and distribution of all AI detections in wild birds in EU MS in 2017 – Non-MS data included**

The classification of sampling intensity is grouped by number of submissions per 100 square kilometres. Low: >0 and ≤25, Medium: >25 and ≤250, High: >250 and ≤2500, Very High: >2500





#### 4.2.2.3 Temporal pattern of HPAI wild bird incidents

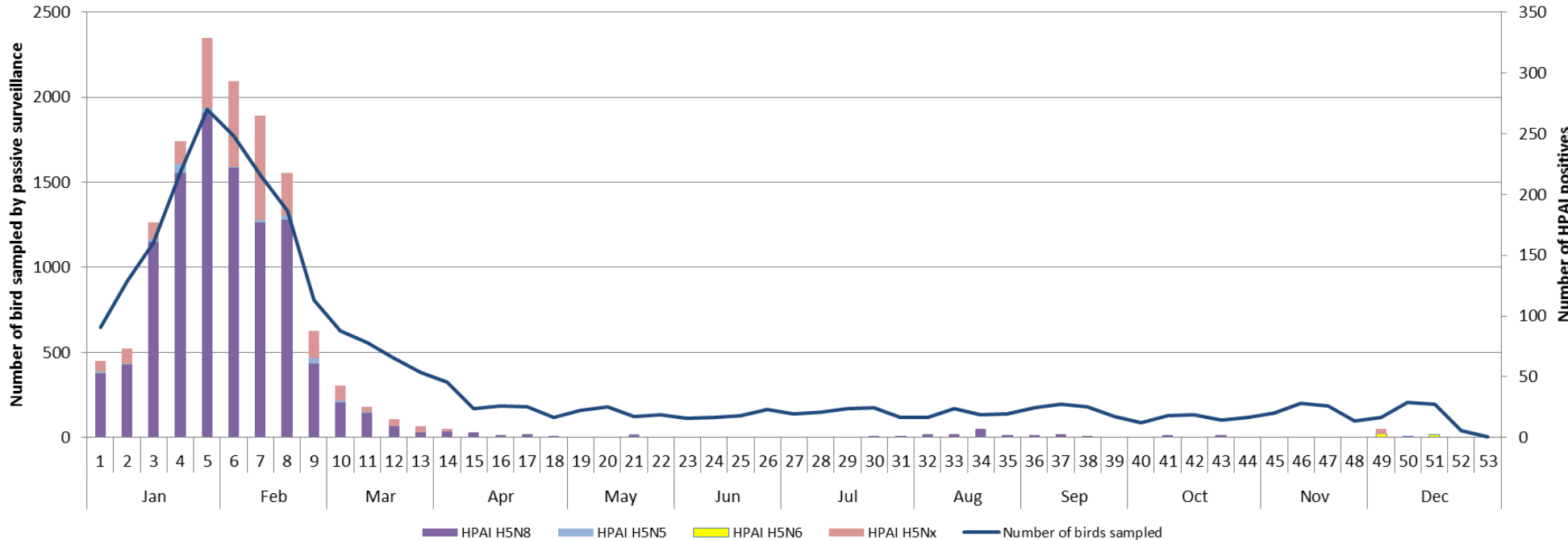
Figure 14 displays the calendar week of HPAI H5 detections by MS. Figure 15 displays the number of HPAI H5 detections and the number of birds sampled by passive surveillance for each week. In both Figure 14 and Figure 15 the first week is a full seven day period as January 2017 began on a Sunday; however week 53 contains data for one day, the 31<sup>st</sup> December, only.

The majority of detections of HPAI H5N8 and H5N5 were temporally clustered in the first quarter (Jan-Mar) of 2017, with just 2.9% of HPAI H5N8 and H5N5 cases detected in the remainder of the year (n=45/1,538). In contrast, HPAI H5N6 detections were all made in December, in weeks 49-51.

The highest number of HPAI detections were made in week 5 of 2017, when 326 detections were reported by 15 MS. This coincides with the greatest intensity of passive surveillance, as 1,926 birds (9.9% of the total passive surveillance effort) were sampled by the reporting EU MS and CH. This represents a higher than average proportion of positive HPAI detections; 17.0% of sampled birds were found positive for HPAI in week 5, compared to 9.7% for 2017 overall.



**Figure 15 Number of HPAI incidents in wild birds and number of wild birds sampled by passive surveillance in the EU by week in 2017 – Non-MS data included**



Each week has been assigned to the month in which most days occurred.

#### 4.2.2.4 Order and species of birds affected by HPAI infections

Table 13 shows the Order of birds with HPAI H5 cases in 2017 and the percentage of birds from each Order that tested positive. Anseriformes (ducks, swans and geese) was the Order with both the highest number of HPAI H5 detections and the highest proportion of sampled birds testing positive in the EU in 2017 (n=1,545, 23.2%).

**Table 13 Total number of wild birds sampled by passive surveillance with the number and proportion positive for all HPAI H5, and the number reported positive for HPAI H5N8, HPAI H5N6, HPAI H5N5 and HPAI H5Nx by Order in 2017 – Non MS data included**

Order	Total sampled	Number of all HPAI H5	Percentage positive for HPAI	Number of HPAI H5N8	Number of HPAI H5N6	Number of HPAI H5N5	Number of HPAI H5Nx
Anseriformes	6,672	1,545	23.2%	1,247	6	22	270
Charadriiformes	1,380	77	5.6%	62	-	1	14
Ciconiiformes	138	5	3.6%	5	-	-	-
Columbiformes	876	2	0.2%	2	-	-	-
Falconiformes	3,571	171	4.8%	122	-	4	45
Gruiformes	465	8	1.7%	7	-	-	1
Passeriformes	2,293	13	0.6%	8	-	-	5
Pelecaniformes	2,844	77	2.7%	54	-	2	21
Podicipediformes	105	3	2.9%	2	-	-	1
Strigiformes	654	3	0.5%	-	-	-	3
<b>Total</b>	<b>19,543</b>	<b>1,904</b>	<b>9.7%</b>	<b>1,509</b>	<b>6</b>	<b>29</b>	<b>360</b>

Table 14 below displays the species where HPAI detections were obtained by passive surveillance in 2017. The total number of birds tested for each species, the number and the proportion of HPAI positives overall is displayed, as well as a breakdown of the number of HPAI H5N8, HPAI H5N6, HPAI H5N5 and HPAI H5Nx detected in each species. In 2017, HPAI was detected in 62 different species of wild bird and in 13 genus aggregates of wild bird species (e.g. *Cygnus sp.*).

The species with the highest number of HPAI detections was the Mute Swan (*Cygnus olor*) (n=797), which constituted 41.9% of all HPAI detections. Eighteen species (or species aggregates) where more than 10 individuals were sampled had a greater proportion of HPAI positives than the overall average of 9.7%. This included nine species where over 25% of birds tested were found positive for HPAI. Eight of these species were from the Order Anseriformes: unspecified swans (*Cygnus sp.*) 41.1%, Black Swan (*Cygnus atratus*) 40.0%, Mute Swan (*Cygnus olor*) 38.6%, Whooper Swan (*Cygnus cygnus*) 34.2%, Greater White-fronted Goose (*Anser albifrons*) 30.6%, Greylag Goose (*Anser anser*) 29.3%, Tufted Duck (*Aythya fuligula*) 27.9% and Canada Goose (*Branta canadensis*) 26.8%; and one species was from the Order Charadriiformes, Great Black-backed Gull (*Larus marinus*) 26.7%.

Of the 62 wild bird species with detections of HPAI, 30 were from the Target Species list, while 32 were not Target Species. The three non-Target Species with the highest proportion of HPAI (where more than 10 individuals of that species were sampled) detected in 2017 were: Black Swan (*Cygnus atratus*) (n=6/15, 40.0%), Great Black-backed Gull (*Larus marinus*) (4/15, 26.7%) and European Herring Gull (*Larus argentatus argentatus*) (n=5/32, 15.6%).

**Table 14 Total number of wild birds sampled by passive surveillance with the number and proportion positive for all HPAI H5, and the number reported positive for HPAI H5N8, HPAI H5N6, HPAI H5N5 and HPAI H5Nx by species in 2017 – Non MS data included**

Species	Total sampled	Number of all HPAI H5	Percentage positive for all HPAI H5	Number of HPAI H5N8	Number of HPAI H5N6	Number of HPAI H5N5	Number of HPAI H5Nx
<b><i>Accipiter gentilis</i></b>	143	5	3.5%	3	-	-	2
<i>Accipiter sp.</i>	50	4	8.0%	3	-	-	1
<i>Aix sponsa</i>	3	1	33.3%	-	-	-	1
<i>Alopochen aegyptiacus</i>	49	1	2.0%	1	-	-	-
<b><i>Anas crecca</i></b>	332	5	1.5%	5	-	-	-
<b><i>Anas platyrhynchos</i></b>	1,734	78	4.5%	49	-	-	29
<i>Anas sp.</i>	425	23	5.4%	17	-	2	4
<b><i>Anser albifrons</i></b>	36	11	30.6%	10	-	1	-
<b><i>Anser anser</i></b>	280	82	29.3%	44	-	2	36
<i>Anser anser domesticus</i>	2	2	100.0%	-	-	-	2
<b><i>Anser Brachyrhynchus</i></b>	7	1	14.3%	1	-	-	-
<b><i>Anser erythropus</i></b>	10	5	50.0%	5	-	-	-
<b><i>Anser fabalis</i></b>	31	4	12.9%	4	-	-	-
<i>Anser sp.</i>	151	29	19.2%	23	-	1	5
<i>Ardea alba</i>	325	10	3.1%	8	-	1	1
<b><i>Ardea cinerea</i></b>	1,673	34	2.0%	20	-	-	14
<i>Ardea sp.</i>	262	7	2.7%	5	-	-	2
<i>Asio otus</i>	80	1	1.3%	-	-	-	1
<b><i>Aythya ferina</i></b>	32	5	15.6%	1	-	-	4
<b><i>Aythya fuligula</i></b>	68	19	27.9%	12	1	-	6
<i>Aythya sp.</i>	1	1	100.0%	1	-	-	-
<i>Botaurus stellaris</i>	8	1	12.5%	1	-	-	-
<b><i>Branta canadensis</i></b>	82	22	26.8%	13	-	-	9
<i>Bucephala clangula</i>	6	1	16.7%	1	-	-	-
<b><i>Buteo buteo</i></b>	1,249	67	5.4%	49	-	1	17
<i>Buteo spp.</i>	800	61	7.6%	48	-	3	10
<b><i>Cairina moschata</i></b>	20	1	5.0%	1	-	-	-
<b><i>Ciconia ciconia</i></b>	113	5	4.4%	5	-	-	-
<i>Columba livia (livia)</i>	214	2	0.9%	2	-	-	-
<i>Corvus corone</i>	56	1	1.8%	-	-	-	1
<i>Corvus corone corone</i>	122	1	0.8%	1	-	-	-
<i>Corvus frugilegus</i>	109	3	2.8%	2	-	-	1
<i>Corvus sp.</i>	175	1	0.6%	1	-	-	-
<i>Cygnus atratus</i>	15	6	40.0%	6	-	-	-
<b><i>Cygnus cygnus</i></b>	366	125	34.2%	114	-	-	11
<b><i>Cygnus olor</i></b>	2,064	797	38.6%	711	5	9	72
<b><i>Cygnus sp.</i></b>	772	317	41.1%	223	-	5	89
<i>Egretta garzetta</i>	18	1	5.6%	1	-	-	-
<i>Egretta sp.</i>	15	1	6.7%	1	-	-	-
<i>Falco cherrug</i>	1	1	100.0%	1	-	-	-
<b><i>Falco peregrinus</i></b>	78	9	11.5%	5	-	-	4

(Table continued overleaf)

Table 14 Continued

Species	Total sampled	Number of all HPAI H5	Percentage positive for all HPAI H5	Number of HPAI H5N8	Number of HPAI H5N6	Number of HPAI H5N5	Number of HPAI H5Nx
<i>Falco sp.</i>	100	2	2.0%	1	-	-	1
<b><i>Falco tinnunculus</i></b>	432	2	0.5%	2	-	-	-
<b><i>Fulica atra</i></b>	345	8	2.3%	7	-	-	1
<i>Haliaeetus albicilla</i>	168	20	11.9%	10	-	-	10
<i>Larus argentatus</i>	286	2	0.7%	1	-	1	-
<i>Larus argentatus argentatus</i>	32	5	15.6%	4	-	-	1
<i>Larus argentatus cachinnans</i>	15	1	6.7%	1	-	-	-
<b><i>Larus canus</i></b>	49	2	4.1%	2	-	-	-
<i>Larus fuscus</i>	90	1	1.1%	-	-	-	1
<i>Larus marinus</i>	15	4	26.7%	3	-	-	1
<b><i>Larus ridibundus</i></b>	354	14	4.0%	12	-	-	2
<i>Larus sp.</i>	309	47	15.2%	38	-	-	9
<b><i>Mareca penelope</i></b>	17	3	17.6%	3	-	-	-
<b><i>Mareca strepera</i></b>	15	2	13.3%	-	-	1	1
<b><i>Mergus albellus</i></b>	4	1	25.0%	-	-	1	-
<i>Microcarbo pygmaeus</i>	4	1	25.0%	1	-	-	-
<i>Oxyura jamaicensis</i>	2	1	50.0%	-	-	-	1
<i>Pelecanus crispus</i>	6	1	16.7%	1	-	-	-
<i>Pelecanus onocrotalus</i>	7	2	28.6%	-	-	-	2
<i>Pelecanus sp.</i>	3	1	33.3%	1	-	-	-
<b><i>Phalacrocorax carbo</i></b>	406	17	4.2%	14	-	1	2
<i>Phalacrocorax sp.</i>	25	1	4.0%	1	-	-	-
<b><i>Pica pica</i></b>	196	2	1.0%	1	-	-	1
<b><i>Podiceps cristatus</i></b>	84	2	2.4%	1	-	-	1
<i>Somateria mollissima</i>	12	1	8.3%	1	-	-	-
<i>Sterna hirundo</i>	30	1	3.3%	1	-	-	-
<i>Strix aluco</i>	122	2	1.6%	-	-	-	2
<i>Sturnus vulgaris</i>	99	1	1.0%	-	-	-	1
<b><i>Tachybaptus ruficollis</i></b>	14	1	7.1%	1	-	-	-
<i>Tadorna tadorna</i>	31	1	3.2%	1	-	-	-
<i>Troglodytes troglodytes</i>	4	1	25.0%	1	-	-	-
<i>Turdus merula</i>	334	1	0.3%	1	-	-	-
<i>Turdus philomelos</i>	39	1	2.6%	-	-	-	1
<i>Turdus pilaris</i>	35	1	2.9%	1	-	-	-
<b>Total (all sampled)</b>	<b>19,543</b>	<b>1,904</b>	<b>9.7%</b>	<b>1,509</b>	<b>6</b>	<b>29</b>	<b>360</b>

\*Target species indicated with bold text.

#### 4.2.3 Low Pathogenicity Avian Influenza Positives

This section describes reports of LPAI detected by passive surveillance, particularly focusing on 'H' subtypes H5 and H7.

As some virus-positive birds were reported with virus H subtype or pathotype "unknown", birds that tested positive on PCR or virus isolation are reported in the following four groups in this section:

- 1) 'LPAI H5' are birds confirmed positive for LPAI subtype H5.
- 2) 'LPAI H7' are birds confirmed positive for LPAI subtype H7.
- 3) 'LPAI other' are birds reported as LPAI of other (not H5 or H7), or unspecified 'H' subtypes.
- 4) 'Other positives' are birds positive for influenza A by PCR or virus isolation but were not reported as either LPAI or HPAI. This section excludes 23 birds that tested positive for H5N8, but the pathotype was unknown. Those 23 birds are presented in the HPAI H5 section of this report (4.2.2 Highly Pathogenic Avian Influenza Positives) in the HPAI H5N8 category.

##### 3.2.3.1 Overview of LPAI results

In 2017, 34 birds were confirmed positive for LPAI from eight MSs when considering passive surveillance activities. There were no LPAI positive birds detected in Switzerland, the only reporting non-MS.

There were 15 H5 LPAI positives detected by passive surveillance in 2017. Seven detections were made in France, in six Mallards (*Anas platyrhynchos*) and one Mute Swan (*Cygnus olor*); four detections were made in Germany in one Bean Goose (*Anser fabalis*), one European Herring Gull (*Larus argentatus argentatus*) and two unspecified swans (*Cygnus sp.*). The four other LPAI H5 detections were made in Austria, Belgium, Denmark and Spain in one Eurasian Teal (*Anas crecca*), one Common Moorhen (*Gallinula chloropus*), one Mute Swan (*Cygnus olor*) and one Mallard (*Anas platyrhynchos*), respectively.

One detection of LPAI H7 was reported in 2017, in a Mallard (*Anas platyrhynchos*), tested by Germany.

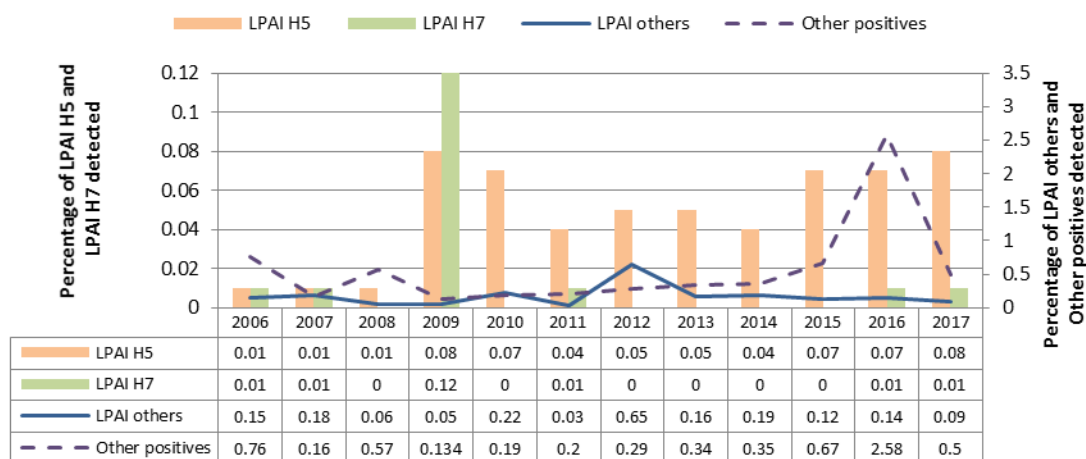
LPAI of subtypes other than H5 or H7 (LPAI other) were detected in 18 birds from six MSs; the United Kingdom (5), Denmark (4), Slovakia (4), Germany (3), Spain (1) and Austria (1). 'Other positives' were detected in 101 birds from 12 MSs ([Table 15](#)).

[Table 15](#) indicates the total number and proportion of wild birds testing positive for LPAI H5, LPAI H7, 'LPAI other' and 'Other positives' by Member State, when considering passive surveillance data only. A very low proportion of birds tested positive for LPAI H5 (0.08%) and LPAI H7 (0.01%) by passive surveillance in 2017. This is similar to findings in previous years, and the annual trend over time is displayed in [Figure 16](#).

**Table 15 Total number of wild birds sampled by passive surveillance with the number and proportion positive for LPAI H5, LPAI H7, 'LPAI other' and 'Other positives' by Member State in 2017 – EU data only**

Member State	Total sampled	Number of LPAI H5	% LPAI H5 (proportion of total sampled)	Number of LPAI H7	% LPAI H7 (proportion of total sampled)	Number of 'LPAI other'	% 'LPAI other' (proportion of total sampled)	Number of 'Other positives'	% 'Other positives' (proportion of total sampled)
AT	897	1	0.1%	-	-	1	0.1%	10	1.1%
BE	367	1	0.3%	-	-	-	-	-	-
DE	8,533	4	0.05%	1	0.01%	3	0.04%	58	0.7%
DK	154	1	0.65%	-	-	4	2.60%	-	-
ES	370	1	0.3%	-	-	1	0.3%	4	1.1%
FR	766	7	0.9%	-	-	-	-	1	0.1%
IT	2,019	-	-	-	-	-	-	3	0.1%
NL	509	-	-	-	-	-	-	11	2.2%
PL	209	-	-	-	-	-	-	5	2.4%
RO	528	-	-	-	-	-	-	3	0.6%
SE	452	-	-	-	-	-	-	1	0.2%
SI	556	-	-	-	-	-	-	1	0.2%
SK	513	-	-	-	-	4	0.8%	1	0.2%
UK	1,194	-	-	-	-	5	0.4%	3	0.3%
<b>EU</b>	<b>19,381</b>	<b>15</b>	<b>0.08%</b>	<b>1</b>	<b>0.01%</b>	<b>18</b>	<b>0.09%</b>	<b>101</b>	<b>0.5%</b>

**Figure 16 Annual trends in the percentage of LPAI H5, LPAI H7, LPAI of other subtypes and 'Other positives' detected in the period 2006-2017**



#### 4.2.3.2 Geographical distribution of LPAI detections

Figure 13b in (Section 4.2.2.2 Geographical distribution of HPAI detections) shows the location of the LPAI H5 and LPAI H7 detections in 2017.

#### 4.2.3.3 Temporal pattern of LPAI wild bird incidents

Figure 17 displays the calendar week of LPAI H5 and LPAI H7 detections by Member State. Figure 18 presents the week of LPAI H5 and H7 detections alongside the number of birds sampled by passive surveillance. In 2017, most LPAI H5 and the H7 detections occurred in the 1<sup>st</sup> quarter of the year (Jan-Mar) when the majority of the passive surveillance took place.





#### 4.2.3.4 Order and species of birds affected by LPAI infections

LPAI H5 was detected in Anseriformes, Charadriiformes and Gruiformes in 2017, while LPAI H7 was detected in a single Anseriform. Other LPAI positives (not H5 or H7) and 'Other positives' were detected in eight different Orders, most notably Anseriformes (n=87) and Charadriiformes (n=13) (Table 16).

**Table 16 Total number of wild birds sampled by passive surveillance with the number and proportion positive for LPAI H5, LPAI H7, 'LPAI other' and 'Other positives' by Order in 2017 – EU data only**

Order	Total sampled	Number of LPAI H5	Number of LPAI H7	Number of "LPAI other"	Number of "Other positives"
Anseriformes	6,609	13	1	13	74
Charadriiformes	1,357	1	-	1	12
Falconiformes	3,543	-	-	-	5
Gruiformes	460	1	-	-	2
Passeriformes	2,281	-	-	4	2
Pelecaniformes	2,834	-	-	-	2
Podicipediformes	92	-	-	-	1
Strigiformes	654	-	-	-	1
Species unknown	46	-	-	-	2
<b>Total (all sampled by MS)</b>	<b>19,381</b>	<b>15</b>	<b>1</b>	<b>18</b>	<b>101</b>

In total, 26 species and six species groups (e.g. *Cygnus sp.*) tested positive for AI (excluding confirmed HPAI) in 2017, Table 17. Mallards (*Anas platyrhynchos*) were the most common species from which observations of LPAI or 'Other positives' originated (n=40/135, 29.6%). Of the 26 species with detections of LPAI and 'Other positives', 16 belong to the Target Species list, while detections were made in 10 species not on the Target Species list.

Further details regarding sampling and results for Target-Species and other species by individual MS can be found in Annex 3 (section 8.2.1 Passive surveillance data, supplementary tables and figures).

Table 17 Total number of wild birds sampled by passive surveillance with the number and proportion positive for LPAI H5, LPAI H7, 'LPAI other' and 'Other positives' by species in 2017 – EU data only

Species*	Total sampled	Number of LPAI H5	Number of LPAI H7	Number of "LPAI other"	Number of "Other positives"
<b>Accipiter gentilis</b>	143	-	-	-	1
<b>Anas crecca</b>	332	1	-	-	2
<b>Anas platyrhynchos</b>	1,718	7	1	6	26
Anas sp.	424	-	-	-	2
<b>Anser albifrons</b>	36	-	-	-	2
<b>Anser anser</b>	279	-	-	-	4
Anser cygnoides	3	-	-	-	1
<b>Anser fabalis</b>	31	1	-	-	-
Anser spp.	151	-	-	-	3
Ardea sp.	262	-	-	-	1
<b>Branta leucopsis</b>	30	-	-	1	-
<b>Buteo buteo</b>	1,226	-	-	-	1
Buteo spp.	798	-	-	-	3
Corvus corone corone	122	-	-	-	1
<b>Cygnus columbianus</b>	3	-	-	-	1
<b>Cygnus cygnus</b>	366	-	-	1	2
<b>Cygnus olor</b>	2,035	2	-	2	11
<b>Cygnus sp.</b>	769	2	-	2	20
<b>Fulica atra</b>	340	-	-	-	2
Gallinula chloropus	69	1	-	-	-
Larus argentatus	286	-	-	-	2
Larus argentatus argentatus	32	1	-	-	-
Larus fuscus	90	-	-	-	2
<b>Larus ridibundus</b>	347	-	-	-	2
Larus sp.	308	-	-	-	6
<b>Mareca penelope</b>	17	-	-	1	-
Passer domesticus	38	-	-	-	1
<b>Phalacrocorax carbo</b>	403	-	-	-	1
<b>Podiceps cristatus</b>	72	-	-	-	1
Scolopax rusticola	46	-	-	1	-
Surnia ulula	13	-	-	-	1
Turdus pilaris	34	-	-	4	-
Species unknown	46	-	-	-	2
<b>Total (all sampled by MS)</b>	<b>19,381</b>	<b>15</b>	<b>1</b>	<b>18</b>	<b>101</b>

\*Target species indicated with bold text.

### 4.3 Poultry and Wild Bird Survey Results by Member State

Table 4 shows the number of poultry holdings sampled and the total number of holdings (from regions where sampling took place) by poultry category across MS reported to the survey in 2017. In addition, Table 8 shows the number of poultry holdings sampled and the number of seropositive H5 and H7 holdings by poultry category across MS in 2017. Furthermore, for wild birds, Table 9 shows the number of birds sampled by passive surveillance and Table 12 and Table 15 in section 4.2.2.1 show the number of AI detections across MS in 2017.

#### Descriptive results relating to individual Member State's programmes

Poultry: The total number of poultry holdings (from regions where sampling took place) reported for each poultry category per MS is given in parentheses in the text below. Where the number of sampled holdings exceeds the total number of holdings reported, holdings are assumed to have been sampled more than once. For more information on how the poultry data were processed, including the definition of a poultry holding and how the total number of poultry holdings figure (from regions where sampling took place) was calculated, please refer to the Methods Section 6.1. Details are also given below on the number of influenza A virus positive poultry holdings (including H5, H7 and other subtypes) detected in each MS. Information on positive poultry holdings from the two previous years is also provided to aid inter-year comparison.

Wild Birds: The total number of wild birds sampled as a result of passive surveillance is reported, including the number of HPAI H5, LPAI H5 or H7 subtypes detected through passive surveillance.

#### Austria

##### Poultry:

- Austria carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Fattening Ducks, Fattening Geese, and Ratites.
- 37 Chicken Breeder holdings were sampled (101 total).
- 63 Conventional Laying Hen holdings were sampled (734 total).
- 62 Free-range Laying Hen holdings were sampled (1,164 total).
- 60 Fattening Turkey holdings were sampled (145 total).
- 25 Fattening Duck holdings were sampled (19 total).
- 65 Fattening Geese holdings were sampled (65 total).
- Ten Ratite holdings were sampled (ten total).
- Austria reported from eight regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

##### Wild Birds:

- 897 wild birds were sampled by passive surveillance.
- **There were 127 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017. These were 102 Mute Swans (*Cygnus olor*), six unspecified swans (*Cygnus sp.*), four Mallards (*Anas platyrhynchos*), three Black-headed Gulls (*Larus ridibundus*), three Tufted Ducks (*Aythya fuligula*), two Common Buzzards (*Buteo buteo*), two Greylag Geese (*Anser anser*), one Muscovy Duck (*Cairina***

*moschata*), one Grey Heron (*Ardea cinerea*), one Great White Egret (*Ardea alba*), one Dalmatian Pelican (*Pelecanus crispus*) and one Great Cormorant (*Phalacrocorax carbo*).

- HPAI H5N5 was detected in one European Herring Gull (*Larus argentatus*).
- Six wild birds were positive for HPAI H5, but the N type was not determined. These were three Mute Swans (*Cygnus olor*), two Mallards (*Anas platyrhynchos*) and one Black-headed Gull (*Larus ridibundus*).
- One Eurasian Teal (*Anas crecca*) was positive for LPAI H5.
- There were no positive LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Belgium

### Poultry:

- Belgium carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Fattening Ducks, Farmed Game Birds (gallinaceous), and Others.
- 201 Chicken Breeder holdings were sampled (204 total).
- 175 Conventional Laying Hen holdings were sampled (148 total).
- 189 Free-range Laying Hen holdings were sampled (101 total).
- 52 Fattening Turkey holdings were sampled (38 total).
- 20 Fattening Duck holdings were sampled (23 total).
- 22 Farmed Game Bird (gallinaceous) holdings were sampled (16 total).
- Six Other holdings were sampled (eight total).
- Belgium reported from ten regions.
- **Positive holdings were reported in 2017, which was also the case in 2016 and 2015.**
- **In 2017, one Fattening Duck holding tested serologically positive for influenza A virus subtype H5.**
- *In 2016, three Fattening Duck holdings tested serologically positive for influenza A virus subtype H5 (one was also PCR positive for influenza A virus of undetermined subtype).*
- *In 2015, one Fattening Duck holding tested serologically positive for influenza A virus subtype H5.*

### Wild Birds:

- 367 wild birds were sampled by passive surveillance.
- **There were six confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017; three Mallards (*Anas platyrhynchos*), one Black Swan (*Cygnus atratus*), one common Buzzard (*Buteo buteo*) and one Mute Swan (*Cygnus olor*).**

- **There was one positive LPAI H5N8 detection in a Common Moorhen (*Gallinula chloropus*), found dead.**
- There were no positive LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## **Bulgaria**

### Poultry:

- Bulgaria carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Backyard Flocks, Farmed Game Birds (gallinaceous) and Others.
- 11 Chicken Breeder holdings were sampled (11 total).
- 67 Conventional Laying Hen holdings were sampled (104 total).
- Four Broilers (at heightened risk) holdings were sampled (Eight total).
- One Fattening Turkey holding was sampled (one total).
- One Turkey Breeder holding was sampled (one total).
- 275 Fattening Duck holdings were sampled (199 total).
- 119 Backyard Flock holdings were sampled (120,038 total).
- Six Farmed Game Bird (gallinaceous) holdings were sampled (six total).
- One Breeder Duck holding was sampled (one total).
- Two Other holdings was sampled (two total).
- Bulgaria reported from 28 regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

### Wild Birds:

- 47 wild birds were sampled by passive surveillance.
- **There were 14 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017; 10 Whooper Swans (*Cygnus cygnus*), one Winter Wren (*Troglodytes troglodytes*), one Eurasian Coot (*Fulica atra*), one Common Buzzard (*Buteo buteo*) and one heron (*Ardea sp.*).**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## **Croatia**

### Poultry:

- Croatia carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Turkey Breeders,

Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Backyard Flocks, and Farmed Game Birds (gallinaceous).

- 47 Chicken Breeder holdings were sampled (8,932 total).
- 39 Conventional Laying Hen holdings were sampled (16,434 total).
- Ten Broiler (at heightened risk) holdings were sampled (6,232 total).
- One Fattening Turkey holdings were sampled (1,672 total).
- Two Turkey Breeder holdings were sampled (772 total).
- Six Fattening Duck holdings were sampled (2,036 total).
- Six Breeder Duck holdings were sampled (916 total).
- One Fattening Geese holding was sampled (1,037 total).
- Six Breeder Geese holdings were sampled (476 total).
- 147 Backyard Flock holdings were sampled (26,708 total).
- Seven Farmed Game Bird (gallinaceous) holdings were sampled (24 total).
- Croatia reported from two regions.
- **No positive holdings were reported in 2017, unlike 2016 and 2015.**
- *In 2016, one Backyard Flock holding tested serologically positive for influenza A virus of undetermined subtype. It also tested virologically positive for influenza A subtype H5 by PCR and influenza A virus of undetermined subtype by virus isolation.*
- *In 2015, one Backyard Flock holding tested serologically positive for influenza A virus subtype H5.*

#### Wild Birds:

- 279 wild birds were sampled by passive surveillance.
- **There were 23 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017. These were 21 Mute Swans (*Cygnus olor*), two Great Cormorants (*Phalacrocorax carbo*) and one Common Buzzard (*Buteo buteo*).**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## **Cyprus**

#### Poultry:

- Cyprus carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Backyard Flocks, and Farmed Game Birds (gallinaceous).
- Nine Chicken Breeder holdings were sampled (nine total).
- 23 Conventional Laying Hen holdings were sampled (23 total).

- 13 Free-range Laying Hen holdings were sampled (14 total).
- Four Broiler (at heightened risk) holdings were sampled (four total).
- Six Fattening Turkey holdings were sampled (seven total).
- 51 Backyard Flock holdings were sampled (1,247 total).
- Three Farmed Game Bird (gallinaceous) holdings were sampled (five total).
- Cyprus reported as one region.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

#### Wild Birds:

- 117 wild birds were sampled by passive surveillance.
- **One Common Buzzard (*Buteo buteo*), found dead, was reported positive for HPAI H5N8.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

### **Czech Republic**

#### Poultry:

- The Czech Republic carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Farmed Game Birds (gallinaceous), and Farmed Game Birds (waterfowl).
- 53 Conventional Laying Hen holdings were sampled (132 total).
- 16 Free-range Laying Hen holdings were sampled (16 total).
- 43 Fattening Turkey holdings were sampled (59 total).
- 49 Fattening Duck holdings were sampled (49 total).
- 24 Breeder Duck holdings were sampled (24 total).
- Ten Fattening Geese holdings were sampled (ten total).
- Nine Breeder Geese holdings were sampled (nine total).
- 37 Farmed Game Bird (gallinaceous) holdings were sampled (37 total).
- Ten Farmed Game Bird (waterfowl) holdings were sampled (ten total).
- The Czech Republic reported from 13 regions.
- **Positive holdings were reported in 2017, as in 2016. No positive holdings occurred in 2015.**
- **In 2017, four holdings were reported as serologically positive for influenza A virus subtype H5. This included, two Farmed Game Bird (waterfowl) holdings, one**



**Breeder Geese holding, and one holding positive in both the Breeder Duck and Breeder Geese categories.**

- *In 2016, four holdings were reported as serologically positive for influenza A virus subtype H5. This included two Breeder Duck holdings, one Breeder Geese holding, and one holding positive in both the Breeder Geese and Farmed Game Bird (waterfowl) categories.*

Wild Birds:

- 330 wild birds were sampled by passive surveillance.
- **There were 51 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017. These were 40 Mute Swans (*Cygnus olor*), seven Mallards (*Anas platyrhynchos*), two Grey Heron (*Ardea cinerea*) and two Greylag Geese (*Anser anser*).**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

**Denmark**

Poultry:

- Denmark carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Fattening Ducks, Fattening Geese, Farmed Game Birds (gallinaceous), and Farmed Game Birds (waterfowl).
- 269 Chicken Breeder holdings were sampled (194 total).
- 224 Free-range Laying Hen holdings were sampled (161 total).
- 35 Broiler (at heightened risk) holdings were sampled (65 total).
- 23 Fattening Turkey holdings were sampled (58 total).
- 19 Fattening Duck holdings were sampled (91 total).
- Six Fattening Geese holdings were sampled (15 total).
- 27 Farmed Game Bird (gallinaceous) holdings were sampled (66 total).
- Nine Farmed Game Bird (waterfowl) holdings were sampled (24 total).
- Denmark reported as one region.
- **Positive holdings were reported in 2017, as was the case in 2016 and 2015.**
- **In 2017, five holdings were reported as positive. One Free-range laying hen holding tested serologically positive for influenza A virus subtype H5. Two Farmed Game Bird (gallinaceous) holdings tested positive; one for influenza A virus subtype H5, whilst the other tested positive for both influenza A subtype H5 and H7. Additionally, the same premises tested positive for H7 in two bird categories (Farmed Game Birds (gallinaceous) and Farmed Game Birds (waterfowl)). Finally, two Farmed Game Birds (waterfowl) holdings tested positive for influenza A virus; one for the H5 subtype and one for the H7 subtype.**
- *In 2016, eight holdings were reported as positive. Three Free-range Laying Hen holdings tested serologically positive for influenza A virus; one for the H5 subtype and two for the*

*H7 subtype. Five Farmed Game Bird (waterfowl) holdings tested serologically positive for influenza A virus; four for the H5 subtype and one for the H7 subtype.*

- *In 2015, two holdings were reported as positive. One Free-range Laying Hen holding and one Farmed Game Bird (waterfowl) holding tested serologically positive for influenza A virus subtype H7.*

#### Wild Birds:

- 154 wild birds were sampled by passive surveillance.
- **There were 17 confirmed HPAI H5N8 detections in wild birds found dead in 2017. These were in seven Common Buzzards (*Buteo buteo*), three White-tailed Eagles (*Haliaeetus albicilla*), three Great Black-backed Gulls (*Larus marinus*), and one of each of the following: Peregrine Falcon (*Falco peregrinus*), European Herring Gull (*Larus argentatus*), Eurasian Widgeon (*Mareca penelope*) and Common Eider (*Somateria mollissima*).**
- LPAI H5 was detected in a single Mute Swan (*Cygnus olor*), found dead.
- There were no positive LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

### **Estonia**

#### Poultry:

- Estonia carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Conventional Laying Hens and Farmed Game Birds (gallinaceous).
- 40 Conventional Laying Hen holdings were sampled (40 total).
- One Farmed Game Birds (gallinaceous) holding was sampled (one total).
- Estonia reported from one region.
- **No positive holdings were reported in 2017, the same as in the preceding two years.**

#### Wild Birds:

- 38 wild birds were sampled by passive surveillance.
- There were no positive HPAI H5, LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

### **Finland**

#### Poultry:

- Finland carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Turkey Breeders, Fattening Ducks, Fattening Geese, Farmed Game Birds (gallinaceous), Farmed Game Birds (waterfowl), and Ratites.
- 35 Chicken Breeder holdings were sampled (58 total).

- 48 Conventional Laying Hen holdings were sampled (411 total).
- 36 Free-range Laying Hen holdings were sampled (51 total).
- Two Broiler (at heightened risk) holdings were sampled (two total).
- 36 Fattening Turkey holdings were sampled (40 total).
- Three Turkey Breeder holdings were sampled (four total).
- Three Fattening Duck holdings were sampled (six total).
- Two Fattening Geese holdings were sampled (five total).
- Ten Farmed Game Bird (gallinaceous) holdings were sampled (16 total).
- Five Farmed Game Bird (waterfowl) holdings were sampled (three total).
- Three Ratite holding was sampled (three total).
- Finland reported from four regions.
- **Similar to 2016, but unlike 2015, no positive holdings were reported in 2017.**
- *In 2015, one Fattening Geese holding tested serologically positive for influenza A virus subtype H5.*

#### Wild Birds:

- 316 wild birds were sampled by passive surveillance.
- **Six birds 'found dead' tested positive for HPAI H5N8 in 2017: five White-tailed Eagles (*Haliaeetus albicilla*) and one Whooper Swan (*Cygnus cygnus*).**
- **One White-tailed Eagle (*Haliaeetus albicilla*), 'live with clinical signs', was reported positive for HPAI H5, but the N type was not determined.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## **France**

#### Poultry:

- France carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Farmed Game Birds (gallinaceous) and Farmed Game Birds (waterfowl).
- 68 Chicken Breeder holdings were sampled (564 total).
- 39 Conventional Laying Hen holdings were sampled (2,547 total).
- 66 Free-range Laying Hen holdings were sampled (1,626 total).
- 52 Fattening Turkey holdings were sampled (697 total).
- 57 Turkey Breeder holdings were sampled (258 total).

- 260 Fattening Duck holdings were sampled (6,952 total).
- 185 Breeder Duck holdings were sampled (237 total).
- 55 Fattening Geese holdings were sampled (147 total).
- 27 Breeder Geese holdings were sampled (29 total).
- 92 Farmed Game Bird (gallinaceous) holdings were sampled (338 total).
- 13 Farmed Game Bird (waterfowl) holdings were sampled (54 total).
- France reported from 61 regions.
- **Positive holdings were reported in 2017, which was also the case in 2016 and 2015.**
- **In 2017, 8 holdings tested serologically positive for influenza A subtype H5, including 2 Farmed Game Bird (waterfowl) holdings, five Breeder Ducks holdings (one testing positive three times) and one Breeder Geese holding (also testing positive three times).**
- *In 2016, 85 holdings tested serologically positive for influenza A subtype H5, including two Fattening Duck holdings, 70 Breeder Duck holdings, and 13 Breeder Geese holdings.*
- *In 2015, 16 holdings tested serologically positive for influenza A virus subtype H5, including five Fattening Duck holdings (three were also PCR positive for H5), six Breeder Duck holdings, and five Breeder Geese holdings (one was also PCR positive for H5).*

#### Wild Birds:

- 766 wild birds were sampled by passive surveillance.
- **There were 47 confirmed HPAI H5N8 detections in wild birds all 'found dead' in 2017. These were: 33 Mute Swans (*Cygnus olor*), four Great Cormorants (*Phalacrocorax carbo*), three Common Buzzards (*Buteo buteo*), two Greylag Geese (*Anser anser*), one Eurasian Bittern (*Botaurus stellaris*), one Great White Egret (*Ardea alba*), one Canada Goose (*Branta canadensis*), one Common Kestrel (*Falco tinnunculus*) and one Caspian Gull (*Larus argentatus cachinnans*).**
- **19 birds, all 'found dead' were reported positive for HPAI H5, but the N type was not determined. These were 12 Mute Swans (*Cygnus olor*), three Common Buzzards (*Buteo buteo*), one Song Thrush (*Turdus philomelos*), one Common Starling (*Sturnus vulgaris*), one Greylag Goose (*Anser anser*) and one Grey Heron (*Ardea cinerea*).**
- **Six Mallards (*Anas platyrhynchos*) and one Mute Swan (*Cygnus olor*), all 'found dead' were positive for LPAI H5 in 2017.**
- There were no positive LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Germany

#### Poultry:

- Germany carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Farmed Game Birds (gallinaceous), Ratites, and Others.

- 22 Chicken Breeder holdings were sampled (1,123 total).
- 100 Conventional Laying Hen holdings were sampled (3,112 total).
- 109 Free-range Laying Hen holdings were sampled (2,707 total).
- 19 Broiler (at heightened risk) holdings were sampled (2,621 total).
- 115 Fattening Turkey holdings were sampled (1,075 total).
- 18 Turkey Breeder holdings were sampled (57 total).
- 154 Fattening Duck holdings were sampled (772 total).
- 23 Breeder Duck holdings were sampled (41 total).
- 115 Fattening Geese holdings were sampled (1,862 total).
- 11 Breeder Geese holdings were sampled (21 total).
- Four Farmed Game Bird (gallinaceous) holdings were sampled (971 total).
- 27 Ratite holdings were sampled (479 total).
- 30 Other holdings were sampled (15,082 total).
- Germany reported from 15 regions.
- **Positive holdings were reported in 2017, which was also the case in 2016 and 2015.**
- **In 2017, 12 holdings were reported as serologically positive for influenza A virus subtype H5, including three Breeder Duck holdings (all of which were also PCR positive for H5), three Fattening Duck holdings (two also PCR positive for H5), three Fattening Turkey holdings (two PCR positive for H5; one PCR and virological positive for H5), one Breeder Geese holding, one Turkey Breeder holding (also PCR positive for H5), and one Other holding.**

In addition, one Other holding tested serologically positive for influenza A virus subtype H7.

Furthermore, although not a compulsory requirement of the surveillance programme, the following subtypes other than H5 or H7 were reported:

- **One Fattening Turkey holding was seropositive for influenza A virus subtype H9; and**
- **Ten holdings were seropositive for influenza A virus of undetermined subtype, including one Breeder Duck holding, two Fattening Duck holdings, four Fattening Turkey holdings (one also PCR positive for influenza A virus of undetermined subtype), one Breeder Geese holding, one Conventional Laying Hen holding (also PCR positive for influenza A virus of undetermined subtype), one Turkey Breeder holding and one other holding. One holding tested positive for influenza A virus of undetermined subtype in both Fattening Duck and Fattening Turkey categories.**
- **One holding tested positive for both influenza A virus of undetermined subtype and influenza A virus subtype H9 in Turkey Breeder and Fattening Turkey categories, respectively.**
- *In 2016, nine holdings were reported as serologically positive for influenza A virus subtype H5, including one Conventional Laying Hen holding (which was also PCR positive for H5), four Fattening Duck holdings (two were also PCR positive for H5), one*

Fattening Geese holding, one Breeder Geese holding, one Fattening Turkey holding (which was also PCR positive for H5), and one Other holding.

In addition, one Conventional Laying Hen holding tested serologically positive for influenza A virus subtype H7.

Furthermore, although not a compulsory requirement of the surveillance programme, the following subtypes other than H5 or H7 were reported:

- three Fattening Turkey holdings seropositive for influenza A virus subtype H9; and
  - 13 holdings seropositive for influenza A virus of undetermined subtype, including one Conventional Laying Hen holding, three Fattening Turkey holdings, one Turkey Breeder holding, four Fattening Duck holdings (one of which was also PCR and virus isolation positive for subtype H6), two Fattening Geese holdings, one Breeder Geese holding, and one Other holding (which was also PCR positive for influenza A virus of undetermined subtype).
- In 2015, three holdings were reported as serologically positive for influenza A virus subtype H5, including one Fattening Duck holding and two Other holdings (one was also PCR and virus isolation positive for H5).

In addition, although not a compulsory requirement of the surveillance programme, the following subtypes other than H5 or H7 were reported:

- eight H9 seropositive holdings (one Free-range Laying Hens, six Fattening Turkeys and one Turkey Breeders); and
- 20 holdings seropositive for influenza A of undetermined subtype (one Free-range Laying Hens, one Broilers (at heightened risk), six Fattening Turkeys, one Turkey Breeders, four Fattening Ducks, six Fattening Geese and one Others).

#### Wild Birds:

- 8,533 wild birds were sampled by passive surveillance.
- **HPAI H5N8 was reported in 455 wild birds of the following species, all found dead: 176 unspecified swans (*Cygnus sp.*), 47 unspecified buzzards (*Buteo spp.*), 28 unspecified gulls (*Larus sp.*), 28 Mute Swans (*Cygnus olor*), 27 Common Buzzards (*Buteo buteo*), 22 unspecified geese (*Anser sp.*), 18 Greylag Geese (*Anser anser*), 12 dabbling ducks (*Anas sp.*), 11 Canada Geese (*Branta canadensis*), 11 Grey Heron (*Ardea cinerea*), nine Mallards (*Anas platyrhynchos*), nine Whooper Swans (*Cygnus cygnus*), seven Tufted Ducks (*Aythya fuligula*), five Black-headed Gulls (*Larus ridibundus*), four herons (*Ardea sp.*), four European Herring Gulls (*Larus argentatus argentatus*), four Great Cormorants (*Phalacrocorax carbo*), four Great White Egrets (*Ardea alba*), three hawks (*Accipiter sp.*), three Northern Goshawks (*Accipiter gentilis*), three Bean Geese (*Anser fabalis*), three White Storks (*Ciconia ciconia*), two Mew Gulls (*Larus canus*), two Peregrine Falcons (*Falco peregrinus*), two White-tailed Eagles (*Haliaeetus albicilla*), one Egyptian Goose (*Alopochen aegyptiacus*), one diving duck (*Aythya sp.*), one Carrion Crow (*Corvus corone corone*), one unspecified Corvid (*Corvus sp.*), one unspecified falcon (*Falco sp.*), one Common Goldeneye (*Bucephala clangula*), one Eurasian Coot (*Fulica atra*), one Great Crested Grebe (*Podiceps cristatus*), one Greater White-fronted Goose (*Anser albifrons*) and one Little Grebe (*Tachybaptus ruficollis*). Additionally, HPAI H5N8 was found in one Greylag Goose (*Anser anser*) that was live with clinical signs.**
- **HPAI H5N5 was reported in 15 birds found dead: four unspecified swans (*Cygnus sp.*), tree unspecified buzzards (*Buteo spp.*), two dabbling ducks (*Anas sp.*), one Common Buzzard (*Buteo buteo*), one unspecified goose (*Anser sp.*), one Great Cormorant (*Phalacrocorax carbo*), one Great White Egret (*Ardea alba*), one Greylag Goose (*Anser anser*) and one Smew (*Mergus albellus*).**

- Furthermore, HPAI H5 where the N type was unspecified was reported in 259 wild birds belonging to 31 different species or species aggregates.
- LPAI H5 was reported in two unspecified swans (*Cygnus sp.*), one European Herring Gull (*Larus argentatus argentatus*), and one Bean Goose (*Anser fabalis*), all found dead.
- LPAI H7 was reported in one Mallard (*Anas platyrhynchos*), found dead.

## Greece

### Poultry:

- Greece carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Turkey Breeders, Farmed Game Birds (gallinaceous), Ratites, and Others.
- 47 Chicken Breeder holdings were sampled (86 total).
- 64 Conventional Laying Hen holdings were sampled (411 total).
- 40 Free-range Laying Hen holdings were sampled (139 total).
- 29 Broiler (at heightened risk) holdings were sampled (36 total).
- 20 Fattening Turkey holdings were sampled (40 total).
- Three Turkey Breeder holdings were sampled (five total).
- 14 Farmed Game Bird (gallinaceous) holdings were sampled (17 total).
- Three Ratite holdings were sampled (Five total).
- 50 Other holdings were sampled (144 total).
- Greece reported from 11 regions.
- **Positive holdings were reported in 2017, unlike the two preceding years.**
- **In 2017, two Conventional Laying Hen holdings tested serologically positive for influenza A virus of undetermined subtype. One Free-range Laying Hen holding tested serologically positive for influenza A virus of undetermined subtype twice.**

### Wild Birds:

- 90 wild birds were sampled by passive surveillance.
- **There were 12 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017; nine Mute Swans (*Cygnus olor*), one Common Pochard (*Aythya ferina*), one Eurasian Magpie (*Pica pica*) and one Greylag Goose (*Anser anser*).**
- **One Mute Swan (*Cygnus olor*), 'live with clinical signs', was positive for HPAI H5N5.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Hungary

### Poultry:

- Hungary carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Backyard Flocks, Farmed Game Birds (gallinaceous), Farmed Game Birds (waterfowl), and Ratites.
- 46 Chicken Breeder holdings were sampled (113 total).
- 59 Conventional Laying Hen holdings were sampled (399 total).
- 20 Free-range Laying Hen holdings were sampled (20 total).
- 51 Fattening Turkey holdings were sampled (277 total).
- 25 Turkey Breeder holdings were sampled (29 total).
- 58 Fattening Duck holdings were sampled (230 total).
- 26 Breeder Duck holdings were sampled (59 total).
- 53 Fattening Geese holdings were sampled (271 total).
- 43 Breeder Geese holdings were sampled (66 total).
- 495 Backyard Flock holdings were sampled (227,092 total).
- 32 Farmed Game Bird (gallinaceous) holdings were sampled (72 total).
- Four Farmed Game Bird (waterfowl) holdings were sampled (four total).
- Nine Ratite holdings were sampled (12 total).
- Hungary reported from 19 regions.
- **No positive holdings were reported in 2017, as was the case in 2016, but not 2015.**
- *In 2015, one Breeder Geese holding tested serologically positive for influenza A virus subtype H7.*

### Wild Birds:

- 702 wild birds were sampled by passive surveillance.
- **There were 180 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017. These were: 139 Mute Swans (*Cygnus olor*), eight Greater White-fronted Geese (*Anser albifrons*), five Lesser White-fronted Geese (*Anser erythropus*), five Greylag Geese (*Anser anser*), four Mallards (*Anas platyrhynchos*), three Black-headed Gulls (*Larus ridibundus*), three Common Buzzards (*Buteo buteo*), two Rooks (*Corvus frugilegus*), two Great White Egrets (*Ardea alba*), two Great Cormorants (*Phalacrocorax carbo*); and one of each: Pygmy Cormorant (*Microcarbo pygmaeus*), Peregrine Falcon (*Falco peregrinus*), White Stork (*Ciconia ciconia*), Saker Falcon (*Falco cherrug*), Bean Goose (*Anser fabalis*), Eurasian Coot (*Fulica atra*) and Common Tern (*Sterna hirundo*).**
- **One Mute Swan (*Cygnus olor*) and one Greater White-fronted Goose (*Anser albifrons*), both 'found dead', were positive for HPAI H5N5.**



- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Ireland

### Poultry:

- Ireland carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Fattening Ducks, Fattening Geese, Turkey Breeders and Farmed Game Birds (gallinaceous).
- 63 Chicken Breeder holdings were sampled (67 total).
- 36 Conventional Laying Hen holdings were sampled (45 total).
- 130 Free-range Laying Hen holdings were sampled (180 total).
- 58 Broiler (at heightened risk) holdings were sampled (66 total).
- 111 Fattening Turkey holdings were sampled (136 total).
- 20 Fattening Duck holdings were sampled (15 total).
- Three Fattening Geese holdings were sampled (seven total).
- One Turkey Breeder holding was sampled (one total).
- Six Farmed Game Bird (gallinaceous) holdings were sampled (three total)
- Ireland reported from two regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

### Wild Birds:

- 137 wild birds were sampled by passive surveillance.
- **H5N8 was detected in eight Whooper Swans (*Cygnus cygnus*), one Mute Swan (*Cygnus olor*), and one Grey Heron (*Ardea cinerea*) 'found dead'; and in one Eurasian Wigeon (*Mareca penelope*) found 'live with clinical signs'.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Italy

### Poultry:

- Italy carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Backyard Flocks, Farmed Game Birds (gallinaceous), Ratites, and Others.

- 243 Chicken Breeder holdings were sampled (210 total).
- 726 Conventional Laying Hen holdings were sampled (760 total).
- 63 Free-range Laying Hen holdings were sampled (57 total).
- 572 Fattening Turkey holdings were sampled (754 total).
- 47 Turkey Breeder holdings were sampled (38 total).
- 67 Fattening Duck holdings were sampled (64 total).
- 12 Breeder Duck holdings were sampled (eight total).
- Ten Fattening Geese holdings were sampled (17 total).
- Nine Breeder Geese holdings were sampled (six total).
- 190 Backyard Flock holdings were sampled (111 total).
- Ten Farmed Game Bird (gallinaceous) holdings were sampled (nine total).
- 14 Ratite holdings were sampled (16 total).
- 848 Other holdings were sampled (672 total).
- Italy reported from 18 regions.
- **No positive holdings were reported in 2017, unlike 2016 and 2015.**
- *In 2016, two Other (grower) holdings were reported as serologically positive for influenza A virus, one for subtype H5 (which was also PCR positive for H5) and one for subtype H7 (which was also PCR and virus isolation positive for H7). In addition, one Other (grower) holding, which did not undergo serological testing, tested PCR and virus isolation positive for subtype H5 (- in the 2016 national surveillance plan for Italy virological testing was approved for grower farms).*
- *In 2015, three holdings were reported as positive. One Backyard Flock holding tested serologically and virologically (PCR and virus isolation) positive for influenza A virus subtype H7. Two Other holdings tested serologically and virologically positive for influenza A virus subtype H5 (one was PCR/virus isolation positive for H5, while the other was PCR positive for H5/virus isolation not performed).*

#### Wild Birds:

- 2,019 wild birds were sampled by passive surveillance.
- **There were 14 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017. These were four Whooper Swans (*Cygnus cygnus*), all live with clinical signs; as well as two Rock Doves (*Columba livia*), two Mute Swans (*Cygnus olor*), one Eurasian Wigeon (*Mareca penelope*), one Whooper Swan (*Cygnus cygnus*), one Mallard (*Anas platyrhynchos*), one Greylag Goose (*Anser anser*), one Common Shelduck (*Tadorna tadorna*) and one Common Kestrel (*Falco tinnunculus*), all 'found dead'.**
- **HPAI H5N5 was detected in one Gadwall (*Mareca strepera*) 'found dead'.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Latvia

### Poultry:

- Latvia carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Fattening Ducks, Fattening Turkeys, Fattening Geese, and Backyard Flocks.
- One Chicken Breeder holding was sampled (one total).
- 33 Conventional Laying Hen holdings were sampled (33 total).
- One Fattening Duck holding was sampled (one total).
- Three Fattening Turkey holdings were sampled (three total).
- One Fattening Geese holding was sampled (one total).
- 60 Backyard Flock holdings were sampled (3,783 total).
- Latvia reported from five regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

### Wild Birds:

- 11 wild birds were sampled by passive surveillance.
- There were no positive HPAI H5, LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Lithuania

### Poultry:

- Lithuania carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Backyard Flocks, Conventional Laying Hens, Broilers (at heightened risk), Fattening Ducks and Fattening Turkeys.
- Five Backyard Flock holdings were sampled (five total).
- Two Conventional Laying Hen holdings were sampled (three total).
- Five Broiler (at heightened risk) holdings were sampled (21 total).
- One Fattening Ducks holding was sampled (one total).
- One Fattening Turkeys holding was sampled (one total).
- Lithuania reported from eight regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

### Wild Birds:

- 131 wild birds were sampled by passive surveillance.

- HPAI H5N8 was detected in 11 Mute Swans (*Cygnus olor*) and one Whooper Swan (*Cygnus cygnus*), all 'found dead'.
- One Mute Swan (*Cygnus olor*), 'found dead' was reported positive for HPAI H5, but the N type was not determined.
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Luxembourg

### Poultry:

- Luxembourg carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Backyard Flocks, and Ratites.
- Four Conventional Laying Hen holdings were sampled (four total).
- Four Free-range Laying Hen holdings were sampled (four total).
- Three Broiler (at heightened risk) holdings were sampled (three total).
- 21 Backyard Flock holdings were sampled (500 total).
- Two Ratite holdings were sampled (one total).
- Luxembourg reported from one region.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

### Wild Birds:

- 61 wild birds were sampled by passive surveillance.
- There were no positive HPAI H5, LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Malta

### Poultry:

No poultry surveillance data was reported from Malta for the 2017 period.

### Wild Birds:

No wild birds were sampled by passive surveillance in 2017, as was the case in 2016 and 2015.

## The Netherlands

### Poultry:

- The Netherlands carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Fattening Ducks and Breeder Ducks.

- 562 Chicken Breeder holdings were sampled (281 total).
- 904 Conventional Laying Hen holdings were sampled (447 total).
- 880 Free-range Laying Hen holdings were sampled (444 total).
- 880 Broiler (at heightened risk) holdings were sampled (274 total).
- 81 Fattening Turkey holdings were sampled (41 total).
- 48 Fattening Duck holdings were sampled (12 total).
- 20 Breeder Duck holdings were sampled (12 total).
- The Netherlands reported from 12 regions.
- **Positive holdings were reported in 2017, which was also the case in 2016 and 2015.**
- **In 2017, six holdings were reported as positive. Five holdings were reported positive for influenza A virus subtype H5 including one Chicken Breeder holding (also PCR and virologically positive), one Breeder Ducks holding (also PCR and virologically positive) and three Free-range Laying Hen holdings. One Free-range Laying Hen holding tested serologically, PCR and virologically positive for influenza A virus subtype H7.**
- *In 2016, four holdings were reported as positive. Two holdings tested serologically and virologically (PCR and virus isolation) positive for influenza A virus subtype H5, including one Free-range Laying Hen holding and one holding positive in both the Conventional Laying Hen and Free-range Laying Hen categories. In addition, two Free-range Laying Hen holdings tested serologically and virologically (PCR and virus isolation) positive for influenza A virus subtype H7.*
- *In 2015, three Free-range Laying Hen holdings were reported as positive. One was serologically and virologically (PCR and virus isolation) positive for influenza A virus subtype H5 and two were serologically and virologically (PCR and virus isolation) positive for influenza A virus subtype H7.*

#### Wild Birds:

- 509 wild birds were sampled by passive surveillance.
- **There were 16 confirmed HPAI H5N8 detections in wild birds all 'found dead' by passive surveillance in 2017. These were: six Mallards (*Anas platyrhynchos*), four Mute Swans (*Cygnus olor*), two Greylag Geese (*Anser anser*), one Tufted Duck (*Aythya fuligula*), one Peregrine Falcon (*Falco peregrinus*), one Eurasian Coot (*Fulica atra*) and one Common Buzzard (*Buteo buteo*).**
- **HPAI H5N5 was reported in one Greylag Goose (*Anser anser*) 'found dead'.**
- **HPAI H5N6 was reported in four Mute Swans (*Cygnus olor*) and one Tufted Duck (*Aythya fuligula*), all 'found dead'.**
- **Four Mute Swans (*Cygnus olor*), 'found dead' were reported positive for HPAI H5, but the N type was not determined.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Poland

### Poultry:

- Poland carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Farmed Game Birds (gallinaceous), Farmed Game Birds (waterfowl) and Ratites.
- 56 Chicken Breeder holdings were sampled (488 total).
- 72 Conventional Laying Hen holdings were sampled (622 total).
- 42 Free-range Laying Hen holdings were sampled (90 total).
- 60 Fattening Turkey holdings were sampled (219 total).
- 22 Turkey Breeder holdings were sampled (32 total).
- 85 Fattening Duck holdings were sampled (339 total).
- 31 Breeder Duck holdings were sampled (39 total).
- 93 Fattening Geese holdings were sampled (994 total).
- 80 Breeder Geese holdings were sampled (230 total).
- 39 Farmed Game Bird (gallinaceous) holdings were sampled (92 total).
- Two Farmed Game Bird (waterfowl) holdings were sampled (seven total).
- 32 Ratite holdings were sampled (75 total).
- Poland reported from 16 regions.
- **Positive holdings were reported in 2017, which was also the case in 2016 and 2015.**
- **In 2017, four Breeder Geese holdings were reported as serologically positive for influenza A virus subtype H5.**
- *In 2016, two Breeder Geese holdings were reported as serologically positive for influenza A virus subtype H5.*
- *In 2015, nine Breeder Geese holdings were reported as positive. Eight were serologically positive for influenza A virus subtype H5 and one was serologically positive for influenza A virus subtype H7.*

### Wild Birds:

- 209 wild birds were sampled by passive surveillance.
- **There were 97 confirmed HPAI H5N8 detections in wild birds all 'found dead' by passive surveillance in 2017. These were 46 Mute Swans (*Cygnus olor*) as well as 38 unspecified swans (*Cygnus sp.*), four Mallards (*Anas platyrhynchos*), three unspecified dabbling ducks (*Anas sp.*) and one: Whooper Swan (*Cygnus cygnus*), Eurasian Coot (*Fulica atra*), unspecified cormorant (*Phalacrocorax sp.*), unspecified gull (*Larus sp.*) unspecified egret (*Egretta sp.*) and unspecified goose (*Anser sp.*).**

- **HPAI H5N5 was detected in four Mute Swans (*Cygnus olor*) and one unspecified Swan (*Cygnus sp.*), all 'found dead'.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Portugal

### Poultry:

- Portugal carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Fattening Ducks, Breeder Ducks, Backyard Flocks, Farmed Game Birds (gallinaceous), Farmed Game Birds (waterfowl) and Ratites.
- 76 Chicken Breeder holdings were sampled (79 total).
- 95 Conventional Laying Hen holdings were sampled (128 total).
- 36 Free-range Laying Hen holdings were sampled (24 total).
- 65 Broiler (at heightened risk) holdings were sampled (229 total).
- 63 Fattening Turkey holdings were sampled (131 total).
- 21 Fattening Duck holdings were sampled (15 total).
- Three Breeder Duck holdings were sampled (two total).
- 72 Backyard Flock holdings were sampled (237,000 total).
- 43 Farmed Game Bird (gallinaceous) holdings were sampled (40 total).
- One Farmed Game Bird (waterfowl) holding was sampled (one total).
- Eight Ratite holdings were sampled (Seven total).
- Portugal reported from seven regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

### Wild Birds:

- 54 wild birds were sampled by passive surveillance.
- **One Grey Heron (*Ardea cinerea*) 'found dead', was reported positive for HPAI H5N8 in 2017.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Romania

### Poultry:

- Romania carried out surveillance using a risk-based sampling approach.

- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Fattening Turkeys, Breeder Ducks, Fattening Ducks, Backyard Flocks, Farmed Game Birds (gallinaceous), and Others.
- 64 Chicken Breeder holdings were sampled (41 total).
- 212 Conventional Laying Hen holdings were sampled (206 total).
- 31 Fattening Turkey holdings were sampled (16 total).
- Two Breeder Duck holdings were sampled (two total).
- Three Fattening Duck holdings were sampled (three total).
- 1,205 Backyard Flock holdings were sampled (1,205 total).
- 14 Farmed Game Bird (gallinaceous) holdings were sampled (eight total).
- One Other holding was sampled (one total).
- Romania reported from 43 regions.
- **Positive holdings were reported in 2017, unlike in 2016 and 2015.**
- **In 2017, 14 backyard flock holdings were reported as serologically positive for influenza A virus subtype H5 (12 of which were PCR and virologically positive for influenza A virus subtype H5). Five holdings tested positive twice.**

#### Wild Birds:

- 528 wild birds were sampled by passive surveillance.
- **There were 143 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017. One Whooper Swan (*Cygnus cygnus*) was 'live with clinical signs' when sampled. The remaining birds, all 'found dead' were: 73 Whooper Swans (*Cygnus cygnus*), 40 Mute Swans (*Cygnus olor*), nine unspecified gulls (*Larus sp.*), five Eurasian Teal (*Anas crecca*), five Black Swans (*Cygnus atratus*), three Mallards (*Anas platyrhynchos*), one Little Egret (*Egretta garzetta*), one Great Cormorant (*Phalacrocorax carbo*), one Fieldfare (*Turdus pilaris*), one Eurasian Coot (*Fulica atra*) and one unspecified pelican (*Pelecanus sp.*).**
- **10 Whooper Swans (*Cygnus cygnus*), five Gulls (*Larus sp.*), two Great White Pelicans (*Pelecanus onocrotalus*) and two Mallards (*Anas platyrhynchos*), all 'found dead', were positive for HPAI H5, but the N type was not determined.**
- **LPAI H5 was detected in one Mute Swan (*Cygnus olor*) and one Whooper Swan (*Cygnus cygnus*), both 'found dead'.**
- There were no positive LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

### **Slovak Republic**

#### Poultry:

- The Slovak Republic carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Fattening Geese, Farmed Game Birds (gallinaceous), and Ratites.



- 12 Chicken Breeder holdings were sampled (12 total).
- 50 Conventional Laying Hen holdings were sampled (60 total).
- Ten Fattening Turkey holdings were sampled (15 total).
- Seven Turkey Breeder holdings were sampled (seven total).
- Five Fattening Duck holdings were sampled (5 total).
- One Breeder Duck holding were sampled (one total).
- Four Fattening Geese holdings were sampled (five total).
- 19 Farmed Game Bird (gallinaceous) holdings were sampled (18 total).
- Seven Ratite holdings were sampled (ten total).
- Slovak Republic reported from four regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

#### Wild Birds:

- 513 wild birds were sampled by passive surveillance.
- **There were 70 confirmed HPAI H5N8 detections in wild birds 'found dead' by passive surveillance in 2017. These were 52 Mute Swans (*Cygnus olor*), six Greylag Geese (*Anser anser*), four Grey Heron (*Ardea cinerea*), two Whooper Swans (*Cygnus cygnus*), two Mallards (*Anas platyrhynchos*), two unspecified swans (*Cygnus sp.*), one Pink-footed Goose (*Anser brachyrhynchus*) and one Common Blackbird (*Turdus merula*).**
- **Seven Mute Swans (*Cygnus olor*) and three Mallards (*Anas platyrhynchos*), all 'found dead', were positive for HPAI H5, but the N type was not determined.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## **Slovenia**

#### Poultry:

- Slovenia carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Fattening Turkeys, Backyard Flocks, Farmed Game Birds (gallinaceous), and Farmed Game Birds (waterfowl).
- Seven Chicken Breeder holdings were sampled (seven total).
- 60 Conventional Laying Hen holdings were sampled (141 total).
- 43 Fattening Turkey holdings were sampled (43 total).
- 86 Backyard Flock holdings were sampled (4,154 total).
- Five Farmed Game Bird (gallinaceous) holdings were sampled (five total).
- One Farmed Game Bird (waterfowl) holding was sampled (one total).

- Slovenia reported from two regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

#### Wild Birds:

- 556 wild birds were sampled by passive surveillance.
- **There were 169 confirmed HPAI H5N8 detections in wild birds sampled by passive surveillance in 2017. These were 167 Mute Swans (*Cygnus olor*), one Mallard (*Anas platyrhynchos*) and one Greater White-fronted Goose (*Anser albifrons*), all 'found dead'.**
- **HPAI H5N5 was detected in three Mute Swans (*Cygnus olor*), all 'found dead'.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

### **Spain**

#### Poultry:

- Spain carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Turkey Breeders, Fattening Ducks, Fattening Geese, Breeder Geese, Backyard Flocks, Farmed Game Birds (gallinaceous), Farmed Game Birds (waterfowl), Ratites, and Others.
- 118 Chicken Breeder holdings were sampled (403 total).
- 77 Conventional Laying Hen holdings were sampled (673 total).
- 71 Free-range Laying Hen holdings were sampled (327 total).
- One Broiler (at heightened risk) holding was sampled (1,034 total).
- 60 Fattening Turkey holdings were sampled (629 total).
- Nine Turkey Breeder holdings were sampled (13 total).
- 50 Fattening Duck holdings were sampled (49 total).
- 13 Fattening Geese holdings were sampled (ten total).
- One Breeder Geese holdings were sampled (three total).
- 27 Backyard Flock holdings were sampled (8,117 total).
- 178 Farmed Game Bird (gallinaceous) holdings were sampled (494 total).
- 95 Farmed Game Bird (waterfowl) holdings were sampled (117 total).
- 27 Ratite holdings were sampled (50 total).
- 107 Other holdings were sampled (4,761 total).
- Spain reported from 17 regions.
- **Positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

- In 2017, six Farmed Game Bird (gallinaceous) holdings were reported as serologically positive for influenza A virus subtype H7. Thirteen holdings were reported as serologically positive for influenza A virus subtype H5, including nine Fattening Duck holdings (all of which were PCR positive for H5), three Farmed Game Bird (waterfowl) holdings and one Fattening Geese holding.

One holding tested positive for both influenza A virus of an undetermined subtype and Influenza A virus subtype H7, whilst another holding tested positive for influenza A virus of an undetermined subtype in both semesters.

Furthermore, although not a compulsory requirement of the surveillance programme, the following seropositive holdings were reported:

- 69 holdings were reported as serologically positive for influenza A virus of undetermined subtype including 25 Farmed Game Birds (waterfowl) holdings, 9 Fattening Duck holdings, 10 Farmed Game Birds (gallinaceous) holdings, eight Others holdings, six Conventional Laying Hen holdings, four Chicken Breeder holdings, four Free-range Laying Hen holdings, three Fattening Turkey holdings and one Backyard Flock holding. One Fattening Duck holding tested serologically positive for influenza A virus of undetermined subtype in both semesters.
- *In 2016, seven holdings were reported as serologically positive for influenza A virus subtype H5, including one Fattening Geese holding, five Farmed Game Bird (waterfowl) holdings, and one Other holding.*

*In addition, three Farmed Game Bird (waterfowl) holdings tested serologically positive for influenza A virus subtype H7.*

*Furthermore, although not a compulsory requirement of the surveillance programme, the following seropositive holdings were reported:*

- *90 holdings seropositive for influenza A virus of undetermined subtype, including six Chicken Breeder holdings, three Conventional Laying Hen holdings, four Free-range Laying Hen holdings, three Fattening Turkey holdings, ten Fattening Duck holdings (one of which was also PCR positive for influenza A virus of undetermined subtype), one Backyard Flock holding, nine Farmed Game Bird (gallinaceous) holdings, 49 Farmed Game Bird (waterfowl) holdings, and five Other holdings.*
- *In 2015, no holdings were found to be seropositive for influenza A virus subtypes H5 or H7.*

*However, although not a compulsory requirement of the surveillance programme, the following subtypes other than H5 or H7 were reported:*

- *11 H1 seropositive holdings (one Chicken Breeders, one Conventional Laying Hens, seven Fattening Ducks (two of which were also PCR positive for influenza A), one Farmed Game Birds (gallinaceous) and one Farmed Game Birds (waterfowl));*
- *two H6 seropositive holdings (one Farmed Game Birds (waterfowl), and one Others, which was also seropositive for H10); and*
- *one H10 seropositive Other holding (which was also seropositive for H6).*
- *In 2014, three Fattening Duck holdings tested serologically and PCR positive for influenza A virus of undetermined subtype.*

#### Wild Birds:

- 314 wild birds were sampled by passive surveillance.

- HPAI H5N8 was detected in two Greylag Geese (*Anser anser*) and one Grey Heron (*Ardea cinerea*), all 'found dead'.
- LPAI H5 was reported in one Mallard (*Anas platyrhynchos*), 'found dead'.
- There were no positive LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Sweden

### Poultry:

- Sweden carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Broilers (at heightened risk), Fattening Turkeys, Turkey Breeders, Fattening Ducks, Fattening Geese, Farmed Game Birds (gallinaceous), Farmed Game Birds (waterfowl), and Ratites.
- 31 Chicken Breeder holdings were sampled (31 total).
- 68 Conventional Laying Hen holdings were sampled (229 total).
- 43 Free-range Laying Hen holdings were sampled (151 total).
- 23 Broiler (at heightened risk) holdings were sampled (32 total).
- 16 Fattening Turkey holdings were sampled (17 total).
- Three Turkey Breeder holdings were sampled (three total).
- One Fattening Duck holdings were sampled (one total).
- Five Fattening Geese holdings were sampled (five total).
- 13 Farmed Game Bird (gallinaceous) holdings were sampled (13 total).
- Two Farmed Game Bird (waterfowl) holdings were sampled (two total).
- Two Ratite holdings were sampled (two total).
- Sweden reported from seven regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

### Wild Birds:

- 452 wild birds were sampled by passive surveillance.
- **39 wild birds, all 'found dead', were reported as positive for HPAI H5, but the N type was unspecified. These were: 15 Mute Swans (*Cygnus olor*), seven White-tailed Eagles (*Haliaeetus albicilla*), four Mallards (*Anas platyrhynchos*), three Peregrine Falcons (*Falco peregrinus*), three Common Buzzards (*Buteo buteo*), two feral Domestic Geese (*Anser anser domesticus*), two Northern Goshawks (*Accipiter gentilis*), one Black-headed Gull (*Larus ridibundus*), one Rook (*Corvus frugilegus*) and one Carrion Crow (*Corvus corone*).**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## United Kingdom

### Poultry:

- The United Kingdom carried out surveillance using a risk-based sampling approach.
- Test results from holdings sampled were reported from Chicken Breeders, Conventional Laying Hens, Free-range Laying Hens, Fattening Turkeys, Turkey Breeders, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Farmed Game Birds (gallinaceous), and Farmed Game Birds (waterfowl).
- 12 Chicken Breeder holdings were sampled (124 total).
- 41 Conventional Laying Hen holdings were sampled (715 total).
- Ten Free-range Laying Hen holdings were sampled (263 total).
- 51 Fattening Turkey holdings were sampled (240 total).
- 10 Turkey Breeder holding were sampled (37 total).
- 43 Fattening Duck holdings were sampled (90 total).
- 32 Breeder Duck holdings were sampled (113 total).
- 39 Fattening Geese holdings were sampled (71 total).
- Seven Breeder Geese holdings were sampled (22 total).
- 41 Farmed Game Bird (gallinaceous) holdings were sampled (101 total).
- 11 Farmed Game Birds (waterfowl) holdings were sampled (51 total).
- The UK reported from 32 regions.
- **As in 2016, positive holdings were also reported in 2017. No holdings were reported as positive in 2015.**
- **In 2017, three holdings were reported as serologically positive for influenza A virus subtype H5. These included one Duck Breeder holding, one Farmed Game Birds (gallinaceous) holding and one Fattening Geese holding.**
- *In 2016, six holdings were reported as positive. Two Breeder Duck holdings and four Fattening Geese holdings tested serologically positive for influenza A virus subtype H5.*

### Wild Birds:

- 1,195 wild birds were sampled by passive surveillance.
- **There were 20 confirmed HPAI H5N8 detections in wild birds 'found dead' by passive surveillance in 2017. These were eight Mute Swans (*Cygnus olor*), three Common Buzzards (*Buteo buteo*), two Whooper Swans (*Cygnus cygnus*), two Greylag Geese (*Anser anser*), two dabbling ducks (*Anas sp.*), one Canada Goose (*Branta canadensis*), one Black-headed Gull (*Larus ridibundus*) and one unspecified buzzard (*Buteo sp.*).**
- **One Mute Swan (*Cygnus olor*) and one Whooper Swan (*Cygnus cygnus*), both 'found dead', were reported as positive for HPAI H5, but the N type was unspecified.**

- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

## Non-EU countries

### Switzerland

#### Poultry:

- Switzerland carried out surveillance using a representative sampling approach.
- Test results from holdings sampled were reported from Free-range Laying Hens and Fattening Turkeys.
- 68 Free-range Laying Hen holdings were sampled (1,890 total).
- 25 Fattening Turkey holdings were sampled (70 total).
- Switzerland reported from seven regions.
- **No positive holdings were reported in 2017, which was also the case in 2016 and 2015.**

#### Wild Birds:

- 162 wild birds were sampled by passive surveillance in 2017.
- **There were 14 confirmed HPAI H5N8 detections in wild birds ‘found dead’ by passive surveillance in 2017. These were: six Mute Swans (*Cygnus olor*), five Mallards (*Anas platyrhynchos*), one Tufted Duck (*Aythya fuligula*), one Eurasian Coot (*Fulica atra*) and one unspecified swan (*Cygnus sp.*).**
- **HPAI H5N6 was reported in one Mute Swan (*Cygnus olor*) ‘live with clinical signs’.**
- There were no positive LPAI H5 or LPAI H7 detections in wild birds sampled by passive surveillance in 2017.

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## 5 DISCUSSION

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### 5.1 Poultry

In 2017 active surveillance for avian influenza in poultry holdings was carried out in 27 MS according to Directive 2005/94/EC (EC 2005). In addition, one non-EU country, Switzerland, submitted data for this report. Eleven MS applied a risk-based sampling approach according to guidelines of Commission Decision 2010/367/EC (EC 2010) (10 MS used a risk-based approach in 2016, 11 in 2015 and 2014).

A total of 16,836 holdings were sampled, which compares to 18,138 in 2016 and 21,867 holdings in 2015. The most frequently sampled poultry category in 2017 was Laying Hens (Conventional and Free-range combined), making up 30.9% of the total holdings sampled by EU MS in 2017, followed by Backyard Flocks (14.7% of EU holdings sampled), and Chicken Breeders (12.1% of EU holdings sampled). The least sampled poultry category was Ratites (0.9% of total EU poultry holdings sampled) reflecting the low number of Ratite holdings as a proportion of all poultry holdings across the EU (0.09% of total holdings reported to the survey).

The number of holdings sampled by MS varied from 11 holdings in Lithuania to 3,375 holdings in the Netherlands. Italy and the Netherlands sampled the most holdings among MS, together sampling 36.7% (6,186 holdings) of the total holdings sampled in 2017. There was an increase in the number of holdings sampled from four categories: Free-range Laying Hens (+16.2%), Fattening Ducks (+24.4%), Ratites (+3.6%) and Others (+10.6%), compared to 2016, while all the other poultry categories saw a decrease in the number of holdings sampled in 2017. Overall there was a 7.1% decrease in the number of holdings sampled in 2017 compared to 2016.

In 2017, evidence of previous infection with H5 or H7 avian influenza was detected in 71 holdings, which is 0.42% of the total EU holdings sampled. This compares to 134 H5/H7 seropositive holdings in 2016 (0.74% of total EU holdings sampled) and 40 H5/H7 seropositive holdings in 2015 (0.18% of total EU holdings sampled)

Detection of antibodies to avian influenza, H5 and H7 subtypes, occurred in Chicken Breeders, Free-range Laying Hens, Fattening Turkeys, Fattening Ducks, Breeder Ducks, Fattening Geese, Breeder Geese, Backyard Flocks, Farmed Game Birds (gallinaceous and waterfowl), and Others. Most detections of antibodies to subtype H5 infection were in Backyard Flocks (14/62, 22.6%) followed by Fattening Ducks (11/62, 17.7%). Antibodies to the H7 subtype were detected in Farmed Game Birds (waterfowl) (7/11, 63.6%), followed by Free-range Laying Hens, Farmed Game Birds (gallinaceous) and Others (all 1/11, 9.1%).

Sixty-one holdings were found positive for subtype H5 by serological testing (0.36% of total EU holdings sampled). This compares to 124 and 33 holdings seropositive for H5 in 2016 (0.68% of total EU holdings sampled) and 2015 (0.15% of total EU holdings sampled), respectively. Of the 61 H5 seropositive poultry holdings reported by MS, 59 holdings underwent follow-up testing for the presence of active infection, and 24 of these (24/59, 40.7%) tested virologically positive (by PCR and in some cases virus isolation as well) for subtype H5. In comparison, seven of 119 seropositive holdings (5.9%) that underwent follow-up testing in 2016 tested positive for subtype H5 by PCR or virus isolation, whilst in 2015, eight of 26 H5 seropositive holdings (30.8%) that underwent follow-up testing, tested positive for subtype H5 by PCR or virus isolation.

Ten holdings were found positive for subtype H7 by serological testing (0.06% of total EU holdings sampled). This compares to ten holdings seropositive for H7 in 2016 (0.06% of total EU holdings sampled) and seven holdings in 2015 (0.03% of total EU holdings sampled). Of the ten H7 seropositive poultry holdings reported by MS in 2017, nine underwent follow-up testing for the presence of active infection, and one of these (1/9, 11.1%) tested virologically positive for subtype H7. In comparison in 2016, all ten poultry holdings reported to be H7 seropositive underwent follow-up testing for the presence of active infection and three of these (3/10, 30.0%) tested virologically positive (by PCR and virus isolation) for subtype H7. In 2015, three of seven H7 seropositive holdings (42.9%) that underwent follow-up testing, tested positive for subtype H7 by PCR or virus isolation.

Overall, H5 or H7 seropositive poultry holdings were reported from ten MS: Belgium, the Czech Republic, Germany, Denmark, France, the Netherlands, Poland, Romania, Spain and the UK. Nine of these MS also reported H5 or H7 seropositive holdings in 2016 (BE, CZ, DE, DK, ES, FR, NL, PL and UK). A high proportion of the H5 seropositive holdings were found in Poland (14/61, 23.0%) and Spain (13/61, 21.3%), while H7 seropositive holdings were detected in Denmark (2/10, 20.0%), Germany (1/10, 10.0%), the Netherlands (1/10, 10.0%) and Spain (6/10, 60.0%). In addition, in 2017, nineteen holdings from Germany were seropositive for influenza A virus (nine were also PCR positive for subtype H5; one PCR positive for subtype H9 and two PCR positive for Influenza A virus) and Spain reported sixty-nine holdings as seropositive for influenza A virus of undetermined subtype.

The detection rate of H5/H7 seropositive holdings was greatest in Farmed Game Birds (waterfowl) (16 H5/H7 seropositive holdings/151 sampled, 10.6%), followed by Backyard Flocks (14 H5/H7 seropositive holdings/2,478 sampled, 0.08%), Fattening Ducks (11 H5/H7 seropositive holdings/1,214, 2.2%), Breeder Ducks (14 H5/H7 seropositive holdings/366, 3.8%) and Fattening Ducks (14 H5/H7 seropositive holdings/1,214, 0.9%). In comparison, the detection rate of H5/H7 seropositive holdings was greatest in Breeder Ducks in 2016 (74 H5/H7 seropositive holdings/632 sampled, 11.7%). A high detection rate of H5/H7 in Farmed Game Bird (waterfowl) holdings emphasises the importance of continued surveillance efforts within this sector, especially considering the release of game birds into the wild. Holdings that have not undergone testing, but may be positive, could consequently act as sources of infection if reared game come into contact with wild birds.

In previous survey years there have also been high rates of detection in ducks and geese; the detection rate of H5/H7 seropositive holdings was greatest in Breeder Ducks (74 H5/H7 seropositive holdings/632 sampled, 11.7%) in 2016 and Breeder Geese in 2015 (15 H5/H7 seropositive holdings/210 sampled, 7.1%). The high rate of detections in these categories may be due to the following factors: waterfowl, ducks and geese are less likely to show clinical signs than other poultry species so infection is less likely to have been detected earlier by passive surveillance, while in other species clinical disease due to AI may lead to earlier detection. The breeder category birds tend to have a longer lifespan than birds of other poultry categories and therefore a longer time period over which they could be exposed to the virus. Farmed Game Birds (waterfowl), ducks and geese are also frequently kept outdoors and therefore may have a higher probability of contact with wild birds, either directly or indirectly, and hence possibly a greater risk of exposure to AI virus. Furthermore, in general viruses of wild bird origin have a better fitness and replication capacity in domestic waterfowl species compared to gallinaceous hosts.

The sampling regimes among MS and poultry categories are diverse with different degrees of targeting and testing frequencies, varying numbers of samples collected in each flock and likely variance of within-flock seroprevalence at the time of sampling. Hence differences in between-flock detection rates for poultry categories or MS need to be interpreted with great caution. In particular, those MS undertaking risk-based sampling may experience higher seropositive detection rates than those using representative sampling.

Infection with LPAI in any poultry species, and even HPAI in domestic ducks and geese, can result in only mild clinical signs and may not be detected by poultry keepers and veterinary practitioners. Serological surveillance has greatest value in these situations and particularly at the current time given the recent increased HPAI activity globally. The H5 HPAI epidemic in France of 2015-16 most probably emerged through such a pathway whereby clinical infection with HPAI viruses was difficult to detect through passive surveillance in local duck breeds owing to largely asymptomatic infection, and then spread as a consequence. In addition to the value of serological surveillance for poultry health, recent events involving H7N9 LPAI virus in China highlight the potential value for public health in surveillance for avian influenza in the absence of disease. A positive PCR or virus isolation result indicates that active infection is present on the holding and potential for transmission exists. Such a test result will lead to the implementation of measures and restrictions in accordance with Council Directive 2005/94/EC (EC 2005).

The current guidelines on surveillance in poultry for the EU surveillance programme (EC 2010) encourage a risk-based approach. Criteria and risk factors suggested for incorporation include those associated with virus introduction into poultry holdings due to direct or indirect exposure to wild birds; those for potential for virus spread within and between poultry holdings; as well as the consequences (impact) of the spread of avian influenza between poultry holdings. It is recognised that to carry out risk-based surveillance incorporating such risk factors, an evidence-base



applicable to the individual Member State is required. If insufficient evidence is available to develop a risk-based surveillance plan, then representative sampling is recommended.

## 5.2 Wild Birds

Avian influenza (AI) is a highly contagious viral infection, which can affect all species of birds. Highly pathogenic avian influenza (HPAI) can spread rapidly causing serious disease with high mortality in many poultry species. To date all HPAI viruses have been of H5 or H7 subtypes of influenza A. The on-going goose/Guangdong H5 HPAI epidemic has affected 79 countries across Asia, Africa, Europe and North America since 1996, resulting in the loss of hundreds of millions of birds and causing major socio-economic impacts.

Prior to 2005, HPAI infection had rarely been observed in wild birds, and nearly always in connection with poultry outbreaks indicating infection spread from poultry to wild birds. However, since the current H5N1 HPAI epizootic, wild birds have, together with other vectors, been implicated in the spread of this virus and more recently with other H5 HPAI subtypes in Asia, Europe and North America.

The EU guidelines on surveillance for avian influenza in wild birds published in 2010 (EC 2010) focus the objective of the surveillance to the timely detection of H5N1 HPAI and do not include baseline surveillance for LPAI H5 or H7. The guidelines state that a risk-based design should be implemented via passive surveillance i.e. moribund wild birds or birds found dead, particularly those on the target species list (see Annex 6, Table 1). Formulation of this list incorporated data on the number of detections of H5N1 HPAI in the EU surveillance programme from 2005 – 2009 and findings on the epidemiology of this virus in wild birds which in the 2000s indicated that HPAI infection of wild birds caused consequent mortality. In light of the different apparent susceptibility of some species to recent HPAI incursions (compared to earlier H5N1 outbreaks), the list of target species was reviewed by EFSA in 2017 (EFSA *et al.* 2017).

The detection of HPAI in wild birds not associated with outbreaks in poultry illustrates the value of wild bird surveillance in the early detection of the presence of HPAI in a country (e.g. Hesterberg *et al.* 2009) thus providing early warning of increased risk for poultry incursion in a region or MS. Detections of such infections in wild birds require the implementation of control measures, which may include investigations on poultry holdings to detect possible virus introduction, increasing vigilance and reinforcement of biosecurity measures amongst the poultry sector, especially free-range poultry (EC 2018).

There is evidence for wild birds playing a role in the 2014 introduction of H5N8 HPAI (clade 2.3.4.4A) to Europe (Verhagen *et al.* 2015), North America (Lee *et al.* 2015) and parts of Asia. This 2014 introduction was associated with limited clinical disease in European wild bird populations, with detections in Mute Swans (*Cygnus olor*) in Sweden, Eurasian Wigeon (*Mareca penelope*) in the Netherlands, and Eurasian Teal (*Anas crecca*) and Mallards (*Anas platyrhynchos*) in Germany.

In autumn 2016 a second wave of H5N8 HPAI (clade 2.3.4.4B) was detected in European wild bird populations. Extensive infection within poultry holdings was subsequently reported across Europe, most commonly detected by increased mortality and morbidity within flocks (scanning surveillance) and outbreak investigation (tracing) activities. The majority of HPAI detections reported in wild birds during 2017 represent a continuation of the epizootic initiated in October 2016.

As in previous years, surveillance programmes in 2017 were variable between MS with respect to a number of parameters (including sample size, temporal pattern, and differential targeting of species and areas). Therefore only limited inferences can be made by direct comparisons of detections in different MS, species and seasons. The non-random nature of the sampling means that the proportion of positives observed in a species, Member State or time period cannot be assumed to be the true prevalence in the population sampled. The efficacy of passive surveillance is problematic to measure as detection relies on i) birds dying, and ii) then being found. A large amount of time and resources may be spent in patrolling a reserve, or the public may frequently observe a particular area, but if mortalities are not observed and reported to the appropriate veterinary authority then dead birds will not be tested for AI. Further, it is known that carcasses of

dead bird are rapidly removed by scavengers (Pain 1991). Nonetheless, passive surveillance may be effective for the detection of Highly Pathogenic Avian Influenza even when only a relatively small number of birds are tested.

A total of 19,543 wild birds, from 27 Member States of the European Union and one non-MS (Switzerland) were tested as a result of passive sampling programmes during the 2017 survey. HPAI detections were made in 1,904 birds across 24 MS and Switzerland. These detections were made in a diverse range of birds belonging to 10 Orders and 75 species, or species aggregates (at genus level). Most HPAI detections belonged to clade 2.3.4.4B that was found circulating in high numbers in the 4<sup>th</sup> quarter of 2016. HPAI H5N8 (1,509 birds) and HPAI where the N type was not determined (360 birds) were largely detected in the 1<sup>st</sup> quarter of 2017, but with sporadic cases reported throughout the remainder of the year. Subtypes HPAI H5N5 (29 birds) were exclusively detected in the 1<sup>st</sup> quarter of 2017, while six detections of HPAI H5N6 were reported in the 4<sup>th</sup> quarter of 2017 in the Netherlands and Switzerland. At the time of writing, increased insights into the epidemiology of H5N6 are ongoing but there appear to be possible differences in virus properties that might affect infection kinetics and virus transmission within and between species. Further detections of HPAI H5N8 were made via active sampling programmes, although at a lower proportion of birds sampled than for passive surveillance.

The proportion of all wild birds sampled by passive surveillance that yielded any AI virus was 10.4% (n=2,039/19,543) in 2017, this is comparable to 2016 (10.1%), but much higher than previous years (0.29-2.96%). For HPAI detected by passive surveillance, the proportion of wild birds testing positive was 9.7% (n=1,904/19,543) in 2017, an increase on 2016 (6.7%), and (much higher than previous years); whilst the proportion testing positive for LPAI H5 or LPAI H7 was 0.08% (n=16/19,543) in 2017, unchanged from 2016 (0.08%) and similar to previous years (0.06% in 2011, 0.05% in 2012, 0.05% in 2013 and 0.04% in 2014, 0.07 in 2015).

This episode represents a continuation of the events of 2016 with a comparable prevalence in wild bird populations in 2017. This new incursion has been associated with increased levels of wild bird mortality compared to the 2014 variant. These findings highlight the complex and changeable nature of the epidemiology of avian influenza and the potential role for active and passive surveillance in wild birds in Europe in the future (EFSA 2014, 2017). The short or long term maintenance of clade specific strains in wild birds is uncertain but currently 2.3.2.1 and 2.3.4.4 continue to be detected in wild birds and hence provide an ongoing threat for reintroduction to the EU with risk for spillover to domestic species.

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## 6 METHODS

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### 6.1 Poultry

#### 6.1.1 Survey design

A 'poultry holding', as defined in Council Directive 2009/158/EC (EC 2009), is a facility used for the rearing or keeping of breeding or productive poultry. For the purposes of avian influenza surveillance, this may include facilities that only contain poultry during certain months of the year (i.e. poultry do not need to be present all year round).

MS sampled holdings and submitted data for some or all of the following poultry categories:

- Chicken Breeders (CB)
- Conventional Laying Hens (LH) and Free-range Laying Hens (FR LH)
- Broilers (at heightened risk) (B)
- Fattening Turkeys (FT)
- Turkey Breeders (TB)
- Fattening Ducks (FD)
- Breeder Ducks (BD)
- Fattening Geese (FG)
- Breeder Geese (BG)
- Backyard Flocks (BYF)
- Farmed Game Birds (gallinaceous) (FGB-G) and Farmed Game Birds (waterfowl) (FGB-W)
- Ratites (R)
- Others (O)

Where the survey design was based upon **representative sampling**, the required number of holdings to be sampled for specified poultry categories was determined according to Tables 18 and 19 below.

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**Table 18 Number of holdings to be sampled of each poultry category (except turkey, duck and goose holdings)**

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<b>Number of holdings per poultry category per Member State</b>	<b>Number of holdings to be sampled</b>
Up to 34	All
35–50	35
51-80	42
81-250	53
>250	60

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Note: The number of holdings to be sampled is defined to ensure the identification of at least one infected holding if the prevalence of infected holdings is at least 5%, with a 95% confidence interval.

**Table 19 Number of turkey, duck and goose holdings to be sampled**

Number of holdings per poultry category per Member State	Number of holdings to be sampled
Up to 46	All
47-60	47
61-100	59
101-350	80
>350	90

Note: The number of turkey, duck and goose holdings to be sampled is defined to ensure the identification of at least one infected holding if the prevalence of infected holdings is at least 5%, with a 99% confidence interval.

Where the survey design was based upon **risk-based surveillance**, the following criteria and risk factors would be considered:

- Criteria and risk factors for virus introduction into poultry holdings due to direct or indirect exposure to wild birds in particular those of identified ‘target species’ for HPAI H5N1 detection (EC 2010):
  - (a) The location of the poultry holding in proximity to wet areas, ponds, swamps, lakes, rivers or sea shores where migratory wild waterbirds may gather.
  - (b) The location of the poultry holding in areas with a high density of migratory wild birds, in particular of those birds that are characterised as ‘target species’.
  - (c) The location of poultry holding in proximity to resting and breeding places of migratory wild waterbirds, in particular where these areas are linked through migratory birds’ movements to areas where HPAI H5N1 is known to occur in wild birds or poultry.
  - (d) Poultry holdings with free range production, or poultry holdings where poultry or other captive birds are kept in the open-air in any premises in which contact with wild birds cannot be sufficiently prevented.
  - (e) Low biosecurity level in the poultry holding, including the method of storage of feed and the use of surface water.
- Criteria and risk factors for virus spread within the poultry holding and between poultry holdings, as well as the consequences (impact) of the spread of avian influenza from poultry to poultry and between poultry holdings:
  - (a) The presence of more than one poultry species in the same poultry holding, in particular the presence of domestic ducks and geese together with other poultry species.
  - (b) The type of poultry production and the poultry species on the holding for which surveillance data have shown an increased detection rate of avian influenza infection in the Member State, such as duck holdings and poultry intended for re-stocking supplies of game (in particular farmed Mallards).
  - (c) The location of the poultry holding in areas with high densities of poultry holdings.

- (d) Trade patterns, including imports and related intensity of movements, both direct and indirect, of poultry and other factors including vehicles, equipment and persons.
- (e) The presence of long lived poultry categories and multi-age groups of poultry on the holding (such as layers).

In addition, in terms of targeting of populations at risk:

- The level of targeting must reflect the number and local weighting of risk factors present on the poultry holding.
- The competent authority may consider other risk factors in its assessment in designing its surveillance design, which must be duly indicated and justified in their surveillance programme.
- Broilers should only be included when: (i) they are kept in significant numbers in free range production and (ii) they are considered to pose a higher risk of infection with avian influenza.
- Backyard Flocks generally play a minor role in virus circulation and spread and sampling them is resource intensive; however, in certain Member States Backyard Flocks may pose a higher risk of avian influenza due to their presence in significant numbers, their proximity to commercial poultry holdings, involvement in local/regional trade, and other criteria and risk factors.

Table 20 shows the criteria and risk factors considered by Member States following a risk-based surveillance approach in their 2017 programmes, according to the guidelines of Commission Decision 2010/367/EU (EC 2010).

#### 6.1.2 Laboratory testing

Samples were tested in accordance with the Diagnostic Manual for avian influenza, which lays down the procedures for confirmation and differential diagnosis of avian influenza (EC 2006a). Furthermore, for domestic waterfowl species, testing to include additional viral antigens for H5N8 was recommended by the EURL.

All positive serological findings must then be followed up at the poultry holding by epidemiological investigations and further sampling for testing by virological methods, in order to determine if active infection of avian influenza virus is present on the poultry holding.

**Table 20 Criteria and risk factors considered by Member States following a risk-based surveillance approach in their 2017 poultry survey programme**

Member State	Geographical				Demographic	Production Type	Biosecurity	Trade	Timing of Sampling	Reactive Sampling	Epidemiology	Location Explicitly Defined	Sampling difference between risk strata
	Proximity to waterbodies	Proximity to high density areas of migratory wild birds	Proximity to resting and breeding areas of migratory wild birds	Others	Densely populated poultry areas	Free-text	Presence of poultry holdings where poultry or other birds are kept in the open air in premises in which contact with wild birds cannot be sufficiently prevented.	Free-text	Free-text	Free-text			
BE	✓	✓			✓	Free-Range holdings; Turkey, ducks and geese are considered most at risk; Distance between poultry holdings	✓					YES	
BG		✓	✓	Increased sampling on Romanian border					Sampling to coincide with seasonal production		Previous outbreak in 4 regions in 2006, these regions are included in risk strata	YES	
DK	Denmark is considered as one big risk area. This is due to: small countryside, long coastline, many inlets and areas with wetlands, geographical position considering migratory flyways					Free range poultry, game birds for restocking fattening turkeys and breeder poultry are sampled.		When traded poultry and game birds have to be accompanied by a certificate stating that the flock has been tested within the preceding three months for poultry and two months for game birds	Sampling to coincide with seasonal production, when appropriate			YES	Free range poultry and game birds for restocking are tested more often than indoor breeders.
FR	✓	✓				Free Range holdings; Mixed species holdings without complete emptying; More sampling of holdings with Chickens; Turkeys; Ducks and Geese; Game birds; Laying Hens	✓				samples will be taken of game birds (pheasants, partridges and ducks Molluscs) and palmipeds, which have shown a higher serological prevalence in previous investigations	YES	risk score is attributed to farms based on three risk factors : 1) density of palmipeds 2) risk of contamination from wildbirds 3) presence of palmipeds in the herd
DE		✓			✓								
IT	✓	✓	✓		✓	productive type and biosecurity measures of industrial poultry farms (e.g. long productive life animals, multi-age or multi-species farm).	✓	Flows and types			Risk factors for introduction and spread of previous epidemics	YES	<p>Sampling in defined High Risk Areas: Turkey broilers; Breeding quail; Breeding ducks and geese; fattening ducks and geese; breeding flocks and laying hen flocks; ostriches; other birds bred for meat (excluding broilers and quail); Wild game</p> <p>Sampling in defined Low Risk Areas : fattening and breeding ducks and geese; breeding turkeys and broilers; breeding chicken; laying hens, both those kept indoors and free range; breeding wild game</p>

Member State	Geographical				Demographic	Production Type	Biosecurity	Trade	Timing of Sampling	Reactive Sampling	Epidemiology	Location Explicitly Defined	Sampling difference between risk strata
	Proximity to waterbodies	Proximity to high density areas of migratory wild birds	Proximity to resting and breeding areas of migratory wild birds	Others	Densely populated poultry areas	Free-text	Presence of poultry holdings where poultry or other birds are kept in the open air in premises in which contact with wild birds cannot be sufficiently prevented.	Free-text	Free-text	Free-text			
LU					✓	layer and Broiler chickens, Ratites sampled throughout the year	✓		sampling twice a year when the migratory wild birds are passing;				
NL	✓	✓	✓		✓		✓	Flows and types: Breeders have extra testing. All birds tested if they are moved.		Contiguous and contact testing on seropositives		YES	Turkey holdings sampled 3 times more frequently, free range holdings samples 4 times more frequently. Pre-movement sampling.
RO	✓	✓				Presence of multiple species; Backyard Flocks; all holdings with game birds, quail and ratites will be sampled. Increased sampling in holdings with turkeys, ducks and geese			Sampling to coincide with seasonal production for commercial holdings, all year round for backyard flocks	Increased sampling in local areas where necessary. i.e. increased sampling in Danube area where wild birds can gather if poultry production is high in those areas			
UK	✓	✓			✓	Free-Range holdings; Mixed Poultry species holding, where one of the species is waterfowl					Minimum flock sizes for sampling	YES	Samples only taken from defined risk area
ES	✓					Holdings with different phases of life cycle; Mixed Poultry species holding; broilers excluded; adult quails sampled	✓					NO	

### 6.1.3 Data and data processing

The poultry data presented in the report are restricted to data that were collected in 2017 according to the guidelines laid down in Decision 2010/367/EU (EC 2010).

MS submitted data to the EC database in a standardised format, containing laboratory testing information and more detailed information on the positive holdings found for each poultry category. The data submitted by MS were extracted from the EC database and checked and analysed by the EURL. The standardised format for submission of data ensured that in the majority of MS the data were complete and could be analysed effectively.

The total number of holdings for each poultry category in a MS was calculated using the total number of holdings figure provided for each NUTS code in the last semester of the year, or where this was not given, the first semester, only from NUTS regions where sampling took place. Hence if a MS did not sample in all NUTS regions that a poultry category is present, this figure will differ from the total number of holdings for that poultry category at the MS level.

Some MS sample holdings more than once within their approved surveillance programmes for the survey period. This was assumed to be the case where the reported number of holdings sampled for a poultry category exceeded the total number of holdings reported for that category.

If positives are found in two or more poultry categories on the same holding, they are reported in each of the poultry categories, but in the overall positive holdings figures for the MS, the holding would only be counted once. Similarly if positives are found for both H5 and H7 subtypes on the same holding, they are reported under each of the subtypes, but in the overall H5/H7 positive holdings figures for the MS, the holding would only be counted once.

For the comparison of survey results according to poultry categories across years, free-range and indoor categories were combined, as were fatteners and breeders for Turkeys, Ducks and Geese, and gallinaceous and waterfowl for Farmed Game Birds.

A number of MS that submitted data in the Others category provided further species details ([Table 21](#)). In light of this information, if queries arose concerning whether a type of poultry should be included under Others or another category, they were referred to the relevant MS.

The map ([Figure 5](#)) showing the intensity of sampling in the poultry survey and H5/H7 serologically positive holdings was produced using the ArcMap function of Arc GIS version 10.2.2.

The intensity of surveillance is calculated as the sum of the number of holdings sampled in each region per 100 km<sup>2</sup>, mainly NUTS 2 with some NUTS 1 regions. Low ( $\leq 10$ ), Medium ( $> 10$  and  $\leq 100$ ), High ( $> 100$  and  $\leq 500$ ) and Very High ( $> 500$ ). H5 and H7 seropositive holdings are shown as the centroid of the region they are located in.



**Table 21 Information on holdings included under the 'Others' poultry category in 2017 (where category species details were provided)**

<b>Member State</b>	<b>Category species detail included</b>	<b>Comments</b>
BE	Includes pigeon and guinea fowl.	Destined for slaughter, not to be released as game birds.
BG	None specified.	
DE	Includes zoo.	
EL	None specified.	.
ES	Includes vultures, kestrels, geese for fairs/zoos, pigeons, zoo birds.	
IT	Includes guinea fowl breeders, quail breeders and growers.	Guinea fowl breeders and quail breeders belonging to the meat-production system (and not reared for the hunting/gaming chain). Grower holdings consisted of several species (often reared together).
RO	None specified.	

## **6.2 Wild Birds**

### **6.2.1 Survey design**

Details of individual MS passive surveillance sampling strategies, as described in their 2017 survey plans can be found in [Table 22](#).

### **6.2.2 Laboratory testing**

Laboratory tests were carried out in accordance with the EU diagnostic manual for avian influenza (EC 2006a). It was recommended that samples should initially be tested using M gene PCR (to detect presence of AI virus), with rapid testing of positives for H5, and if possible N1, and that analysis of the haemagglutinin cleavage site should be undertaken to determine the pathogenicity of the AI virus. Following the emergence of H5N8 viruses MS were expected to either confirm the virus subtype to include N serotype using newly available methods or forward materials to the EURL to carry out the characterisation.

### **6.2.3 Data and data processing**

The data presented in this report is limited to data collected under Commission Decision 2010/367/EU (EC 2010), submitted to the EC database in the required format. Consequently the data may differ from other reporting systems such as the Animal Disease Notification System (ADNS).

#### **Species of wild birds**

For passive surveillance, 16,284 birds were identified to species level (83.3%) whilst 53 submissions were completely unidentified as to what bird they were taken from (0.3%). For active surveillance 11,294 birds (88.3%) were identified to species level, whilst one was completely unidentified (0.01%).

#### **Wild bird status**

Information on the status of the bird at sampling (e.g. live, found dead etc.) was complete, with all birds sampled in 2017 submitted with this information.

#### **Wild bird Subtype / Pathotype information**

Of the 2,039 wild birds testing positive for any influenza A by passive surveillance, 146 (7.2%) had an undetermined pathotype and 120 (5.9%) had an undetermined H subtype and 460 (22.4%) had an undetermined N subtype. Of the 146 birds submitted without a pathotype, 23 were subtype H5N8 and were handled as HPAI H5N8 due to the epidemiological situation in the countries submitting these results. Of the 120 birds submitted with an undetermined H type, 57 were also reported as HPAI, and were therefore handled as HPAI H5.

#### **Date of wild bird sampling**

MS provided a localisation date (from when the bird was sampled in the field) for all birds sampled in 2017.

#### **Wild bird spatial information**

Maps were produced using the ArcMap function of Arc GIS version 10.2.2, and the sampling intensity is calculated as the sum of the number of birds sampled in each region (mainly NUTS3 level) per 100km<sup>2</sup>. Low (<=25), Medium (>25 and <=250), High (>250 and <=2500) and Very High (>2500). Positive cases are shown either at provided coordinates or at the centroid of the NUTS3 region in which the bird was found.

**Table 22 Summary of passive surveillance sampling strategies, as described in Member States 2017 wild bird survey plans**

Member State	Target number of birds to sample	Surveillance design													
		EU Target Species	Location							Mass mortalities	Searching for birds	Collaboration with hunting or ornithological interest groups	General public	Temporal targeting	
			Proximity to water	Proximity of poultry holdings	Density of poultry holdings	Density of target species	Where HPAI found previously	Epi linked areas	Increased mortalities						
AT	300	✓	✓												
BE	400	✓							✓	✓		✓	✓		
BG	240	✓	✓	✓	✓					✓	✓ (2)	✓			
CY	180	(1)	✓						✓		✓				
CZ	200	(3)	✓	✓			✓	✓	✓	✓					
DE	1,570	✓	✓			✓	✓								
DK	50	✓								✓					
EE	10*	(4)	✓												✓
EL	100	✓	✓		✓	✓	✓	✓			✓ (5)	✓			
ES	400	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		
FI	100	✓								✓					
FR	150	(6)	✓			✓				✓					
HU	1,440	✓	✓	✓			✓	✓	✓	✓					
IE	500	✓	✓		✓							✓	✓		
IT	800	✓	✓					✓	✓	✓	✓ (5)				✓ (9)
LT	102	(10)	✓						✓	✓					
LU	150	(1)								✓					✓
LV	20	(7)													
MT	10*	(8)										✓	✓		
NL	400	✓	✓	✓	✓			✓			✓ (5)	✓	✓		
PL	50	✓	✓			✓		✓			✓ (5)				✓
PT	300	✓	✓	✓		✓			✓			✓			
RO	420	✓	✓	✓	✓		✓	✓	✓		✓ (5)	✓			
SE	500	(1)									✓ (5)				
SI	200	✓	✓	✓	✓						✓ (5)	✓	✓		
SK	120	✓	✓	✓	✓				✓		✓ (5)	✓			
UK	650	✓			✓	✓				✓	✓		✓		
HR	100	✓							✓			✓			

(1) Information was not specified in the 2017 survey plan

(2) If the epidemiological situation for the HPAI H5N1 virus so requires

(3) CZ uses 6 'target species' considered higher risk in their country, not EU TS list

(4) EE target species are 'Waterfowl 70% and shorebirds 20% and other wild birds 10%'

(5) Searching for dead/moribund birds will occur if the epidemiological situation requires

(6) FR targeting Anatidae family

(7) LV targeting orders Anseriformes and Charadriiformes

(8) MT targets wild ducks and other migratory birds

(9) Active surveillance on wild waterfowl during the main migratory periods

(10) Anseriformes (water fowl) and Charadriiformes (shorebirds) target species

(\*) 2017 Programme not available, 2016 target number stated

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## 7 REFERENCES

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Del Hoyo, J. & Collar, N.J. (2014) *Handbook of the Birds of the World and BirdLife International Illustrated Checklist of the Birds of the World. Volume 1: Non-passerines*. Lynx Edicions, Barcelona. 903 pp.

Del Hoyo, J. & Collar, N.J. (2016) *Handbook of the Birds of the World and BirdLife International Illustrated Checklist of the Birds of the World. Volume 2: Passerines*. Lynx Edicions, Barcelona. 1013 pp.

EC (2002) Commission Decision 2002/649/EC of 5 August 2002 on the implementation of surveys for avian influenza in poultry and wild birds in the Member States, *Official Journal of the European Union*, L 213, 9.8.2002, p.38.

EC (2005) Council Directive 2005/94/EC of 20 December 2005 on Community measures for the control of avian influenza and repealing Directive 92/40/EEC, *Official Journal of the European Union*, L 10, 14.1.2006, p. 16.

EC (2006a) Commission Decision 2006/437/EC of 4 August 2006 approving a Diagnostic Manual for avian influenza as provided for in Council Directive 2005/94/EC, *Official Journal of the European Union*, L 237, 31.8.2006, p. 1.

EC (2006b) Commission Decision 2006/563/EC of 11 August 2006 concerning certain protection measures in relation to highly pathogenic avian influenza of subtype H5N1 in wild birds in the Community and repealing Decision 2006/115/EC, *Official Journal of the European Union*, (OJ L 222, 15.8.2006, p. 11.

EC (2009) Council Directive 2009/158/EC of 30 November 2009 on animal health conditions governing intra-Community trade in, and imports from third countries of, poultry and hatching eggs, *Official Journal of the European Union*, L 343, 22.12.2009, p. 74.

EC (2010) Commission Decision 2010/367/EU of 25 June 2010 on the implementation by Member States of surveillance programmes for avian influenza in poultry and wild birds, *Official Journal of the European Union*, L 166, 1.7.2010, p. 22.

EC (2018) Commission Implementing Decision (EU) 2018/1136 of 10 August 2018 on risk mitigation and reinforced biosecurity measures and early detection systems in relation to the risks posed by wild birds for the transmission of highly pathogenic avian influenza viruses to poultry, *Official Journal of the European Union*, OJ L 205, 14.08.2018, p. 48.

EFSA (2006) Scientific Opinion of the Panel on Animal Health and Welfare on migratory birds and their possible role in the spread of highly pathogenic avian influenza. *The EFSA Journal*, 357: 1-46.

EFSA (2014) Highly pathogenic avian influenza A subtype H5N8. *The EFSA Journal*, 12(12): 3941, 32 pp.

EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), More S, Bicout D, Bøtner A, Butterworth A, Calistri P, Depner K, Edwards S, Garin-Bastuji B, Good M, Gortázar Schmidt C, Michel V, Miranda MA, Nielsen SS, Raj M, Sihvonen L, Spooler H, Thulke H-H, Velarde A, Willeberg P, Winckler C, Breed A, Brouwer A, Guillemain M, Harder T, Monne I, Roberts H, Baldinelli F, Barrucci F, Fabris C, Martino L, Mosbach-Schulz O, Verdonck F, Morgado J and Stegeman JA, 2017. Scientific opinion on avian influenza. *EFSA Journal* 2017;15(10):4991, 233 pp. <https://doi.org/10.2903/j.efsa.2017.4991>

European Food Safety Authority, European Centre for Disease Prevention and Control, European Union Reference Laboratory for Avian influenza, Brown I, Mulatti P, Smietanka K, Staubach C, Willeberg P, Adlhoch C, Candiani D, Fabris C, Zancanaro G, Morgado J and Verdonck F, 2017. Scientific report on the avian influenza overview October 2016–August 2017. *EFSA Journal* 2017;15(10):5018, 101 pp. <https://doi.org/10.2903/j.efsa.2017.5018>

EFSA (European Food Safety Authority), ECDC (European Centre for Disease Prevention and Control), EURL (European Reference Laboratory for Avian Influenza), Adlhoch C, Brouwer A, Kuiken T, Mulatti P, Smietanka K, Staubach C, Willeberg P, Barrucci F, Verdonck F, Amato L and Baldinelli F, 2018. Scientific report: Avian influenza overview November 2017 - February 2018. EFSA Journal 2018;16(3):5240. 55 pp. doi: 10.2903/j.efsa.2018.5240

EFSA (European Food Safety Authority), ECDC (European Centre for Disease Prevention and Control), EURL (European Reference Laboratory on Avian Influenza), Brown, I., Kuiken, T., Mulatti, P., Smietanka, K., Staubach, C., Stroud, D., Therkildsen, O.R., Willeberg, P., Baldinelli, F., Verdonck, F. & Adlhoch, C. (2017) Scientific report: Avian influenza overview September - November 2017. The EFSA Journal, 15(12): 5141, 70 pp.

Hesterberg, U., Harris, K., Stroud, D., Guberti, V., Busani, L., Pittman, M., Piazza, V., Cook, A. & Brown, I. (2009) Avian influenza surveillance in wild birds in the European Union in 2006. *Influenza and Other Respiratory Viruses*, 3, 1-14.

The Global Consortium for H5N8 and Related Influenza Viruses (2016) Role for migratory wild birds in the global spread of avian influenza H5N8. *Science* 354 (6309): 213-217.

Lee, D.H., Torchetti, M.K., Winker, K., Ip, H.S., Song, C.S., Swayne, D.E. (2015) Intercontinental spread of Asian-origin H5N8 to North America through Beringia by migratory birds. *Journal of virology* 89(12): 6521-6524.

Pain, D.J. (1991) Why are lead-poisoned waterfowl rarely seen? The disappearance of waterfowl carcasses in the Camargue, France. *Wildfowl* 42: 118–122.

SCAHAW (2000) Opinion of the Scientific Committee on Animal Health and Animal Welfare on: 'The Definition of Avian Influenza and the use of Vaccination against Avian Influenza' [http://ec.europa.eu/food/fs/sc/scsah/out45-final\\_en.pdf](http://ec.europa.eu/food/fs/sc/scsah/out45-final_en.pdf).

Verhagen, J.H., van der Jeugd, H.P., Nolet, B.A., Slaterus, R., Kharitonov, S.P., de Vries, P.P., Voong, O., Majoor, F. & Fouchier, R.A. (2015) Wild bird surveillance around outbreaks of highly pathogenic avian influenza A (H5N8) virus in the Netherlands, 2014, within the context of global flyways. *Euro surveillance: bulletin*, 20(12).

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## 8 ANNEXES

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### 8.1 Poultry Survey

8.1.1 Annex 1 Details of sampling by poultry category and MS for 2017 and 2016

**Annex 1 Table 1 Total number of Chicken Breeder holdings reported (from regions where sampling took place), total number sampled and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017					2016				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	101	37	0	0	0	93	24	0	0	0
BE	204	201	0	0	0	206	199	0	0	0
BG	11	11	0	0	0	18	9	0	0	0
CY	9	9	0	0	0	10	7	0	0	0
CZ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DE	1,123	22	0	0	0	453	25	0	0	0
DK	194	269	0	0	0	147	184	0	0	0
EE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EL	86	47	0	0	0	83	47	0	0	0
ES	403	118	0	0	0	399	80	0	0	0
FI	58	35	0	0	0	57	36	0	0	0
FR	564	68	0	0	0	911	393	0	0	0
HR	8,932	47	0	0	0	52	22	0	0	0
HU	113	46	0	0	0	140	49	0	0	0
IE	67	63	0	0	0	81	66	0	0	0
IT	210	243	0	0	0	198	261	0	0	0
LT	NS	NS	0	0	0	NS	NS	NS	NS	NS
LU	NS	NS	0	0	0	NS	NS	NS	NS	NS
LV	1	1	0	0	0	1	1	0	0	0
MT						NS	NS	NS	NS	NS
NL	281	562	1	1	0	308	807	0	0	0
PL	488	56	0	0	0	488	63	0	0	0
PT	79	76	0	0	0	79	75	0	0	0
RO	41	64	0	0	0	45	72	0	0	0
SE	31	31	0	0	0	34	34	0	0	0
SI	7	7	0	0	0	7	7	0	0	0
SK	12	12	0	0	0	12	11	0	0	0
UK	124	12	0	0	0	112	10	0	0	0
Total	13,139	2,037	1	1	0	3,934	2,482	0	0	0
CH	NS	NS	NS	NS	MS	NS	NS	NS	NS	NS

2017 notes

ES: Four CB holdings were seropositive for influenza A virus.

2016 notes

ES: Six CB holdings were seropositive for influenza A virus.

**Annex 1 Table 2 Total number of Conventional and Free-range Laying Hen holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017										2016									
	Conventional Laying Hens					Free-range Laying Hens					Conventional Laying Hens					Free-range Laying Hens				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	734	63	0	0	0	1,164	62	0	0	0	778	64	0	0	0	810	62	0	0	0
BE	148	75	0	0	0	101	189	0	0	0	153	201	0	0	0	100	185	0	0	0
BG	104	67	0	0	0	NS	NS	NS	NS	NS	112	51	0	0	0	NS	NS	NS	NS	NS
CY	23	23	0	0	0	14	13	0	0	0	23	22	0	0	0	14	13	0	0	0
CZ	127	53	0	0	0	16	16	0	0	0	132	53	0	0	0	13	13	0	0	0
DE	3,112	100	0	0	0	2,707	109	0	0	0	5,287	86	2(1)	1(1)	1	4,182	85	0	0	0
DK	NS	NS	NS	NS	NS	161	224	1	1	0	NS	NS	NS	NS	NS	139	219	3	1	2
EE	40	40	0	0	0	NA	NS	NS	NS	NS	24	24	0	0	0	NS	NS	NS	NS	NS
EL	411	64	0	0	0	139	40	0	0	0	414	54	0	0	0	134	26	0	0	0
ES	673	77	0	0	0	327	71	0	0	0	908	71	0	0	0	228	56	0	0	0
FI	411	48	0	0	0	51	36	0	0	0	424	51	0	0	0	50	40	0	0	0
FR	2,547	39	0	0	0	1,626	66	0	0	0	1,909	41	0	0	0	1,045	62	0	0	0
HR	16,434	39	0	0	0	NS	NS	0	0	0	137	59	0	0	0	12	12	0	0	0
HU	399	59	0	0	0	20	20	0	0	0	592	54	0	0	0	15	13	0	0	0
IE	45	36	0	0	0	180	130	0	0	0	45	37	0	0	0	180	63	0	0	0
IT	760	726	0	0	0	57	63	0	0	0	769	878	0	0	0	77	75	0	0	0
LT	3	2	0	0	0	NS	NS	NS	NS	NS	5	2	0	0	0	NS	NS	NS	NS	NS
LU	4	4	0	0	0	4	4	0	0	0	4	4	0	0	0	4	4	0	0	0
LV	33	33	0	0	0	NS	NS	NS	NS	NS	33	33	0	0	0	NS	NS	NS	NS	NS
MT											33	24	0	0	0	NS	NS	NS	NS	NS
NL	447	904	0	0	0	444	880	4	3	1(1)	504	1,095	1(1)	1(1)	0	407	738	4(4)	2(2)	2(2)
PL	622	72	0	0	0	90	42	0	0	0	622	74	0	0	0	89	36	0	0	0
PT	128	95	0	0	0	24	36	0	0	0	128	90	0	0	0	20	36	0	0	0
RO	206	212	0	0	0	NS	NS	NS	NS	NS	209	179	0	0	0	NS	NS	NS	NS	NS
SE	229	68	0	0	0	151	43	0	0	0	229	62	0	0	0	151	30	0	0	0
SI	141	60	0	0	0	NS	NS	NS	NS	NS	228	64	0	0	0	NS	NS	NS	NS	NS
SK	60	50	0	0	0	NS	NS	NS	NS	NS	136	47	0	0	0	NS	NS	NS	NS	NS
UK	715	41	0	0	0	263	10	0	0	0	1,004	60	0	0	0	NS	NS	NS	NS	NS
Total	28,556	3,150	0	0	0	7,539	2,054	5	4	1(1)	14,842	3,480	3(2)	2(2)	1	7,670	1,768	7(4)	3(2)	4(2)
CH	NS	NS	NS	NS	NS	1,890	68	0	0	0	NS	NS	NS	NS	NS	1,757	40	0	0	0

2017 notes  
 EL: Two FR LH holdings were seropositive for influenza A virus.  
 ES: Six LH and Four FR LH holdings were seropositive for influenza A virus.  
 DE: One LH holding was seropositive and PCR positive for influenza A virus.

2016 notes  
 DE: One LH holding was seropositive for influenza A virus.  
 ES: Three LH and four FR LH holdings were seropositive for influenza A virus.



**Annex 1 Table 3 Total number of Broiler (at heightened risk) holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017					2016				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BG	4	8	0	0	0	3	3	0	0	0
CY	4	4	0	0	0	3	5	0	0	0
CZ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DE	2,621	19	0	0	0	2,055	20	0	0	0
DK	65	35	0	0	0	42	30	0	0	0
EE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EL	36	29	0	0	0	32	26	0	0	0
ES	1,034	1	0	0	0	252	2	0	0	0
FI	2	2	0	0	0	2	2	0	0	0
FR	NS	NS	NS	NS	NS	4,506	49	0	0	0
HR	6,232	10	0	0	0	NS	NS	NS	NS	NS
HU	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IE	66	58	0	0	0	65	46	0	0	0
IT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LT	2	2	0	0	0	21	5	0	0	0
LU	3	3	0	0	0	3	3	0	0	0
LV	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MT						NS	NS	NS	NS	NS
NL	274	880	0	0	0	245	879	0	0	0
PL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PT	229	65	0	0	0	222	60	0	0	0
RO	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SE	32	23	0	0	0	34	33	0	0	0
SI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
UK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total	10,604	1,139	0	0	0	7,485	1,163	0	0	0
CH	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

**Annex 1 Table 4 Total number of Fattening Turkey and Turkey Breeder holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017										2016									
	Fattening Turkeys					Turkey Breeders					Fattening Turkeys					Turkey Breeders				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	145	60	0	0	0	NS	NS	NS	NS	NS	141	57	0	0	0	NS	NS	NS	NS	NS
BE	38	52	0	0	0	NS	NS	NS	NS	NS	36	51	0	0	0	NS	NS	NS	NS	NS
BG	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0
CY	7	6	0	0	0	NS	NS	NS	NS	NS	7	7	0	0	0	NS	NS	NS	NS	NS
CZ	59	43	0	0	0	NS	NS	NS	NS	NS	58	42	0	0	0	NS	NS	NS	NS	NS
DE	1,075	115	1	1	0	57	18	0	0	0	1,659	118	1(1)	1(1)	0	30	10	0	0	0
DK	58	23	0	0	0	NS	NS	NS	NS	NS	59	19	0	0	0	NS	NS	NS	NS	NS
EE	NS	NS	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EL	40	20	0	0	0	5	3	0	0	0	40	24	0	0	0	1	1	0	0	0
ES	629	60	0	0	0	13	9	0	0	0	593	60	0	0	0	14	12	0	0	0
FI	40	36	0	0	0	4	3	0	0	0	42	40	0	0	0	4	3	0	0	0
FR	697	52	0	0	0	258	57	0	0	0	724	51	0	0	0	283	102	0	0	0
HR	1,672	1	0	0	0	772	2	0	0	0	37	19	0	0	0	11	4	0	0	0
HU	277	51	0	0	0	29	25	0	0	0	326	61	0	0	0	29	26	0	0	0
IE	136	111	0	0	0	1	1	0	0	0	136	51	0	0	0	NS	NS	NS	NS	NS
IT	754	572	0	0	0	38	47	0	0	0	776	1,135	0	0	0	38	47	0	0	0
LT	1	1	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LU	NS	NS	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LV	3	3	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MT											NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
NL	41	81	0	0	0	NS	NS	NS	NS	NS	44	88	0	0	0	NS	NS	NS	NS	NS
PL	219	60	0	0	0	32	22	0	0	0	215	55	0	0	0	11	12	0	0	0
PT	131	63	0	0	0	NS	NS	NS	NS	NS	132	63	0	0	0	NS	NS	NS	NS	NS
RO	16	31	0	0	0	NS	NS	NS	NS	NS	15	29	0	0	0	NS	NS	NS	NS	NS
SE	17	16	0	0	0	3	3	0	0	0	18	18	0	0	0	3	3	0	0	0
SI	43	43	0	0	0	NS	NS	NS	NS	NS	43	43	0	0	0	NS	NS	NS	NS	NS
SK	15	10	0	0	0	7	7	0	0	0	8	9	0	0	0	6	6	0	0	0
UK	240	51	0	0	0	37	10	0	0	0	329	57	0	0	0	13	5	0	0	0
Total	6,354	1,577	1	1	0	1257	208	0	0	0	5,439	2,098	1(1)	1(1)	0	444	232	0	0	0
CH	70	25	0	0	0	NS	NS	NS	NS	NS	70	26	0	0	0	NS	NS	NS	NS	NS

2017 notes

DE: Seven FT holdings were seropositive for influenza A virus (one also PCR positive for subtype H9, and another PCR positive for influenza A virus. Two TB were seropositive for influenza A virus (one also PCR positive for influenza A virus subtype H5).

ES: Three FT holdings were seropositive for influenza A virus.

2016 notes

DE: Three FT holdings were seropositive for H9. Three FT and one TB holdings were seropositive for influenza A virus.

ES: Three FT holdings were seropositive for influenza A virus.

**Annex 1 Table 5 Total number of Fattening and Breeder Duck holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017										2016									
	Fattening Ducks					Breeder Ducks					Fattening Ducks					Breeder Ducks				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			H5/H7	H5	H7			H5/H7	H5	H7			H5/H7	H5	H7			H5/H7	H5	H7
AT	19	25	0	0	0	NS	NS	NS	NS	NS	28	15	0	0	0	NS	NS	NS	NS	NS
BE	23	20	1	1	0	NS	NS	NS	NS	NS	24	16	3	3	0	NS	NS	NS	NS	NS
BG	199	275	0	0	0	1	1	0	0	0	113	109	0	0	0	NS	NS	NS	NS	NS
CY	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CZ	49	49	0	0	0	24	24	1	1	0	43	43	0	0	0	26	26	2	2	0
DE	772	154	1	1	0	41	23	0	0	0	1,311	173	4(2)	4(2)	0	98	22	0	0	0
DK	91	19	0	0	0	NS	NS	NS	NS	NS	73	23	0	0	0	NS	NS	NS	NS	NS
EE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ES	49	50	9	9	0	NS	NS	NS	NS	NS	48	42	0	0	0	3	3	0	0	0
FI	6	3	0	0	0	NS	NS	NS	NS	NS	2	2	0	0	0	NS	NS	NS	NS	NS
FR	6,952	260	0	0	0	237	185	6	6	0	3,659	133	2	2	0	372	461	70	70	0
HR	2,036	6	0	0	0	916	6	0	0	0	40	22	0	0	0	27	13	0	0	0
HU	230	58	0	0	0	59	26	0	0	0	360	74	0	0	0	20	19	0	0	0
IE	15	20	0	0	0	NS	NS	NS	NS	NS	15	15	0	0	0	NS	NS	NS	NS	NS
IT	64	67	0	0	0	8	12	0	0	0	75	57	0	0	0	8	12	0	0	0
LT	1	1	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LU	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LV	1	1	0	0	0	NS	NS	NS	NS	NS	1	1	0	0	0	NS	NS	NS	NS	NS
MT											NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
NL	31	48	0	0	0	12	20	1 (1)	1 (1)	0	47	89	0	0	0	10	10	0	0	0
PL	339	85	0	0	0	39	31	0	0	0	338	83	0	0	0	34	28	0	0	0
PT	15	21	0	0	0	2	3	0	0	0	17	29	0	0	0	2	3	0	0	0
RO	3	3	0	0	0	2	2	0	0	0	NS	NS	NS	NS	NS	2	3	0	0	0
SE	1	1	0	0	0	NS	NS	NS	NS	NS	4	4	0	0	0	NS	NS	NS	NS	NS
SI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SK	5	5	0	0	0	1	1	0	0	0	11	4	0	0	0	3	2	0	0	0
UK	90	43	0	0	0	113	32	1	1	0	97	42	0	0	0	77	30	2	2	0
Total	10,991	1,214	11	11	0	1,455	366	9 (1)	9 (1)	0	6,306	976	9(2)	9(2)	0	682	632	74	74	0
CH	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

2017 notes

DE: Four FD holdings were seropositive for influenza A virus, two of which were also PCR positive for subtype H5. Four FD holdings were seropositive for influenza A virus, three of which were also PCR positive for subtype H5.

ES: Eight FD holdings were seropositive for influenza A virus.

2016 notes

BE: One H5 seropositive FD holding was also PCR positive for influenza A virus.

DE: Four FD holdings were seropositive for influenza A virus, one of which was also PCR/VI positive for subtype H6.

ES: Ten FD holdings were seropositive for influenza A virus, one of which was also PCR positive for influenza A virus.

**Annex 1 Table 6 Total number of Fattening and Breeder Geese holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017										2016									
	Fattening Geese					Breeder Geese					Fattening Geese					Breeder Geese				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	65	65	0	0	0	NS	NS	NS	NS	NS	78	56	0	0	0	NS	NS	NS	NS	NS
BE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	2	1	0	0	0
BG	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CY	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CZ*	10	10	0	0	0	9	9	1	1	0	5	5	0	0	0	8	8	2	2	0
DE	1,862	115	0	0	0	21	11	1	1	0	1,965	115	1	1	0	85	17	1	1	0
DK	15	6	0	0	0	NS	NS	NS	NS	NS	8	2	0	0	0	NS	NS	NS	NS	NS
EE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ES	10	13	1	1	0	3	1	0	0	0	11	10	1	1	0	5	5	0	0	0
FI	5	2	0	0	0	NS	NS	NS	NS	NS	5	3	0	0	0	NS	NS	NS	NS	NS
FR	147	55	0	0	0	29	27	1	1	0	94	48	0	0	0	71	75	13	13	0
HR	1,037	1	0	0	0	476	6	0	0	0	5	1	0	0	0	15	14	0	0	0
HU	271	53	0	0	0	66	43	0	0	0	413	65	0	0	0	68	46	0	0	0
IE	7	3	0	0	0	NS	NS	NS	NS	NS	4	2	0	0	0	NS	NS	NS	NS	NS
IT	17	10	0	0	0	6	9	0	0	0	16	4	0	0	0	7	11	0	0	0
LT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LU	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LV	1	1	0	0	0	NS	NS	NS	NS	NS	1	1	0	0	0	NS	NS	NS	NS	NS
MT											NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
NL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PL	994	93	0	0	0	230	80	4	4	0	991	96	0	0	0	227	81	2	2	0
PT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	1	1	0	0	0	NS	NS	NS	NS	NS
RO	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SE	5	5	0	0	0	NS	NS	NS	NS	NS	7	7	0	0	0	NS	NS	NS	NS	NS
SI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SK	5	4	0	0	0	NS	NS	NS	NS	NS	8	3	0	0	0	1	1	0	0	0
UK	71	39	1	1	0	22	7	0	0	0	64	38	4	4	0	15	6	0	0	0
Total	4,522	475	2	2	0	862	193	7	7	0	3,676	457	6	6	0	504	265	18	18	0
CH	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

\*CZ: One of the H5 seropositive BG holdings was also H5 seropositive in the BD category; it is counted in each category.

2017 notes

FR: One holding tested H5 seropositive on three occasions.

2016 notes

DE: Two FG and one BG holdings were seropositive for influenza A virus.

**Annex 1 Table 7 Total number of Backyard Flock holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017					2016				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BG	120,038	119	0	0	0	116,624	394	0	0	0
CY	1,247	51	0	0	0	1,247	55	0	0	0
CZ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
ES	8,117	27	0	0	0	4,070	6	0	0	0
FI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
FR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HR	26,708	147	0	0	0	314	65	0	0	0
HU	227,092	495	0	0	0	177,117	495	0	0	0
IE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IT	111	190	0	0	0	166	166	0	0	0
LT	5	5	0	0	0	NS	NS	NS	NS	NS
LU	500	21	0	0	0	500	15	0	0	0
LV	3,783	60	0	0	0	3,873	60	0	0	0
MT						NS	NS	NS	NS	NS
NL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PT	237,000	72	0	0	0	237,000	56	0	0	0
RO	1,205	1,205	14 (14)	14 (14)	0	1,028	1,097	0	0	0
SE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SI	4,154	86	0	0	0	4,154	93	0	0	0
SK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
UK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total	629,960	2,478	14 (14)	14 (14)	0	546,093	2,502	0	0	0
CH	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

2017 notes

RO: Five holdings tested seropositive (also PCR and virologically positive) for influenza A subtype H5 on two occasions.

ES: One BYF holding was seropositive for influenza A virus.

2016 notes

ES: One BYF holding was seropositive for influenza A virus.

HR: One BYF holding was serology and VI positive for influenza A virus and PCR positive for H5.

**Annex 1 Table 8 Total number of Farmed Game Bird (gallinaceous) and Farmed Game Bird (waterfowl) holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017										2016									
	Farmed Game Birds (gallinaceous)					Farmed Game Birds (waterfowl)					Farmed Game Birds (gallinaceous)					Farmed Game Birds (waterfowl)				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			H5/H7	H5	H7			H5/H7	H5	H7			H5/H7	H5	H7			H5/H7	H5	H7
AT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
BE	16	22	0	0	0	NS	NS	NS	NS	NS	21	22	0	0	0	NS	NS	NS	NS	
BG	6	6	0	0	0	NS	NS	NS	NS	NS	3	3	0	0	0	1	1	0	0	
CY	5	3	0	0	0	NS	NS	NS	NS	NS	6	4	0	0	0	NS	NS	NS	NS	
CZ*	37	37	0	0	0	10	10	2	2	0	36	36	0	0	0	12	12	1	1	
DE	971	4	0	0	0	NS	NS	NS	NS	NS	15	5	0	0	0	NS	NS	NS	NS	
DK**	64	27	4	2	2	24	9	2	1	1	202	80	0	0	0	31	9	5	4	
EE	1	1	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
EL	17	14	0	0	0	NS	NS	NS	NS	NS	18	14	0	0	0	NS	NS	NS	NS	
ES	494	178	0	0	0	117	95	9	3	6	505	222	0	0	0	121	106	8	5	
FI	16	16	0	0	0	5	3	0	0	0	18	9	0	0	0	8	4	0	0	
FR	338	92	0	0	0	54	13	2	2	0	157	106	0	0	0	56	17	0	0	
HR	24	7	0	0	0	NS	NS	NS	NS	NS	9	9	0	0	0	1	1	0	0	
HU	72	32	0	0	0	4	4	0	0	0	83	38	0	0	0	14	13	0	0	
IE	3	6	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
IT	9	10	0	0	0	NS	NS	NS	NS	NS	146	108	0	0	0	NS	NS	NS	NS	
LT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
LU	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
LV	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
MT											NS	NS	NS	NS	NS	NS	NS	NS	NS	
NL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
PL	92	39	0	0	0	7	2	0	0	0	91	39	0	0	0	NS	NS	NS	NS	
PT	40	43	0	0	0	1	1	0	0	0	58	43	0	0	0	NS	NS	NS	NS	
RO	8	14	0	0	0	NS	NS	NS	NS	NS	11	14	0	0	0	NS	NS	NS	NS	
SE	13	13	0	0	0	2	2	0	0	0	13	9	0	0	0	7	7	0	0	
SI	5	5	0	0	0	1	1	0	0	0	5	5	0	0	0	1	1	0	0	
SK	18	19	0	0	0	NS	NS	NS	NS	NS	17	17	0	0	0	NS	NS	NS	NS	
UK	101	41	0	0	0	51	11	1	1	0	84	32	0	0	0	42	16	0	0	
Total	2,352	623	4	2	2	276	151	16	9	7	1,498	815	0	0	0	294	187	14	10	
CH	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	

\*CZ: The H5 seropositive FGB-W holding w as also H5 seropositive in the BG category; it is counted in each category.

\*\*DK: One holding w as H7 seropositive in both the FGB-G and FGB-W categories; it is counted in each category. One FGB-G holding w as seropositive for both H5 and H7 subtypes.

2017 notes

ES: Ten FGB-G and 25 FGB-W holdings were seropositive for influenza A virus.

2016 notes

ES: Nine FGB-G and 49 FGB-W holdings were seropositive for influenza A virus.

**Annex 1 Table 9 Total number of Ratite holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

Member State	2017					2016				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	10	10	0	0	0	10	5	0	0	0
BE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BG	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CY	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CZ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DE	479	27	0	0	0	710	29	0	0	0
DK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EL	5	3	0	0	0	4	2	0	0	0
ES	50	27	0	0	0	68	33	0	0	0
FI	3	3	0	0	0	1	1	0	0	0
FR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HU	12	9	0	0	0	9	8	0	0	0
IE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IT	16	14	0	0	0	26	8	0	0	0
LT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LU	1	2	0	0	0	1	2	0	0	0
LV	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MT						NS	NS	NS	NS	NS
NL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PL	75	32	0	0	0	75	34	0	0	0
PT	7	8	0	0	0	6	6	0	0	0
RO	NS	NS	NS	NS	NS	1	1	0	0	0
SE	2	2	0	0	0	3	4	0	0	0
SI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SK	10	7	0	0	0	14	6	0	0	0
UK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total	670	144	0	0	0	928	139	0	0	0
CH	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

**Annex 1 Table 10 Total number of Other holdings reported (from regions where sampling took place), total number sampled, and total number of H5 and H7 positive holdings reported for 2017 and 2016 by Member State**

Virological data is displayed in italics in parentheses. If a holding was virologically positive for H5/H7 only, further information is provided at the base of the table. Information is also provided at the base of the table on serological/virological data other than H5/H7.

NS = Not sampled.

For information on the type of holdings included under Others, please see [Table 21](#).

#VALUE!	2017					2016				
	Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings			Total No. of Holdings	Total No. of Holdings Sampled	Positive Holdings		
			Total H5/H7	H5	H7			Total H5/H7	H5	H7
AT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BE	8	6	0	0	0	5	4	0	0	0
BG	2	2	0	0	0	1	1	0	0	0
CY	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
CZ	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DE	15,082	30	2	1	1	6,949	34	1	1	0
DK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
EE	NS	NS	NS	NS	NS	1	1	0	0	0
EL	144	50	0	0	0	102	57	0	0	0
ES	4,761	105	0	0	0	4,477	50	1	1	0
FI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
FR	NS	NS	NS	NS	NS	135	3	0	0	0
HR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
HU	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
IT	672	848	0	0	0	626	787	2(2)	1(1)	1(1)
LT	NS	NS	NS	NS	NS	3	1	0	0	0
LU	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
LV	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MT						NS	NS	NS	NS	NS
NL	NS	NS	NS	NS	NS	2	2	0	0	0
PL	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PT	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
RO	1	1	0	0	0	1	2	0	0	0
SE	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
SK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
UK	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Total	20,670	1,042	2	1	1	12,302	942	4(2)	3(1)	1(1)
CH	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

2017 notes

ES: Nine O holdings were seropositive for influenza A virus.

2016 notes

DE: One O holding was seropositive and PCR positive for influenza A virus.

ES: Five O holdings were seropositive for influenza A virus.

IT: One O (grower) holding, was PCR/VI positive for H5, serology not performed.



## 8.1.2 Annex 2 Additional information on results of the 2017 poultry survey

**Annex 2 Table 1 Poultry holdings testing positive for subtype H5**

Member State	Poultry category	Total poultry holdings reported (from regions where sampling took place)	Total poultry holdings sampled	Number of H5 serological positive poultry holdings	Number of PCR / virus isolation H5 positive poultry holdings	Comments
BE	Fattening Ducks	23	20	1	0	
CZ	Breeder Ducks	24	24	1	0	One holding was H5 seropositive in both the BG and BD categories and is counted in each category
	Breeder Geese	9	9	2	0	
	Farmed Game Birds (waterfowl)	37	10	2	0	
DE	Fattening Turkeys	1,075	115	1	1	
	Fattening Ducks	772	154	1	0	
	Breeder Geese	21	11	1	0	
	Others	15,082	30	1	0	
DK	Free-range Laying Hens	161	224	1	0	
	Farmed Game Birds (gallinaceous)	64	27	2	0	
	Farmed Game Birds (waterfowl)	24	9	1	0	
ES	Fattening Ducks	49	50	9	0	
	Fattening Geese	10	13	1	0	
	Farmed Game Birds (waterfowl)	494	95	3	0	
FR	Breeder Ducks	237	185	6	0	
	Breeder Geese	29	27	1	0	
	Farmed Game Birds (waterfowl)	338	13	2	0	
NL	Chicken Breeders	281	562	1	1	
	Free-range Laying Hens	444	880	3	0	
	Breeder Ducks	12	20	1	1	
PL	Breeder Geese	230	80	4	0	
RO	Backyard Flocks	1,205	1,205	14	12	
UK	Breeder Ducks	90	32	1	0	
	Fattening Geese	71	39	1	0	
	Farmed Game Birds (waterfowl)	101	11	1	0	
Total		20,782	3,834	62	15	

**Annex 2 Table 2 Poultry holdings testing positive for subtype H7**

Member State	Poultry category	Total poultry holdings reported (from regions where sampling took place)	Total poultry holdings sampled	Number of H7 serological positive poultry holdings	Number of PCR / virus isolation H7 positive poultry holdings	Comments
DE	Others	15,082	30	1	0	
DK	Farmed Game Birds (gallinaceous)	64	27	2	0	One holding was serologically positive for H7 in both FGB-G and FGB-W categories and is counted in each category
	Farmed Game Birds (waterfowl)	24	9	1	0	
ES	Farmed Game Birds (waterfowl)	117	95	6	0	
NL	Free-range Laying Hens	444	880	1	1	
Total		15,731	1,041	11	1	

**Annex 2 Table 3 Number of poultry holdings positive for subtype H5 by serology, serology and PCR/virus isolation, or PCR/virus isolation only**

Member State	Poultry category	Number H5 serologically positive only, PCR/virus isolation negative or not performed	Number H5 serologically positive and PCR/virus isolation positive	Number H5 PCR/virus isolation positive, serology negative or not performed
BE	Fattening Ducks	1		
CZ*	Breeder Ducks	1		
	Breeder Geese	2		
	Farmed Game Birds (waterfowl)	1		
DE	Fattening Turkeys		1	
	Fattening Ducks	1		
	Breeder Geese	1		
	Others	1		
DK	Free-range Laying Hens	1		
	Farmed Game Birds (gallinaceous)	2		
	Farmed Game Birds (waterfowl)	1		
ES	Fattening Ducks		9	
	Fattening Geese	1		
	Farmed Game Birds (waterfowl)	3		
FR	Breeder Ducks	6		
	Breeder Geese	1		
	Farmed Game Birds	2		
NL**	Chicken Breeders		1	
	Free-range Laying Hens	3		
	Breeder Ducks		1	
PL	Breeder Geese	4		
RO	Backyard Flocks	2	12	
UK	Breeder Ducks	1		
	Fattening Geese	1		
	Farmed Game Birds (waterfowl)	1		
<b>Total</b>		<b>37</b>	<b>24</b>	<b>0</b>

\*CZ: One holding was H5 seropositive in both the BG and BD categories and is counted in each category.

**Annex 2 Table 4 Number of poultry holdings positive for subtype H7 by serology, serology and PCR/virus isolation, or PCR/virus isolation only**

Member State	Poultry category	Number H7 serologically positive only, PCR/virus isolation negative or not performed	Number H7 serologically positive and PCR/virus isolation positive	Number H7 PCR/virus isolation positive, serology negative or not performed
DE	Others	1	0	0
DK*	Farmed Game Birds (gallinaceous)	1	0	0
	Farmed Game Birds (waterfowl)	1	0	0
ES	Farmed Game Birds (waterfowl)	6	0	0
NL	Free-range Laying Hens	0	1	0
Total		9	1	0

\*DK: One holding was H7 seropositive in both GFB-G and FGB-G categories and is counted in each category.

## 8.2 Wild Bird Annex

### 8.2.1 Annex 3 – Passive surveillance data

#### 8.2.1.1 Diagnosis

This section reports the samples collected through passive surveillance activities and the associated test results. The 2007 guidelines (EC, 2007) recommend oro-pharyngeal (tracheal) and cloacal swabs to be collected from healthy free living birds and cloacal and oro-pharyngeal swabs and/ or tissues from dead or shot birds as the basis of sampling for HPAI H5N1. Similarly, the 2010 guidelines (EC 2010a) recommend that cloacal and tracheal/oro-pharyngeal swabs and/or tissues from wild birds found dead or moribund should be sampled. The totals for the 2017 testing regimes are shown below.

**Annex 3 Table 1 Type of samples collected for birds sampled by passive surveillance in 2017, by status of bird – EU-data only**

Sample type	Status of bird			Passive surveillance total
	Found dead	Injured	Live with clinical signs	
Cloacal	1,608	171	13	1,792
Faecal	50	-	-	50
Other	1,961	-	71	2032
Tissue	4,926	4	104	5,034
Tracheal	3,582	44	8	3,634
Cloacal and Other	34	-	1	35
Cloacal and Tissue	27	-	-	27
Cloacal and Tracheal	6,341	103	86	6,530
Faecal and Other	5	-	-	5
Faecal and Tissue	137	1	5	143
Faecal and Tracheal	4	-	-	4
Tissue and Other	28	-	-	28
Tracheal and Other	1	-	-	1
Tracheal and Tissue	25	-	-	25
Cloacal, Faecal and Tracheal	2	-	-	2
Cloacal, Tracheal and Other	2	-	-	2
Cloacal, Tracheal and Tissue	35	-	2	37
<b>EU Total</b>	<b>18,768</b>	<b>323</b>	<b>290</b>	<b>19,381</b>

Samples from 19,381 birds submitted by EU Member States are considered in this section (excluding the 162 birds submitted by Switzerland). The most commonly submitted sample type for birds found dead was both cloacal and oro-pharyngeal (tracheal) swab (33.8%). Both tissue only submissions (26.2%) and submissions from birds where only oro-pharyngeal (tracheal) swabs were collected (19.1%) were also tested in large numbers for dead birds. For injured birds, the majority of samples collected were cloacal swabs (52.9%) and both cloacal and tracheal swabs (31.9%), whilst for live birds with clinical signs, the most common sample types were for birds where only tissue was submitted (35.9%), where both cloacal and tracheal samples were submitted (29.7%) and 'Other' sample types (24.5%) (Table A3.1).

#### 8.2.1.2 AI Positives

In 2017, AI positive results were detected in birds found dead and those live with clinical signs. Tables A3.2 to A3.4 show the test results for birds that were positive for HPAI, LPAI and 'Other positives', where the pathogenicity was not determined. For birds confirmed or assumed positive for HPAI by EU MS (n=1,889), 91.0% were found positive by PCR only,

with either negative virus isolation results, or virus isolation was not performed on any sample.

Most HPAI detections were made in birds where only tissue samples were tested 27.5% (520 birds), or birds where both cloacal and oro-pharyngeal (tracheal) swab samples were tested 23.0% (434 birds) (Table A3.2). For birds testing positive for LPAI (n=34), 82.4% of birds tested positive by PCR only. LPAI virus was detected in 13 birds (38.2%) where both cloacal and oro-pharyngeal (tracheal) swabs were taken, and in seven birds (20.6%) with only cloacal swabs, and seven birds (20.6%) with only oro-pharyngeal (tracheal) swabs (A3.3). Nearly all 'Other positives' were positive by PCR only (n=97/101, 96.0%) (A3.4).

**Annex 3 Table 2 HPAI test results and samples taken for bird found dead and live with clinical signs - EU-data only**

Status of bird	Sample type	Total number of birds sampled	Total number of birds positive	PCR+ VI+	PCR+ VI-	PCR+ VI NP	PCR- VI+	PCR- VI-	PCR- VI NP	PCR NP VI+	PCR NP VI NP
Found dead	Cloacal	1,608	221	8	4	209	-	-	-	-	-
	Other	1,961	324	2	4	318	-	-	-	-	-
	Tissue	4,926	514	97	29	388	-	-	-	-	-
	Tracheal	3,582	336	18	1	317	-	-	-	-	-
	Cloacal & Tissue	27	1	-	-	1	-	-	-	-	-
				1	-	-	-	-	-	-	
	Cloacal & Tracheal	6,341	433	22	6	385	1	-	15	-	4
				23	7	395	-	-	8	-	-
	Faecal & Tissue	137	12	9	-	2	-	-	1	-	-
				10	-	2	-	-	-	-	-
	Tissue & Other	28	11	9	2	-	-	-	-	-	-
				-	1	9	-	1	-	-	-
Tracheal & Tissue	25	2	-	-	-	2	-	-	-	-	
			1	-	-	1	-	-	-	-	
Cloacal & Tracheal & Tissue	35	20	8	2	8	-	-	2	-	-	
			-	2	17	-	-	1	-	-	
			4	2	12	-	-	1	1	-	
Live with clinical signs	Other	71	5	-	-	5	-	-	-	-	-
	Tissue	104	6	-	-	6	-	-	-	-	-
	Tracheal	8	1	-	-	1	-	-	-	-	-
	Cloacal & Tracheal	86	1	-	1	-	-	-	-	-	-
				-	1	-	-	-	-	-	-
	Faecal & Tissue	5	1	-	-	-	-	-	1	-	-
				1	-	-	-	-	-	-	-
	Cloacal & Tracheal & Tissue	2	1	1	-	-	-	-	-	-	-
1				-	-	-	-	-	-	-	
1				-	-	-	-	-	-	-	

**Annex 3 Table 3 LPAI test-results and samples taken for found dead birds - EU-data only**

Status of bird	Sample type	Total number of birds sampled	Total number of birds positive	PCR+ VI+	PCR+ VI-	PCR+ VI NP	PCR- VI NP
Found dead	Cloacal	1,608	7	4	-	3	-
	Other	1,961	3	-	-	3	-
	Tissue	4,926	2	2	-	-	-
	Tracheal	3,582	7	-	-	7	-
	Cloacal & Tracheal	6,341	13	-	2	9	2
				-	3	3	7
	Faecal & Tissue	137	1	-	-	1	-
				-	-	1	-
	Cloacal & Tracheal & Tissue	35	1	-	1	-	-
			-	-	-	1	
			-	-	-	1	

**Annex 3 Table 4 'Other positive' test-results and samples taken for birds found dead and live with clinical signs - EU-data only**

Status of bird	Sample type	Total number of birds sampled	Total number of birds positive	PCR+ VI+	PCR+ VI-	PCR+ VI NP	PCR- VI-	PCR- VI NP
Found dead	Cloacal	1,608	8	-	-	8	-	-
	Other	1,961	11	-	1	10	-	-
	Tissue	4,926	25	4	9	12	-	-
	Tracheal	3,582	14	-	1	13	-	-
	Cloacal & Tracheal	6,341	38	-	11	27	-	-
				-	4	28	1	5
	Faecal & Tissue	137	2	-	-	1	-	1
				-	-	2	-	-
	Cloacal & Tracheal & Tissue	35	1	-	-	1	-	-
			-	-	-	-	1	
			-	-	-	-	1	
Live with clinical signs	Other	71	1	-	-	1	-	-
	Tissue	104	1	-	-	1	-	-

### 8.2.1.3 Type of Surveillance by Quarter

Table A3.5 displays the number of birds sampled in each quarter of 2017, by passive surveillance in each bird status category (found dead, injured and live with clinical signs). When considering data submitted by Member States, all three bird status categories were most frequently sampled in the 1<sup>st</sup> quarter, with the greatest preference for sampling birds found dead in this time period (70.7% - found dead, 59.1% - injured and 40.3% - live with clinical signs).

**Annex 3 Table 5 Number of birds tested through passive surveillance by quarter and Member State in 2017 – Non MS data included**

Member State	Quarter 1			Quarter 2			Quarter 3			Quarter 4		
	Found dead	Injured	Live with clinical signs	Found dead	Injured	Live with clinical signs	Found dead	Injured	Live with clinical signs	Found dead	Injured	Live with clinical signs
AT	770	-	-	73	-	-	42	-	-	12	-	-
BE	155	-	-	103	-	-	86	-	-	23	-	-
BG	37	-	-	1	-	-	2	-	-	7	-	-
CY	9	14	-	-	8	-	12	20	-	10	42	2
CZ	286	-	-	10	-	-	26	-	-	8	-	-
DE	7,366	-	9	658	-	3	273	-	1	223	-	-
DK	118	-	-	20	-	-	12	-	-	4	-	-
EE	8	-	1	21	-	1	3	-	-	4	-	-
EL	59	4	19	2	-	-	6	-	-	-	-	-
ES	154	6	1	42	4	2	70	24	4	40	16	7
FI	68	1	6	109	-	15	73	-	11	27	-	6
FR	473	-	-	46	-	-	181	-	-	66	-	-
HR	72	-	-	17	-	-	51	-	-	139	-	-
HU	469	-	-	49	-	-	63	-	-	122	-	-
IE	92	1	5	17	-	-	7	-	-	15	-	-
IT	928	-	43	240	-	19	382	-	22	383	-	2
LT	57	2	-	54	-	-	6	-	-	12	-	-
LU	7	32	-	3	14	-	3	-	-	2	-	-
LV	2	2	-	3	-	-	1	-	-	2	1	-
NL	132	-	-	98	-	-	171	-	-	108	-	-
PL	185	-	-	9	-	-	10	-	-	5	-	-
PT	22	-	-	8	-	-	5	-	1	16	1	1
RO	319	1	4	30	-	-	69	2	2	101	-	-
SE	157	-	19	86	-	14	91	-	16	56	-	13
SI	469	2	5	13	-	9	13	-	4	23	-	18
SK	444	2	5	43	-	-	18	-	-	1	-	-
UK	406	124	-	248	-	-	183	-	-	233	-	-
<b>EU Total</b>	<b>13,264</b>	<b>191</b>	<b>117</b>	<b>2,003</b>	<b>26</b>	<b>63</b>	<b>1,859</b>	<b>46</b>	<b>61</b>	<b>1,642</b>	<b>60</b>	<b>49</b>
CH	69	18	12	1	-	1	45	1	1	12	-	2



Table A3.6 displays the number of birds of Target Species and non-Target Species sampled by MS and quarter in 2017.

**Annex 3 Table 6 Number of target species (TS) sampled in each quarter by Member State in 2017 – Non-MS data included**

Member State	Quarter 1		Quarter 2		Quarter 3		Quarter 4	
	TS	Non-TS	TS	Non-TS	TS	Non-TS	TS	Non-TS
AT	614	137	59	10	34	8	12	0
BE	100	55	28	75	33	53	9	14
BG	22	12	1	0	0	2	1	5
CY	12	11	2	6	13	19	22	32
CZ	217	63	8	2	23	3	2	6
DE	4,357	1,047	303	154	125	85	94	42
DK	88	30	13	7	11	1	2	2
EE	6	3	9	13	2	1	4	0
EL	48	27	1	1	0	6	0	0
ES	88	54	30	18	66	24	26	27
FI	41	34	54	70	62	22	22	11
FR	317	128	34	10	122	38	32	28
HR	40	28	6	11	33	18	115	23
HU	299	170	15	33	15	47	54	67
IE	69	29	10	7	5	2	11	4
IT	353	183	71	179	167	226	209	163
LT	48	11	49	5	5	1	12	0
LU	22	1	3	6	0	0	2	0
LV	2	2	2	1	0	0	0	3
NL	105	5	59	38	79	90	44	53
PL	151	6	5	4	10	0	4	1
PT	9	13	5	3	4	2	0	18
RO	284	13	28	2	71	1	79	22
SE	91	85	21	79	36	70	17	50
SI	391	72	14	8	16	1	24	17
SK	270	114	21	18	11	7	1	0
UK	416	74	137	79	119	41	155	68
<b>EU Total</b>	<b>8,460</b>	<b>2,407</b>	<b>988</b>	<b>839</b>	<b>1,062</b>	<b>768</b>	<b>953</b>	<b>656</b>
CH	83	6	1	1	28	18	11	3

Note: 3,259 birds were not identified to species level and could not be classified as Target or Non-target species.

#### 8.2.1.4 Overview of Results by Species

Table A3.7: Detections of HPAI H5N8 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled by passive surveillance in each MS.

Table A3.8: Detections of HPAI H5N6 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled by passive surveillance in each MS.

Table A3.9: Detections of HPAI H5N5 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled by passive surveillance in each MS.

Table A3.10: Detections of LPAI H5 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled by passive surveillance in each MS.

Table A3.11: Detections of LPAI H7 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled by passive surveillance in each MS.

Table A3.12: Detections of all AI types (in brackets) by TS (in bold) and non-TS and the number of those species sampled by passive surveillance in each MS.

The aim of these tables is to provide context of AI detections taking into account bird species and the number of birds sampled by MS.

#### Key to tables

Headings	
HPAI H5N8	HPAI H5N6
HPAI H5N5	LPAI H5
LPAI H7	All AI
Not sampled	

Not presenting data, for illustrative purposes only.

**Annex 3 Table 7 Detections of HPAI H5N8 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled in each MS (page 1 of 4)**

HPAI H5N8	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<b><i>Accipiter gentilis</i></b>	3	1		4		57 (3)	6			1	29	1		1		14				5			1	6	2	8	4	143 (3)	
<i>Accipiter sp.</i>						39 (3)										3		1								2	5	50 (3)	
<i>Alopochen aegyptiacus</i>		1			1	43 (1)														3							1	49 (1)	
<b><i>Anas crecca</i></b>	5	4				4		1			4	10	18	2	1	249				1			31				2	332 (5)	
<b><i>Anas platyrhynchos</i></b>	117 (4)	38 (3)	2	2	78 (7)	701 (9)	9	2		52	10	141	11	39 (4)	10	95 (1)	12			109 (6)	19 (4)	5	33	27	43 (1)	67 (2)	96	1718 (44)	16 (5)
<i>Anas sp.</i>						334 (12)			2			24				14		5		8	6(3)				11	3	17 (2)	424 (17)	1
<b><i>Anser albifrons</i></b>	1					16 (1)		1	3					13 (8)	1											1(1)		36 (10)	
<b><i>Anser anser</i></b>	6(2)				2(2)	172 (19)	3		1(1)	7(2)	3	6(2)	1	12 (5)		1(1)		6		27 (2)			1	1		12 (6)	18 (2)	279 (44)	1
<b><i>Anser Brachyrhynchus</i></b>																							3			1(1)	3	7(1)	
<b><i>Anser erythropus</i></b>	5													5(5)														10 (5)	
<b><i>Anser fabalis</i></b>						18 (3)								6(1)						5	1			1				31 (4)	
<i>Anser sp.</i>	1		1			139 (22)					1					4				1	2(1)				2			151 (23)	
<i>Ardea alba</i>	95 (1)		1			160 (4)			2			6(1)	1	8(2)		2										42	8	325 (8)	
<b><i>Ardea cinerea</i></b>	88 (1)	23	1		70 (2)	1215 (11)	6		2	9	1	43	27	9	2(1)	40		1		10		1(1)	1	2	82	32 (4)	2	1667 (20)	6
<i>Ardea sp.</i>	2		2(1)		6	219 (4)			1			2	4			3		3								18	2	262 (5)	
<b><i>Aythya ferina</i></b>	1	1				12			1(1)	3		1	1		1	1							9					31 (1)	1
<b><i>Aythya fuligula</i></b>	5(3)	1				47 (7)							1							5(1)							4	63 (11)	5(1)

**Annex 3 Table 7 Detections of HPAI H5N8 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled in each MS (continued, page 2 of 4)**

HPAI H5N8	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<i>Aythya sp.</i>						1 (1)																						1 (1)	
<i>Botaurus stellaris</i>						4						1 (1)		1												2		8 (1)	
<b><i>Branta canadensis</i></b>		7				49 (11)						5 (1)						1		4				2			14 (1)	82 (13)	
<i>Bucephala clangula</i>						5 (1)																		1				6 (1)	
<b><i>Buteo buteo</i></b>	82 (2)	37 (1)	2 (1)	12 (1)	1	677 (27)	28 (7)		3	26	1	35 (3)		34 (3)	15	74		8		14 (1)	6		3	24	21	13	110 (3)	1226 (49)	23
<i>Buteo spp.</i>	7					771 (47)																				2	18 (1)	798 (48)	2
<b><i>Cairina moschata</i></b>	6 (1)	1			1					4					2					1		4					1	20 (1)	
<b><i>Ciconia ciconia</i></b>			1			15 (3)		3	1	35 (1)		1	1	7 (1)		7	12			3	5	5	10		5	2		113 (5)	
<i>Columba livia (livia)</i>	1	2	4	3	27	21		1	1	3	1	21	10	23	11	27 (2)	6		1		1	7		15	10		13	209 (2)	5
<i>Corvus corone corone</i>						120 (1)	1																				1	122 (1)	
<i>Corvus frugilegus</i>					17	32	7				3		5	25 (2)	1						4		2	2		5	6	109 (2)	
<i>Corvus sp.</i>	2					156 (1)														1						1	12	172 (1)	3
<i>Cygnus atratus</i>		1 (1)				6						2											6					15 (6)	
<b><i>Cygnus cygnus</i></b>			12 (10)			16 (9)	5				41 (1)	2			22 (8)	28 (5)	4 (1)		2		1 (1)		152	7		6 (2)	68 (2)	366 (114)	
<b><i>Cygnus olor</i></b>	244 (102)	18 (1)			90 (40)	206 (28)	20	3	22 (9)	4	17	195 (33)	33 (21)	204 (139)	26 (1)	19 (2)	82 (11)	9	2	44 (4)	85 (46)		74	24	256 (167)	104 (52)	254 (8)	2035 (705)	29 (6)
<b><i>Cygnus sp.</i></b>	12 (6)					680 (176)			8	1											50 (38)					4 (2)	14	769 (222)	3 (1)
<i>Egretta garzetta</i>				2		1				3		2					7	1					1				1	18 (1)	

**Annex 3 Table 7 Detections of HPAI H5N8 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled in each MS (continued, page 3 of 4)**

HPAI H5N8	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<i>Egretta sp.</i>												2									13 (1)							15 (1)	
<i>Falco cherrug</i>														1 (1)														1 (1)	
<b><i>Falco peregrinus</i></b>	1			4		19 (2)	5 (1)			2	2	5		1 (1)	1	13				2 (1)			1	7		1	14	78 (5)	
<i>Falco sp.</i>	1					88 (1)			1							6										2		98 (1)	2
<b><i>Falco tinnunculus</i></b>	37		1	23		169	6		1	11	1	3 (1)		2	4	132 (1)				2		1	2	7	5	13	11	431 (2)	1
<b><i>Fulica atra</i></b>	13	5	1 (1)	1	1	176 (1)	2		3	5		10	34	3 (1)		6	1	1		25 (1)	1 (1)		32	1	5	1	13	340 (6)	5 (1)
<i>Haliaeetus albicilla</i>						22 (2)	6 (3)	3			35 (5)			18	1		1		2		2			76			2	168 (10)	
<i>Larus argentatus</i>	1	112	1				8 (1)	1			16	1			3	21				86				4			31	285 (1)	
<i>Larus argentatus argentatus</i>						32 (4)																						32 (4)	
<i>Larus argentatus cachinnans</i>	9			2								1 (1)					2					1						15 (1)	
<b><i>Larus canus</i></b>		1				11 (2)		10			3					1	1			3			3			1	11	45 (2)	4
<i>Larus marinus</i>		1				5	3 (3)					1								4							1	15 (3)	
<b><i>Larus ridibundus</i></b>	38 (3)	19				72 (5)	1			11	13	20	48	8 (3)		13	1			4		1		7	1		90 (1)	347 (12)	7
<i>Larus sp.</i>	1					225 (28)			1	12		5				3					4 (1)		26			2	29	308 (38)	1
<i>Mareca penelope</i>						5	2 (1)			1		2	2		1 (1)	1 (1)											3	17 (3)	
<i>Microcarbo pygmaeus</i>														1 (1)									3					4 (1)	
<i>Pelecanus crispus</i>	1 (1)								5																			6 (1)	

**Annex 3 Table 7 Detections of HPAI H5N8 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled in each MS (continued, page 4 of 4)**

HPAI H5N8	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<i>Pelecanus sp.</i>			1																				2					3 (1)	
<b><i>Phalacrocorax carbo</i></b>	22 (1)	8	3		6	244 (4)	2			16	6	4 (4)	6 (2)	12 (2)	2	15				10	2		1	5	16	20	3	403 (14)	3
<i>Phalacrocorax sp.</i>										13		5									3 (1)					4		25 (1)	
<b><i>Pica pica</i></b>						41	4		1 (1)		4	4		13	3	23		1		3			80	12		6	1	196 (1)	
<b><i>Podiceps cristatus</i></b>	10	2				41 (1)						1	5			8				2					2	1		72 (1)	12
<i>Somateria mollissima</i>						4	1 (1)			3					1									3				12 (1)	
<i>Sterna hirundo</i>		1								1			26	2 (1)														30 (1)	
<b><i>Tachybaptus ruficollis</i></b>						5 (1)						3		1		1							1		1		1	13 (1)	1
<i>Tadorna tadorna</i>		6				5			4				7			4 (1)				1							4	31 (1)	
<i>Troglodytes troglodytes</i>			1 (1)			3																						4 (1)	
<i>Turdus merula</i>	3	3	1		1	146	1		1			5	9	35	1	87	1							5	8	22 (1)	329 (1)	5	
<i>Turdus pilaris</i>	3					8								6									2	3		12		34 (1)	1

Target species indicated with bold text.

**Annex 3 Table 8 Detections of HPAI H5N6 (in brackets) and the number of those species sampled in each MS**

HPAI H5N6	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<b><i>Aythya fuligula</i></b>	5	1				47							1							5 (1)							4	68 (1)	5
<b><i>Cygnus olor</i></b>	244	18			90	206	20	3	22	4	17	195	33	204	26	19	82	9	2	44 (4)	85		74	24	256	104	254	2064 (4)	29 (1)

All birds were Target Species and are listed in bold text.

**Annex 3 Table 9 Detections of HPAI H5N5 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled in each MS**

HPAI H5N5	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH	
<i>Anas sp.</i>						334 (2)			2			24				14		5		8	6				11	3	17	424 (2)	1	
<b><i>Anser albifrons</i></b>	1					16		1	3					13 (1)	1											1		36 (1)		
<b><i>Anser anser</i></b>	6				2	172 (1)	3		1	7	3	6	1	12		1		6		27 (1)			1	1		12	18	279 (2)	1	
<i>Anser sp.</i>	1		1			139 (1)						1				4				1	2				2			151 (1)		
<i>Ardea alba</i>	95		1			160 (1)			2			6	1	8		2										42	8		325 (1)	
<b><i>Buteo buteo</i></b>	82	37	2	12	1	677 (1)	28		3	26	1	35		34	15	74		8		14	6		3	24	21	13	110	1226 (1)	23	
<i>Buteo spp.</i>	7					771 (3)																				2	18	798 (3)	2	
<b><i>Cygnus olor</i></b>	244	18			90	206	20	3	22 (1)	4	17	195	33	204 (1)	26	19	82	9	2	44	85 (4)		74	24	256 (3)	104	254	2035 (9)	29	
<b><i>Cygnus sp.</i></b>	12					680 (4)			8	1											50 (1)					4	14	769 (5)	3	
<i>Larus argentatus</i>	1 (1)	112	1				8	1		1	16	1			3	21				86				4			31	286 (1)		
<i>Mareca strepera</i>	1					4			1				3			2 (1)				2							2	15 (1)		
<b><i>Mergus albellus</i></b>						3 (1)					1																	4 (1)		
<b><i>Phalacrocorax carbo</i></b>	22	8	3		6	244 (1)	2			16	6	4	6	12	2	15				10	2		1	5	16	20	3	403 (1)	3	

Target species indicated with bold text.

**Annex 3 Table 10 Detections of LPAI H5 (in brackets) by TS (in bold) and non-TS and the number of those species sampled in each MS**

LPAI H5	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<i>Anas crecca</i>	5 (1)	4				4		1			4	10	18	2	1	249				1			31				2	332 (1)	
<i>Anas platyrhynchos</i>	117	38	2	2	78	701	9	2		52 (1)	10	141 (6)	11	39	10	95	12			109	19	5	33	27	43	67	96	1718 (7)	16
<i>Anser fabalis</i>						18 (1)								6						5	1			1				31 (1)	
<i>Cygnus olor</i>	244	18			90	206	20 (1)	3	22	4	17	195 (1)	33	204	26	19	82	9	2	44	85		74	24	256	104	254	2035 (2)	29
<i>Cygnus sp.</i>	12					680 (2)			8	1											50					4	14	769 (2)	3
<i>Gallinula chloropus</i>	2	6 (1)		2		16						9	2			12				4							16	69 (1)	
<i>Larus argentatus argentatus</i>						32 (1)																						32 (1)	

Target species indicated with bold text.

**Annex 3 Table 11 Detections of LPAI H7 (in brackets) and the number of those species sampled in each MS**

LPAI H7	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<b><i>Anas platyrhynchos</i></b>	117	38	2	2	78	701 (1)	9	2		52	10	141	11	39	10	95	12			109	19	5	33	27	43	67	96	1718 (1)	16

The one species was a Target Species and is listed in bold text.



**Annex 3 Table 12 Detections of all AI (in brackets) by TS (in bold) and non-TS and the number of those species sampled in each MS (page 1 of 5)**

All AI positives	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<b><i>Accipiter gentilis</i></b>	3	1		4		57 (3)	6			1	29	1		1		14 (1)				5			1	6(2)	2	8	4	142 (6)	
<i>Accipiter sp.</i>						39 (4)										3		1								2	5	50(4)	
<i>Alopochen aegyptiacus</i>		1			1	43 (1)														3							1	49(1)	
<b><i>Anas crecca</i></b>	5(3)	4				4		1			4	10	18	2	1	249				1				31 (5)			2	332 (8)	
<b><i>Anas platyrhynchos</i></b>	117 (10)	38 (3)	2	2	78 (7)	701 (38)	9(4)	2		52 (4)	10	141 (6)	11	39 (4)	10	95 (1)	12			109 (8)	19 (9)	5	33 (5)	27 (4)	43 (2)	67 (6)	96 (2)	1713 (113)	16(5)
<i>Anas sp.</i>						334 (20)			2			24				14		5		8	6(3)				11	3	17 (2)	424 (25)	1
<b><i>Anser albifrons</i></b>	1					16 (3)		1	3					13 (9)	1											1(1)		36 (13)	
<b><i>Anser anser</i></b>	6(2)				2(2)	172 (57)	3		1(1)	7(2)	3	6(3)	1	12 (5)		1(1)		6		27 (5)			1	1		12 (6)	18 (2)	278 (86)	1
<i>Anser anser domesticus</i>																								2(2)				2(2)	
<b><i>Anser Brachyrhynchus</i></b>																							3			1(1)	3	7(1)	
<b><i>Anser erythropus</i></b>	5													5(5)														10(5)	
<b><i>Anser fabalis</i></b>						18 (4)								6(1)						5	1			1				31(5)	
<i>Anser sp.</i>	1		1			139 (30)						1				4(1)				1	2(1)				2			151 (32)	

**Annex 3 Table 13 Detections of all AI (in brackets) by TS (in bold) and non-TS and the number of those species sampled in each MS (continued, page 2 of 5)**

All AI positives	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<i>Ardea alba</i>	95 (1)		1			160 (6)			2			6 (1)	1	8 (2)		2									42	8		325 (10)	
<i>Ardea cinerea</i>	88 (1)	23	1		70 (2)	1215 (24)	6		2	9	1	43 (1)	27	9	2 (1)	40		1		10		1 (1)	1	2	82	32 (4)	2	1667 (34)	6
<i>Ardea sp.</i>	2		2 (1)		6	219 (7)			1			2	4			3		3								18	2	262 (8)	
<i>Aythya ferina</i>	1	1				12 (4)			1 (1)	3		1	1		1	1							9					31 (5)	1
<i>Aythya fuligula</i>	5 (3)	1				47 (13)							1							5 (2)							4	63 (18)	5 (1)
<i>Aythya sp.</i>						1 (1)																						1 (1)	
<i>Botaurus stellaris</i>						4						1 (1)		1												2		8 (1)	
<i>Branta canadensis</i>		7				49 (20)						5 (1)						1		4				2			14 (1)	82 (22)	
<i>Bucephala clangula</i>						5 (1)																		1				6 (1)	
<i>Buteo buteo</i>	82 (2)	37 (1)	2 (1)	12 (1)	1	677 (40)	28 (7)		3	26	1	35 (6)		34 (3)	15	74		8		14 (1)	6		3	24 (3)	21	13	110 (3)	1221 (67)	23
<i>Buteo spp.</i>	7					771 (63)																				2	18 (1)	798 (64)	2
<i>Cairina moschata</i>	6 (1)	1			1					4					2					1		4					1	20 (1)	
<i>Ciconia ciconia</i>			1			15 (3)		3	1	35 (1)		1	1	7 (1)		7	12			3	5	5	10		5	2		113 (5)	
<i>Columba livia (livia)</i>	1	2	4	3	27	21		1	1	3	1	21	10	23	11	27 (2)	6		1		1	7		15	10		13	205 (2)	5
<i>Corvus corone</i>	2		1								2	1	1	10		4		3		10				7 (1)	2	13		56 (1)	
<i>Corvus corone corone</i>						120 (2)	1																				1	122 (2)	
<i>Corvus frugilegus</i>					17	32	7				3		5	25 (2)	1						4		2	2 (1)		5	6	109 (3)	
<i>Corvus sp.</i>	2					156 (1)														1						1	12	172 (1)	3

**Annex 3 Table 13 Detections of all AI (in brackets) by TS (in bold) and non-TS and the number of those species sampled in each MS (continued, page 3 of 5)**

All AI positives	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH
<i>Cygnus atratus</i>		1 (1)				6						2											6 (5)					15 (6)	
<b><i>Cygnus cygnus</i></b>			12 (10)			16 (9)	5				41 (1)	2			22 (8)	28 (5)	4 (1)		2		1 (1)		152 (86)	7		6 (2)	68 (5)	366 (128)	
<b><i>Cygnus olor</i></b>	244 (108)	18 (1)			90 (40)	206 (62)	20 (1)	3	22 (10)	4	17	195 (47)	33 (21)	204 (140)	26 (1)	19 (3)	82 (12)	9	2	44 (13)	85 (50)		74 (42)	24 (15)	256 (170)	104 (59)	254 (10)	2031 (802)	29 (7)
<b><i>Cygnus sp.</i></b>	12 (6)					680 (293)			8	1											50 (39)					4 (2)	14	769 (340)	3 (1)
<i>Egretta garzetta</i>				2		1				3		2				7	1						1 (1)				1	18 (1)	
<i>Egretta sp.</i>												2										13 (1)						15 (1)	
<i>Falco cherrug</i>													1 (1)															1 (1)	
<b><i>Falco peregrinus</i></b>	1			4		19 (3)	5 (1)			2	2	5		1 (1)	1	13					2 (1)		1	7 (3)		1	14	77 (9)	
<i>Falco sp.</i>	1					88 (2)			1							6										2	98 (2)	2	
<b><i>Falco tinnunculus</i></b>	37		1	23		169	6		1	11	1	3 (1)		2	4	132 (1)					2	1	2	7	5	13	11	430 (2)	1
<b><i>Fulica atra</i></b>	13	5	1 (1)	1	1	176 (4)	2		3	5		10	34	3 (1)		6	1	1			25 (1)	1 (1)	32 (1)	1	5	1	13	339 (9)	5 (1)
<i>Haliaeetus albicilla</i>						22 (4)	6 (3)	3			35 (6)			18	1		1		2		2			76 (7)			2	155 (20)	
<i>Larus argentatus</i>	1 (1)	112	1				8 (1)	1			16	1			3	21					86 (2)			4			31	285 (4)	
<i>Larus argentatus argentatus</i>						32 (6)																						32 (6)	
<i>Larus argentatus cachinnans</i>	9			2								1 (1)					2					1						15 (1)	
<b><i>Larus canus</i></b>		1				11 (2)		10			3					1	1				3		3			1	11	45 (2)	4
<i>Larus marinus</i>		1				5 (1)	3 (3)					1									4						1	15 (4)	

**Annex 3 Table 13 Detections of all AI (in brackets) by TS (in bold) and non-TS and the number of those species sampled in each MS (continued, page 4 of 5)**

All AI positives	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH	
<b>Larus ridibundus</b>	38 (6)	19				72 (5)	1			11	13	20	48	8 (3)		13	1			4		1		7 (1)	1		90 (1)	347 (16)	7	
<i>Larus sp.</i>	1					225 (38)			1	12		5				3					4 (1)		26 (14)			2	29	308 (53)	1	
<i>Mareca penelope</i>						5	2 (1)			1 (1)		2	2		1 (1)	1 (1)											3	17 (4)		
<i>Microcarbo pygmaeus</i>														1 (1)										3				4 (1)		
<i>Pelecanus crispus</i>	1 (1)								5																			6 (1)		
<i>Pelecanus sp.</i>			1																				2 (1)					3 (1)		
<b>Phalacrocorax carbo</b>	22 (1)	8	3		6	244 (8)	2			16	6	4 (4)	6 (2)	12 (2)	2	15				10	2		1 (1)	5	16	20	3	403 (18)	3	
<i>Phalacrocorax sp.</i>										13		5									3 (1)					4		25 (1)		
<b>Pica pica</b>						41 (1)	4		1 (1)		4	4		13	3	23		1			3			80	12		6	1	194 (2)	
<b>Podiceps cristatus</b>	10	2				41 (3)						1	5			8										2	1		72 (3)	12
<i>Somateria mollissima</i>						4	1 (1)				3				1									3					12 (1)	
<i>Sterna hirundo</i>		1									1		26	2 (1)															30 (1)	
<i>Surnia ulula</i>						1					5													7 (1)					13 (1)	
<b>Tachybaptus ruficollis</b>						5 (1)						3		1		1							1			1	1	1	13 (1)	1
<i>Tadorna tadorna</i>		6				5			4				7			4 (1)					1						4		31 (1)	
<i>Troglodytes troglodytes</i>			1 (1)			3																							4 (1)	
<i>Turdus merula</i>	3	3	1		1	146	1		1			5	9	35	1	87	1							5	8	22 (1)		329 (1)	5	

**Annex 3 Table 13 Detections of all AI (in brackets) by TS (in bold) and non-TS and the number of those species sampled in each MS (continued, page 5 of 5)**

All AI positives	AT	BE	BG	CY	CZ	DE	DK	EE	EL	ES	FI	FR	HR	HU	IE	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK	EU	CH	
<i>Turdus pilaris</i>	3					8								6										<b>2 (1)</b>	3		<b>12 (4)</b>		<b>34 (5)</b>	1

Target species indicated with bold text.

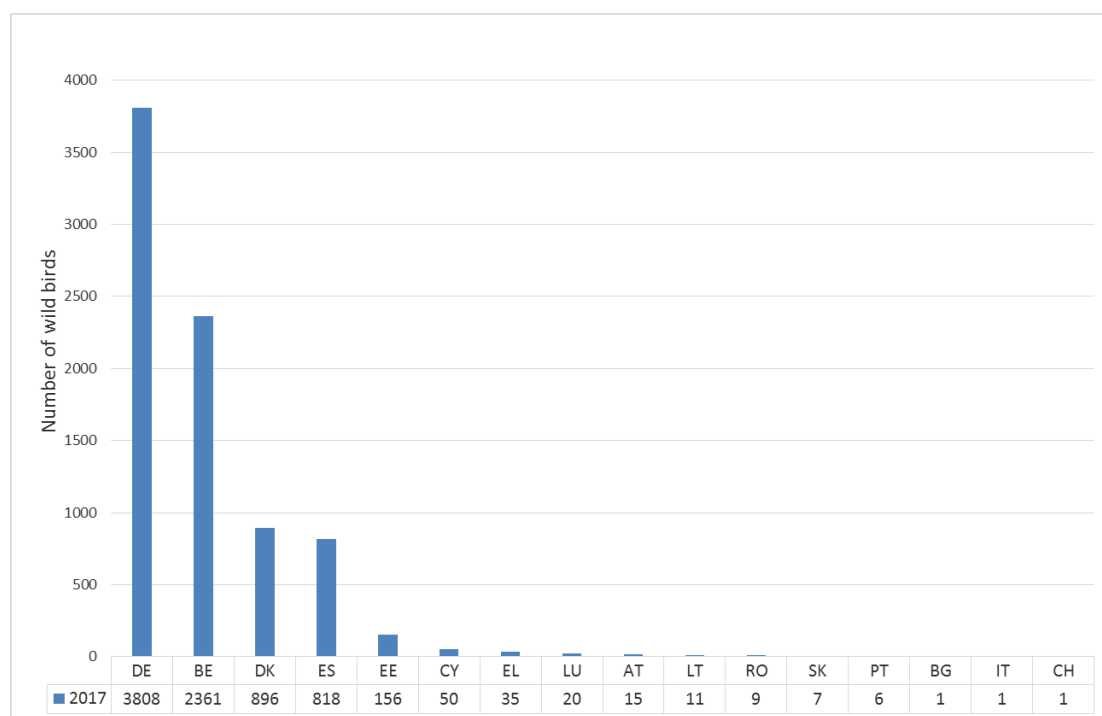
## 8.2.2 Annex 4 – Sampling by reported active surveillance

### 8.2.2.1 Overview of reported active surveillance

During 2017, there was no mandatory requirement for Member States to carry out or submit avian influenza surveillance data collected through active surveillance programmes (sampling live healthy birds). A total of 15 Member States and Switzerland, the one reporting non-Member State, submitted active surveillance data in 2017. The data presented in this section of the report does not accurately represent the extent of active surveillance effort carried out across the EU as a whole. The submission of active surveillance data to the European Commission was voluntary in 2017, and other activities are known to have been carried out but not reported by Member States. For example, the Erasmus Medical Center in the Netherlands conducts a continuous active wild bird surveillance program. In 2017 6,941 wild birds were tested for the presence of avian influenza viruses, and the presence of H5-specific avian influenza viruses. While detailed data were not submitted in 2017, a summary of avian influenza detections resulting from this programme in 2017 can be found in section 8.2.2.7 of this report.

In total, 8,195 birds were reported to be sampled by active surveillance in 2017 (33.0% less than in 2016, n=12,231). As in 2016, Germany submitted the largest number of birds tested by active surveillance (n=3,808, 46.5%), followed by Belgium (n=2,361, 28.8%). This accounts for over 75% of the total active surveillance data submitted in 2017.

#### Annex 4 Figure 1 Total number of birds sampled by active surveillance in 2017 by EU Member States – Non-MS data included

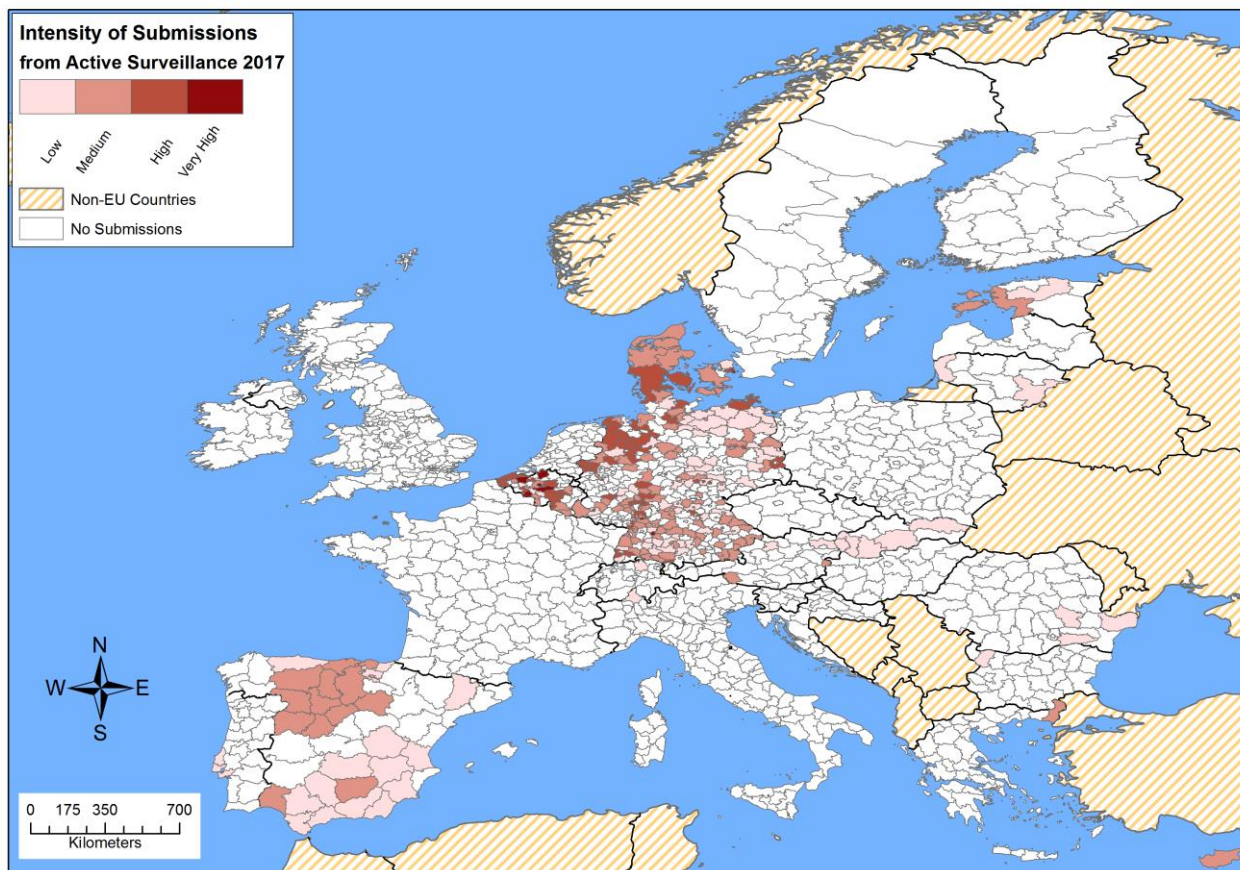


### 8.2.2.2 Geographical targeting of reported active surveillance

Figure A4.2 illustrates the distribution of active surveillance on a spatial scale by displaying the number of birds sampled per unit area.

**Annex 4 Figure 2 Map of the intensity of reported sampling by active surveillance (birds found dead, injured or live with clinical signs) across Member States in 2017**

The classification of intensity of surveillance is grouped by holdings sampled per 100 km<sup>2</sup>  
Low: up to 10, Medium: 11 - 100, High: 101 - 500, Very high: >500



### 8.2.2.3 Seasonal targeting of reported active surveillance

Figure A4.3 displays the percentage of birds reported sampled by MSs in each quarter, when considering active surveillance data. For the EU overall (15 submitting MSs), nearly half of all birds were sampled in the 1<sup>st</sup> quarter (Jan-Mar) (41.4 %) and over a third of birds were sampled in the 4<sup>th</sup> quarter (Oct-Dec) (35.8 %). For individual MSs, the temporal targeting varied. Six MSs carried out the majority of their sampling in the 1<sup>st</sup> quarter, most notably Bulgaria and Lithuania (both sampled all of their birds in the 1<sup>st</sup> quarter). Italy submitted one bird by active surveillance, in the second quarter (Apr-Jun). Austria (53.3%), Spain (45.7%) and Luxembourg (100%) carried out most of their surveillance in the 3<sup>rd</sup> quarter (Jul-Sep); while six MSs carried out most active surveillance in quarter 4 (Oct-Dec), notably Estonia, Greece and Portugal (96.8%, 88.6% and 83.3%, respectively).

**Annex 4 Figure 3 Percentage of all birds sampled by active surveillance in 2017, by quarter and MS. Raw numbers of birds sampled by quarter and MS are shown in the table below – Non-MS data included**

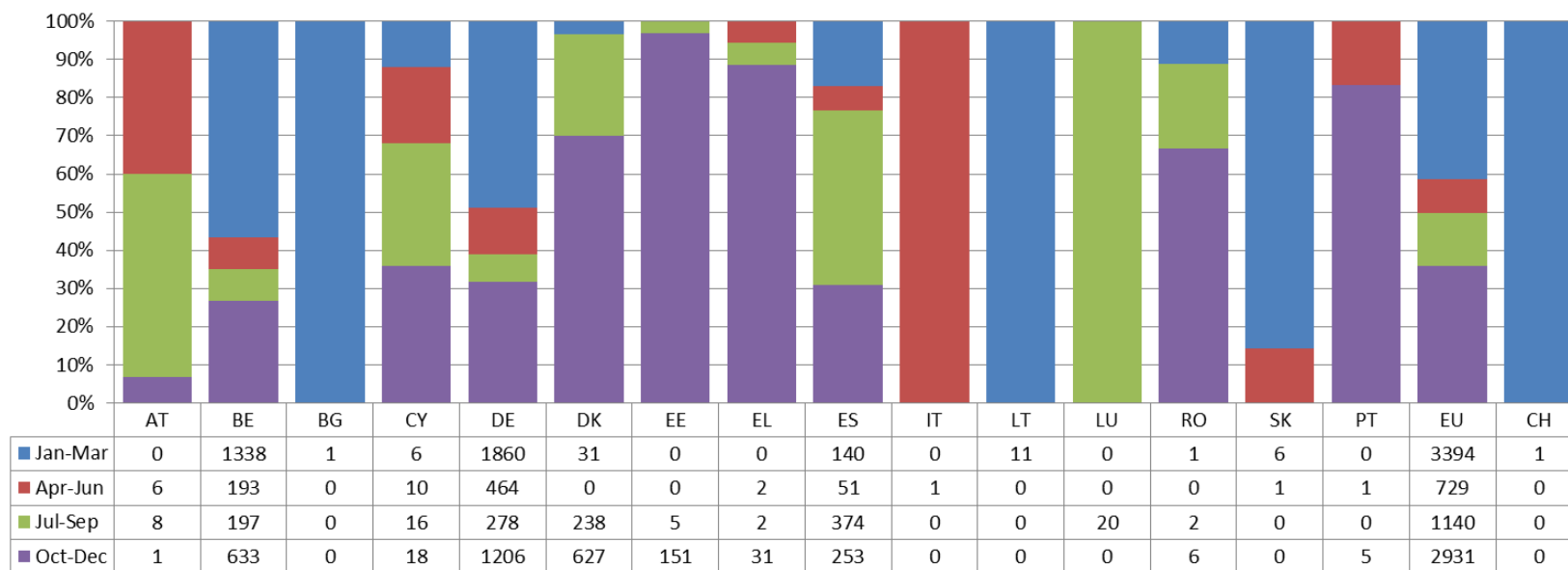




Figure A4.4 displays the percentage of birds that were reported sampled by active surveillance in each quarter for all participating MS.

**Annex 4 Figure 4 Percentage of birds reported sampled by active surveillance in 2017 by quarter - MS data only**

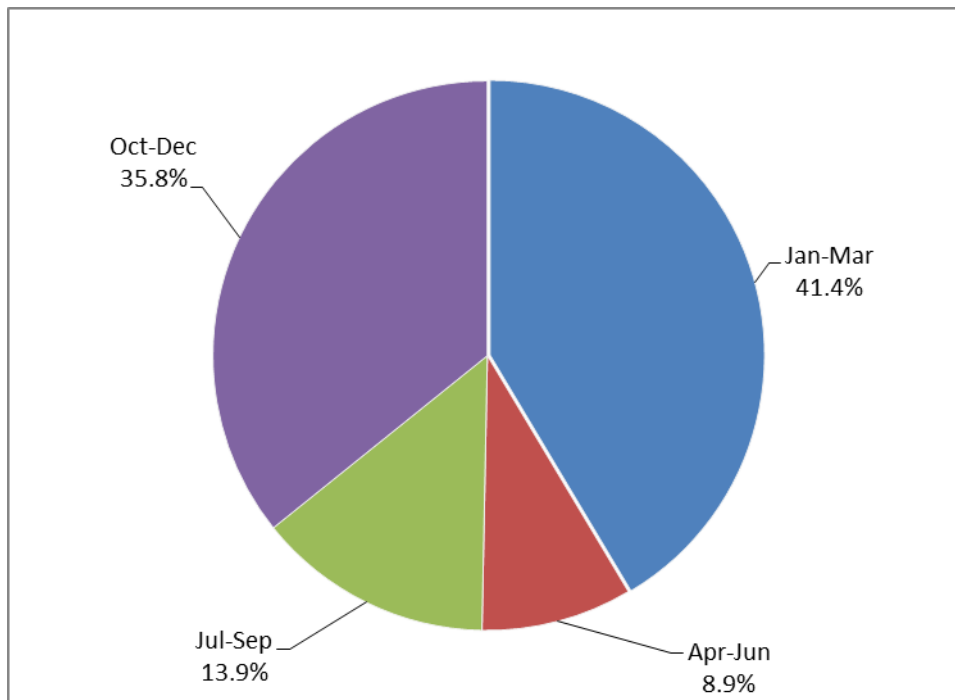
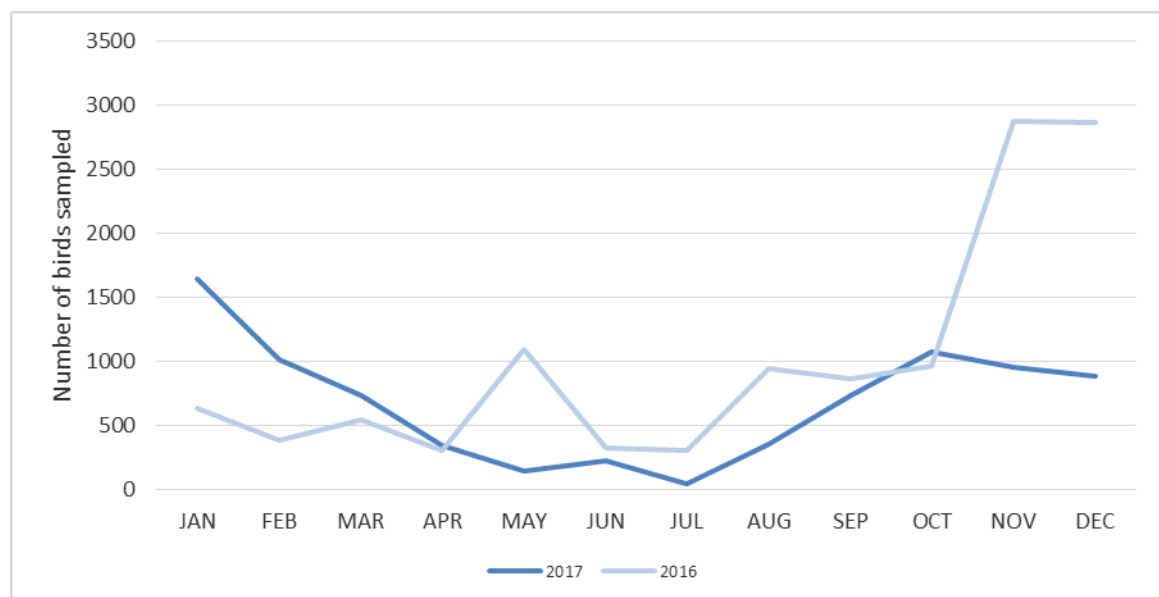


Figure A4.5 displays the overall number of wild birds reported sampled each month by active surveillance during 2017, with the surveillance trend for 2016 presented for cross year comparison. In 2017 reported active surveillance was at its lowest level in July and at its highest level in January.

**Annex 4 Figure 5 Temporal distribution of the number of birds reported sampled by active surveillance during 2017 – MS data only**



#### 8.2.2.4 Bird species sampled by reported active surveillance

Of the 8,194 birds sampled by MS, 89.0% (n=7,289) were identified to full species level, while 11.0% (n=905) were identified to genus only. This involved birds in the genera of *Anser* (n=491), *Anas* and *Mareca* (n=223), *Columba* (n=66), *Buteo* (n=22), *Turdus* (n=21), *Larus* (n=19) and others (with less than 10 birds). Sampling was reported for one 'unknown' bird. In total birds of 16 Orders and 124 species were sampled by active surveillance in 2017. Table A4.1 displays the ten most frequently sampled Orders. The most commonly sampled Order was Anseriformes (ducks, geese and swans), followed by Charadriiformes (gulls and waders) and Galliformes (fowl). Since 2006, Anseriformes and Charadriiformes have consistently been the most intensively sampled Orders by active surveillance. Passeriformes, usually submitted in high numbers, only constituted 0.9% of the active surveillance total in 2017 (n=73/8,194), compared to 6.4% (n=777/12,331) in 2016.

Table A4.2 displays the top 15 species sampled by active surveillance in 2017. As in 2006 to 2016, Mallards (*Anas platyrhynchos*) were the most frequently sampled species in 2017 (n=2,327, 28.4 %). Greylag Goose (*Anser anser*) (n=1,156, 14.1%) were also sampled in high numbers. Of the 15 most frequently sampled species, nine were Target Species (TS). Common Quail (*Coturnix coturnix*), Common Shelduck (*Tadorna tadorna*), Egyptian Goose (*Alopochen aegyptiacus*) and Red-legged partridge (*Alectoris rufa*) were the only non-TS sampled in high numbers. Table A4.2 also indicates that the top 15 species account for over three quarters of all birds tested in 2017.

**Annex 4 Table 1 Wild bird Orders most frequently reported sampled by active surveillance in 2017 – MS data only**

Order	Number sampled	%
Anseriformes	6,184	75.5%
Charadriiformes	631	7.7%
Galliformes	557	6.8%
Falconiformes	287	3.5%
Gruiformes	171	2.1%
Columbiformes	149	1.8%
Passeriformes	73	0.9%
Pelecaniformes	70	0.9%
Strigiformes	47	0.6%
Ciconiiformes	14	0.2%
Total (top 10 Orders only)	8,183	99.9%

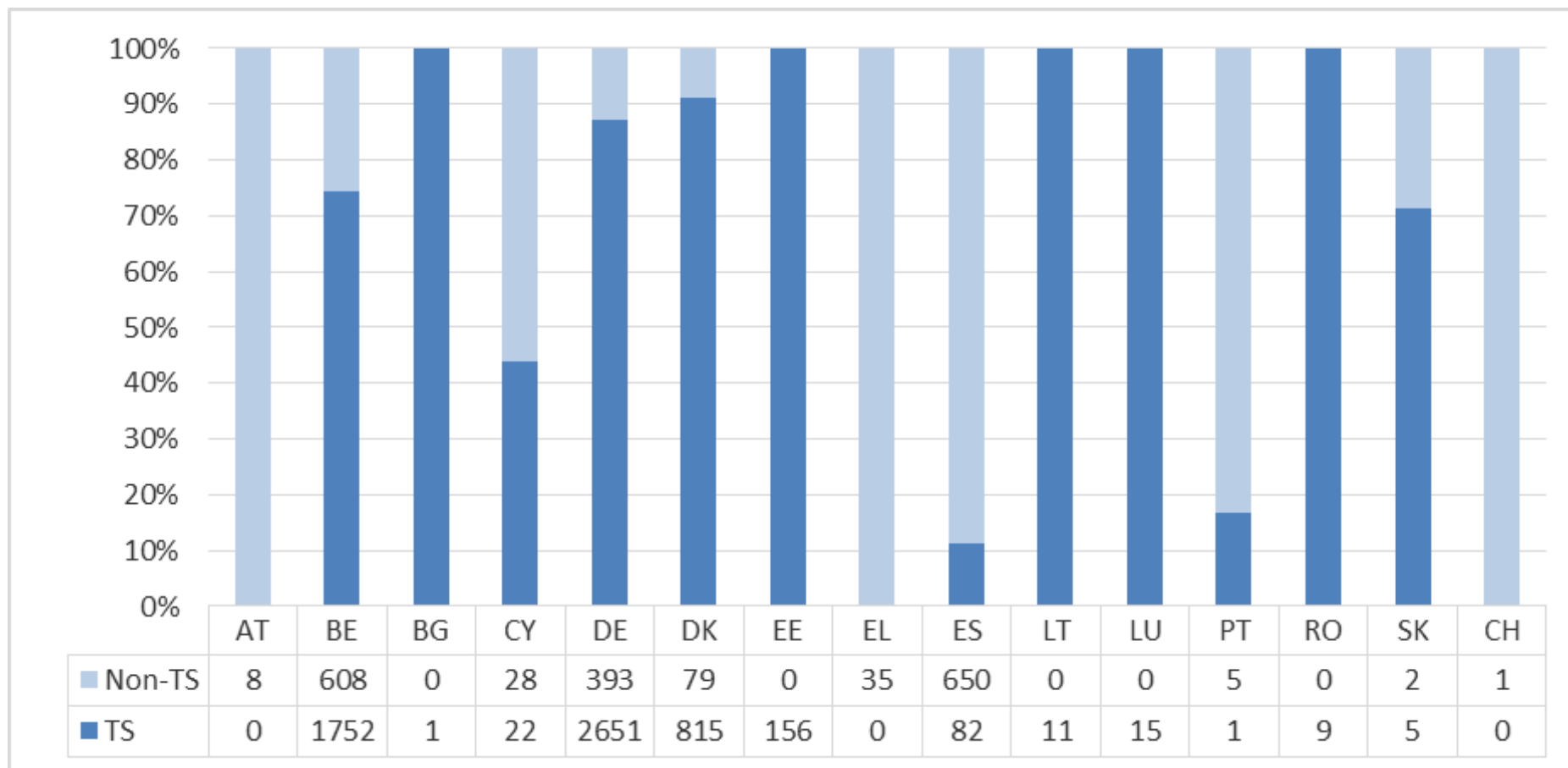
**Annex 4 Table 2 Wild bird species most frequently reported sampled by active surveillance in 2017 – MS data only**

Species*	Number sampled	%
<b>Anas platyrhynchos</b>	2,327	28.4%
<b>Anser anser</b>	1,156	14.1%
Anser sp.	491	6.0%
<i>Coturnix coturnix</i>	321	3.9%
<i>Tadorna tadorna</i>	320	3.9%
<b>Larus ridibundus</b>	315	3.8%
<i>Alopochen aegyptiacus</i>	285	3.5%
<b>Cygnus olor</b>	252	3.1%
<b>Branta leucopsis</b>	245	3.0%
Anas sp.	223	2.7%
<i>Alectoris rufa</i>	183	2.2%
<b>Mareca penelope</b>	179	2.2%
<b>Fulica atra</b>	158	1.9%
<b>Anser albifrons</b>	141	1.7%
<b>Branta canadensis</b>	125	1.5%
Total (top 15 species only)	6,721	82.0%

\*Target species indicated with bold text.

Figure A4.6 displays the proportion of birds from the Target Species list that were sampled by active surveillance by each MS submitting data in 2017. Most birds sampled, where the species was reported, were Target Species (75.3 %).

**Annex 4 Figure 6 Proportion of TS and non-TS sampled by active surveillance in 2017, by Member State. Numbers of birds sampled in each category are shown in the table below – Non-MS data included**



Note: 905 birds were not identified to species level. 863 are not represented in either the Target or Non-Target Species, while 40 Swans '*Cygnus sp.*' are included in the Target Species category.

### 8.2.2.5 H5 HPAI Positives by reported active surveillance

#### 8.2.2.5.1 Overview of HPAI results

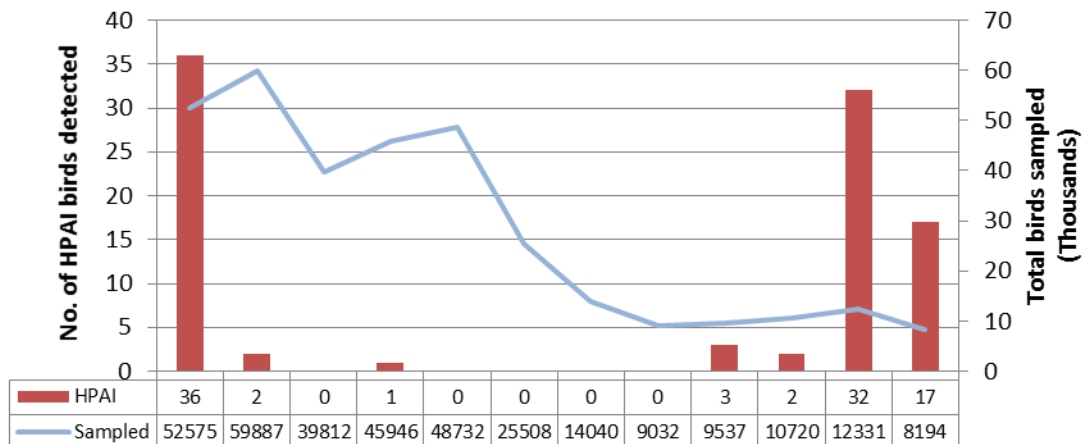
In 2017, HPAI H5 was detected by active surveillance in 17 birds; 15 in Germany and two in Slovakia. Of the 17 HPAI detections, 12 were confirmed HPAI H5N8 by laboratory testing and five were HPAI where the N type was not determined (HPAI H5Nx) (Table A4.3).

Detections of HPAI H5N8 and HPAI H5Nx were each made in five species belonging to two Orders (Tables A4.4 and A4.5). HPAI reported through active surveillance were temporally clustered in the first quarter (Jan-Mar), as was the case for detections by passive surveillance. Two detections were made outside of this time period, one in August and one in October.

**Annex 4 Table 3 Total number of wild birds sampled by active surveillance with the number and proportion positive for all HPAI H5, and the number reported positive for HPAI H5N8 and HPAI H5Nx by Member States in 2017 – MS data only**

Member State	Number sampled	Total number of HPAI H5	% HPAI H5 (proportion of total sampled)	Number of HPAI H5N8	Number of HPAI H5Nx
DE	3,722	15	0.1%	10	5
SK	7	2	28.6%	2	-
EU Total	8,194	17	0.2%	12	5

**Annex 4 Figure 7 Number of HPAI infected birds detected and total birds reported sampled by active surveillance: 2006-2017 – MS data only**

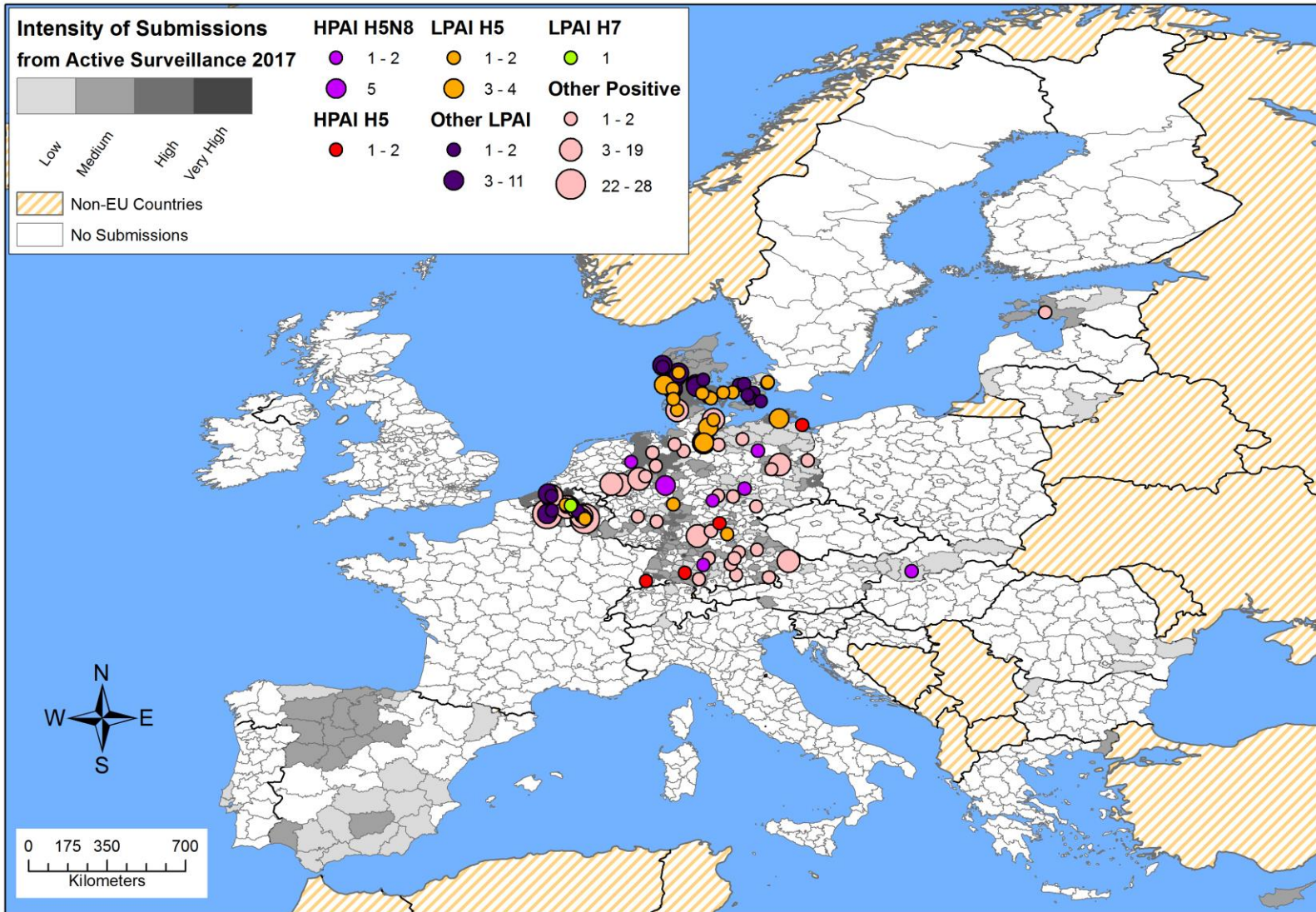


#### 8.2.2.5.2 Geographical distribution of HPAI detections by reported active surveillance

Figure A4.8 displays the location of the HPAI H5N8 and HPAI H5 incidents detected in wild birds through active surveillance activities in 2017. The map also shows the location of LPAI H5, LPAI H7, other LPAI and 'Other positive' findings in wild birds, discussed in the section on LPAI.

**Annex 4 Figure 8 Intensity of sample submission from reported active surveillance and distribution of all AI detections in wild birds in EU MS in 2017**

The classification of intensity of surveillance is grouped by holdings sampled per 100 km<sup>2</sup>  
 Low: up to 10, Medium: 11 - 100, High: 101 - 500, Very high: >500



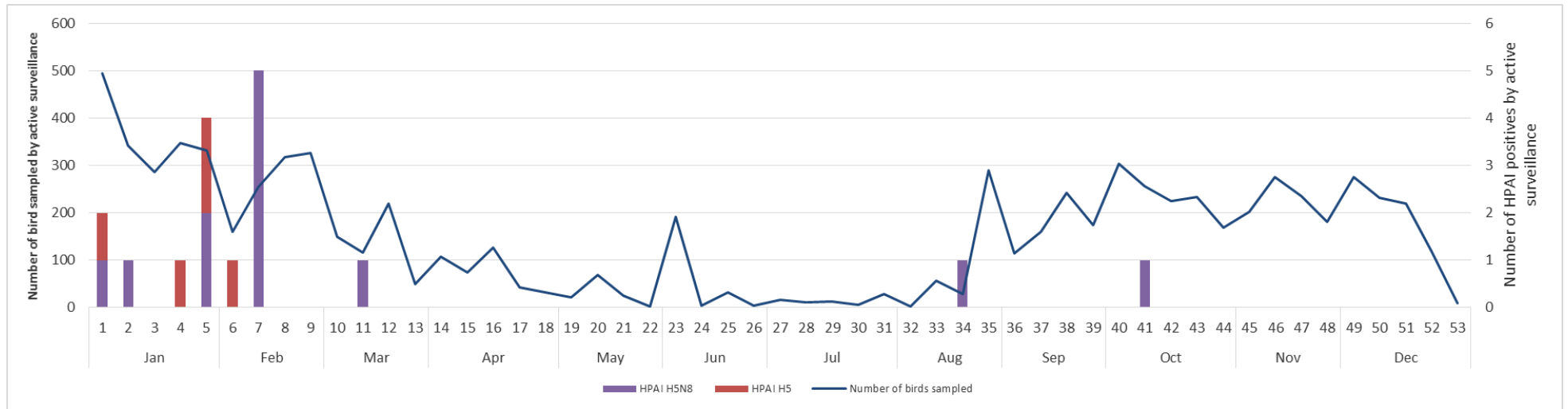
8.2.2.5.3 Temporal distribution of HPAI detections by reported active surveillance

The timing of HPAI detections in wild birds in Germany and Slovakia are presented in Figure A4.9, as well as the number of birds tested by active surveillance by week in the EU in 2017 (Figure A4.10).

**Annex 4 Figure 9 Number of HPAI H5N8 (purple) and HPAI H5 (red) positive wild birds detected through reported active surveillance by week and Member State in 2017 – MS data only**

MS	Jan			Feb					Mar			Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53													
DE	1			1	2	1	5			1																									1																															
SK	1	1																																																																

**Annex 4 Figure 10 Number of HPAI incidents in wild birds and number of wild birds sampled by reported active surveillance in the EU by week in 2017 – MS data only**



#### 8.2.2.5.4 Order and species of wild birds positive for HPAI detections by reported active surveillance

HPAI was reported in Anseriformes (n=12, 0.2%) and Falconiformes (n=5, 1.9%) during 2017 active surveillance activities (Table A4.4).

**Annex 4 Table 4 Number of birds tested by reported active surveillance and number positive for all HPAI, HPAI H5N8 and HPAI H5Nx by Order in 2017 - MS data only**

Order	Number sampled	Total number of HPAI H5	% HPAI H5 (proportion of total sampled)	Number of HPAI H5N8	Number of HPAI H5Nx
Anseriformes	6,184	12	0.2%	10	2
Falconiformes	287	5	1.7%	2	3
<b>Total active surveillance</b>	<b>8,194</b>	<b>17</b>	<b>0.2%</b>	<b>12</b>	<b>5</b>

For active surveillance, four species and three species aggregates were found positive for HPAI in 2017 (Table A4.5). *Anser spp.* had the highest number of detections (n=6, 1.2 %). Detailed information regarding the number of birds tested by MS for bird species that tested positive for HPAI H5N8, LPAI H5, LPAI H7 and all AI is displayed in Annex 5 (Section 8.2.3 Active surveillance data, supplementary tables and figures).

**Annex 4 Table 5 Number of birds tested by active surveillance and number positive for all HPAI, HPAI H5N8 and HPAI H5Nx by species in 2017 – MS data only**

Species*	Number sampled	Total number of HPAI H5	% HPAI H5 (proportion of total sampled)	Number of HPAI H5N8	Number of HPAI H5Nx
<b><i>Anas platyrhynchos</i></b>	2,327	1	0.04%	1	-
<i>Anser spp.</i>	491	6	1.2%	5	1
<b><i>Buteo buteo</i></b>	65	2	3.1%	-	1
<i>Buteo spp.</i>	22	3	13.6%	2	1
<b><i>Cygnus olor</i></b>	252	3	1.2%	3	-
<b><i>Cygnus sp.</i></b>	40	2	5.0%	1	1
<i>Haliaeetus albicilla</i>	7	1	14.3%	-	1
<b>Total active surveillance</b>	<b>8,194</b>	<b>17</b>	<b>0.2%</b>	<b>12</b>	<b>5</b>

\*Target species indicated with bold text.



## 8.2.2.6 LPAI Positives by reported active surveillance

### 8.2.2.6.1 Overview of LPAI results by reported active surveillance

In total 284 birds tested positive for AI when considering active surveillance data (excluding the 17 HPAI positives). In Denmark, laboratory testing was carried out on pools of up to five birds of the same species collected at the same time and place. A positive pool result is reported as a single positive bird in this report, regardless of the number of individual birds contributing to the pooled sample.

LPAI H5 was detected in 15 birds from Germany, 15 birds from Denmark and two birds from Belgium, while LPAI H7 was detected in a single bird from Belgium. LPAI of subtypes other than H5 or H7 (LPAI Other) was detected in 58 birds from Denmark and 23 birds from Belgium. The “Other positives” (pathotype unidentified, but PCR positive for AI) were detected in 170 birds from three MS (Table A4.6).

Overall a very low proportion of birds sampled by active surveillance tested positive for LPAI H5 in 2017 (0.39%). Although this is the highest proportion reported positive in recent year it is similar to findings in previous years, ranging from 0.04%-0.29% in 2007-2016: 2007 (0.13%), 2008 (0.14%), 2009 (0.23%), 2010 (0.29%), 2011 (0.04%), 2012 (0.07%), 2013 (0.13%), 2014 (0.26%), 2015 (0.15%) and 2016 (0.13%) (Figure A4.11).

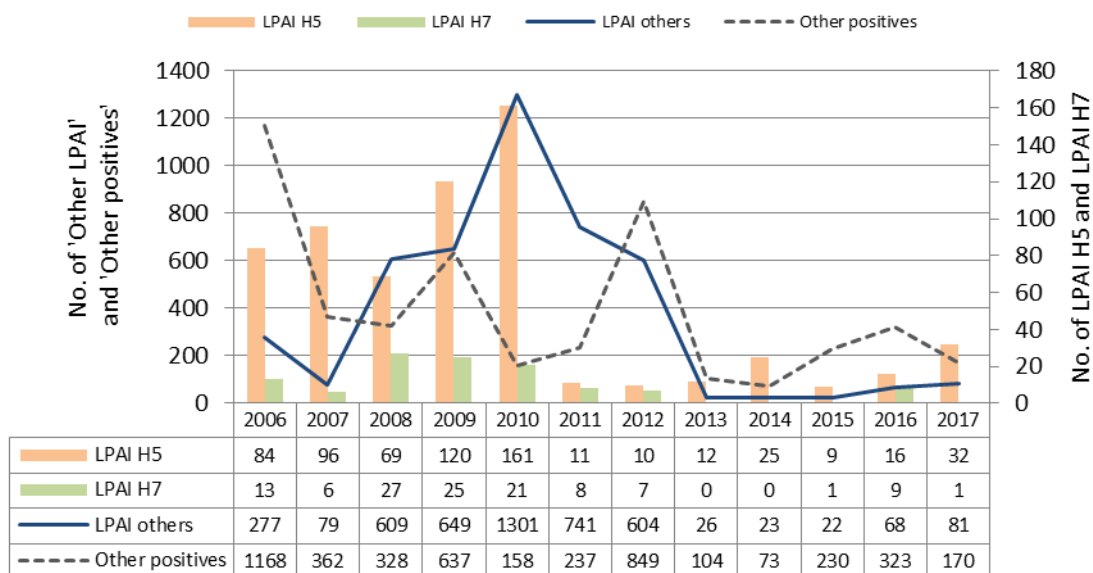
Similarly, the proportion of birds testing positive for LPAI H7 in 2017 was very low with just a single detection giving a percentage positive of 0.01%. This is consistent with previous years when there have been very low (<0.1%), or no detections of LPAI H7 by active surveillance: 2006 (0.02%), 2007 (0.01%), 2008 (0.05%), 2009 (0.06%), 2010 (0.04%), 2011 (0.03%), 2012 (0.05%), 2013-2014 (none), 2015 (<0.1%) and 2016 (0.07%). Trends in LPAI detections over time can be seen in Figure A4.11 below.

**Annex 4 Table 6 Total number of birds tested by active surveillance and number positive for LPAI H5, LPAI H7, other LPAI subtypes and ‘Other positives’ by Member States in 2017 – MS data only**

Member State	Total sampled	Number of LPAI H5	Number of LPAI H7	Number of 'LPAI other'	Number of 'Other positives'
BE	2,361	2	1	23	82
DE	3,808	15	-	-	86
DK*	896	15	-	58	-
EE	156	-	-	-	2
<b>Total</b>	<b>8,194</b>	<b>32</b>	<b>1</b>	<b>81</b>	<b>170</b>

\*In Denmark, 67 individual birds contributed to the 15 LPAI H5 positive samples, and 252 individual birds contributed to the 58 'LPAI other' positive samples.

**Annex 4 Figure 11 Number of AI detections (non-HPAI) during 2006-2017 through reported active surveillance**



8.2.2.6.2 Geographical distribution of LPAI detections by active surveillance

Figure A4.8 displays the geographical distribution of LPAI H5 and LPAI H7 positives (Annex 4, Section 8.2.2.5).

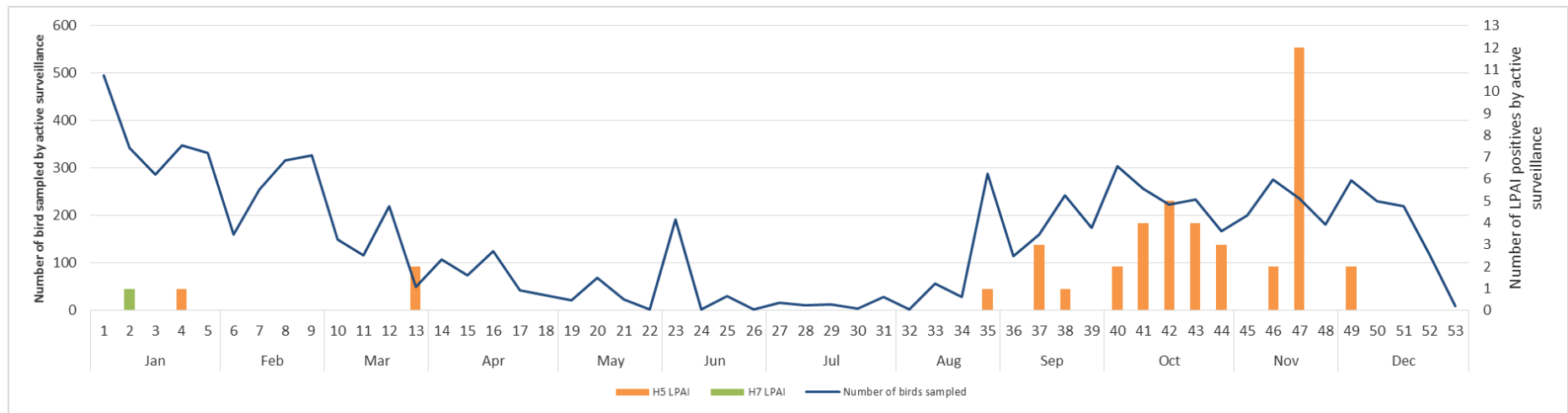
8.2.2.6.3 Temporal distribution of LPAI H5 and LPAI H7 detections by reported active surveillance

Figure A4.12 displays the number of LPAI H5 and H7 detections made by each reporting MS by week number. Figure A4.13 displays the number of LPAI H5 and H7 detections and the number of birds sampled by reported active surveillance by week number in 2017. There were no detections made between April and July, with the majority of H5 detected in the autumn (September to November).

**Annex 4 Figure 12 Number of LPAI H5 (orange) and LPAI H7 (green) positive wild birds detected through reported active surveillance by week and Member State in 2017**

MS	Jan					Feb					Mar					Apr					May					Jun					Jul					Aug					Sep					Oct					Nov					Dec																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53																						
BE		1		1																														1																																									
DE													2																									3						1	1	4	3					11																							
DK																																							1					2	3	4													2	1				2											

**Annex 4 Figure 13 Number of LPAI H5 and LPAI H7 incidents in wild birds and number of wild birds sampled by active surveillance in the EU by week in 2017**



8.2.2.6.4 Order and species of wild birds positive for LPAI H5 and H7 detections reported by active surveillance

All LPAI H5/ H7 and other LPAI detections were all made in Anseriformes. “Other positives” were additionally detected in Charadriiformes, Falconiformes and Pelecaniformes (Table A4.7).

**Annex 4 Table 7 Number of birds tested by active surveillance and number positive for LPAI H5, LPAI H7, other LPAI subtypes and ‘Other positives’ by Order in 2017**

Order	Total sampled	Number of LPAI H5	Number of LPAI H7	Number of ‘LPAI other’	Number of ‘Other positives’
Anseriformes	6,184	32	1	81	166
Charadriiformes	631	-	-	-	1
Falconiformes	287	-	-	-	2
Pelecaniformes	70	-	-	-	1
Total sampled (MS only)	8,194	32	1	81	170

Eight different species were found infected with LPAI H5 in 2017; 12 Mallards (*Anas platyrhynchos*), six Eurasian Teal (*Anas crecca*), five unspecified dabbling ducks (*Anas sp.*), two Greylag Geese (*Anser anser*), two Eurasean Wigeon (*Marcea penelope*), two Mute Swans (*Cygnus olor*) two Barnacle Geese (*Branta Leucopsis*) and one Northern Pintail (*Anas acuta*). LPAI H7 was detected in a single Mallard (*Anas platyrhynchos*). In total, 14 species tested positive for AI (Table A4.8). Further details and tables regarding reported active surveillance sampling can be found in Annex 5, Section 8.2.3.

**Annex 4 Table 8 Number of birds tested by active surveillance and number positive for LPAI H5, LPAI H7, other LPAI subtypes and ‘Other positives’ by species in 2017**

Species	Total sampled	Number of LPAI H5	Number of LPAI H7	Number of ‘LPAI other’	Number of ‘Other positives’
<i>Aix sponsa</i>	2	-	-	-	2
<i>Alopochen aegyptiacus</i>	285	-	-	5	4
<b><i>Anas acuta</i></b>	21	1	-	2	-
<b><i>Anas crecca</i></b>	104	6	-	6	1
<b><i>Anas platyrhynchos</i></b>	2,327	12	1	65	116
<i>Anas sp.</i>	223	5	-	-	14
<b><i>Anser albifrons</i></b>	141	-	-	-	2
<b><i>Anser anser</i></b>	1,156	2	-	1	-
<b><i>Anser fabalis</i></b>	44	-	-	-	1
<i>Anser spp.</i>	491	-	-	-	11
<b><i>Ardea cinerea</i></b>	25	-	-	-	1
<b><i>Branta leucopsis</i></b>	245	2	-	-	5
<b><i>Buteo buteo</i></b>	65	-	-	-	1
<b><i>Cygnus olor</i></b>	252	2	-	1	6
<b><i>Cygnus sp.</i></b>	34	-	-	-	4
<i>Haliaeetus albicilla</i>	5	-	-	-	1
<b><i>Larus ridibundus</i></b>	314	-	-	-	1
<b><i>Mareca penelope</i></b>	177	2	-	1	-
Total sampled (MS only)	8,194	32	1	81	170

\*Target species indicated with bold text.

### 8.2.2.7 Summary results of avian influenza active surveillance conducted by Erasmus Medical Centre, Netherlands

The continuous active wild bird surveillance program from the Erasmus Medical Center in the Netherlands contributes to the knowledge on avian influenza virus dynamics in wild birds. In 2017, cloacal and oropharyngeal swab samples from 6,941 wild birds were tested for the presence of avian influenza viruses, and the presence of H5-specific avian influenza viruses. The Erasmus MC detected avian influenza virus RNA (RRT-PCR) in 1,552 wild birds belonging to several species of Anseriformes and Charadriiformes. Of those, 153 wild birds were infected with an H5 virus based on RRT-PCR. HPAI H5 was confirmed in 18 living Mallards (*Anas platyrhynchos*) in early 2017, and 3 opportunistic sampled dead birds (1 Great Black-backed Gull - *Larus marinus*, 1 Black-headed Gull - *Larus ridibundus* and 1 Common Buzzard - *Buteo buteo*). LPAI H5 was confirmed in 39 birds, belonging to the species Eurasian Wigeon (*Mareca penelope*) and Mallard (*Anas platyrhynchos*). This surveillance project is sponsored by the NIAID/NIH-CEIRS program, contract number HSN272201400008C. Text courtesy of M.J. Poen, MSc, DVM and Prof. R.A.M. Fouchier, PhD.

### 8.2.3 Annex 5 – Active surveillance data, supplementary tables and figures

#### 8.2.3.1 Diagnosis

This section reports the samples collected and the associated test results for active surveillance submitted by Member States only. The 2007 guidelines (EC 2007) recommend oro-pharyngeal (tracheal) and cloacal swabs to be collected from healthy free living birds and cloacal and oro-pharyngeal swabs and/ or tissues from dead or shot birds. Similarly, the 2010 guidelines (EC 2010a) recommended that cloacal and tracheal/oro-pharyngeal swabs and/or tissues from wild birds found dead or moribund should be sampled. The totals for the 2017 testing regimes for active surveillance are shown below.

**Annex 5 Table 1 Number and proportion of samples collected by active surveillance by Status of bird, 2017**

Sample Type	Status of bird			Active surveillance total
	Hunted with clinical signs	Hunted without clinical signs	Live without clinical signs	
Cloacal	10	683	3,537	4,230
Faeces	-	-	1,428	1,428
Other	4	74	320	398
Tissue	5	44	1	50
Tracheal	17	92	90	199
Cloacal and tracheal	31	1,322	534	1,887
Faeces and tracheal	-	2	-	2
<b>EU Total</b>	<b>67</b>	<b>2,217</b>	<b>5,910</b>	<b>8,194</b>

The majority of hunted birds, both with and without clinical signs, had cloacal and tracheal swabs collected for AI testing in 2017 (46.3% and 59.6%, respectively). In contrast, live healthy birds, without clinical signs, most frequently had cloacal samples only collected (n=2,641/5,014, 52.7%). For 1,428 live healthy birds only faecal sampling was carried out; this represents environmental sampling and constituted 19.6% (n=1,428/7,298) of the active surveillance data submitted by MS in 2017 (Table A5.1).

#### 8.2.3.2 AI Positives

Tables A5.2 to A5.4 show the test results of samples collected by bird status that tested positive for HPAI, LPAI and 'Other positives', respectively. In Denmark, cloacal samples from up to five individual birds were pooled before testing. Any test yielding a positive result has been counted as one positive, irrespective of the number of birds contributing to the pool.

For HPAI positive birds, samples were almost exclusively found positive via PCR testing, with virus isolation not performed. One cloacal sample taken from a hunted bird where HPAI H5N8 was confirmed was tested by virus isolation in addition to PCR testing, but the virus isolation result was negative.

Most birds confirmed as positive for LPAI, were only tested by PCR and virus isolation was not performed (n=88/114, 77.2%) (Table A5.3), while for the remaining 26 birds both PCR and virus isolation were performed and found positive. For 'Other positives' where the pathogenicity was not determined, 91.2% of birds (n=155/170) were only subjected to PCR testing, while 15 birds (8.8%) had both PCR and VI testing performed, but only the PCR results were positive (A5.4).

**Annex 5 Table 2 Test-results for HPAI positive birds by type of sampled collected from active surveillance in 2017**

Status of bird	Sample type	Total number of birds sampled	Total number of birds positive	PCR+ VI+	PCR+ VI-	PCR+ VI NP
Hunted with and without clinical signs	Cloacal	693	2	-	1	1
	Other	78	2	-	-	2
	Tissue	49	1	-	-	1
	Tracheal	109	3	-	-	3
	Cloacal & Tracheal	1,353	4	-	-	4
Live without clinical signs	Faeces	1,428	5	-	-	5

**Annex 5 Table 3 Test-results for LPAI positive birds by type of sampled collected from active surveillance in 2017**

Status of bird	Sample type	Total number of birds sampled	Total number of birds positive	PCR+ VI+	PCR+ VI-	PCR+ VI NP
Hunted with and without clinical signs	Cloacal	693	6	6	-	-
	Other	78	1	-	-	1
	Cloacal & Tracheal	1,353	11	-	-	11
Live without clinical signs	Cloacal	3,537	93	20	-	73
	Faeces	1,428	1	-	-	1
	Other	320	2	-	-	2

**Annex 5 Table 4 Test-results for ‘other positive’ birds by type of sampled collected from active surveillance in 2017**

Status of bird	Sample type	Total number of birds sampled	Total number of birds positive	PCR+ VI+	PCR+ VI-	PCR+ VI NP	PCR- VI NP
Hunted with and without clinical signs	Cloacal	693	47	-	10	37	-
	Other	78	3	-	-	3	-
	Tissue	49	2	-	-	2	-
	Tracheal	109	1	-	-	1	-
	Cloacal &	1,353	49	-	-	49	-
	Tracheal			-	-	49	-
Live without clinical signs	Cloacal	3,537	35	-	4	31	-
	Faeces	1,428	21	-	1	20	-
	Cloacal &	534	12	-	-	12	-
	Tracheal			-	-	9	3

#### 8.2.3.3 Type of Surveillance by Quarter

Table A5.5 presents the number of live (without clinical signs) and hunted (with and without clinical signs) birds sampled through active surveillance in 2017, by MS and quarter. When considering hunting and live sampling strategies separately, over half of all sampling of live birds took place in the 1<sup>st</sup> quarter (50.6%), while over half of all hunted birds were sampled in the 4<sup>th</sup> quarter (52.4%). Fewest birds were tested in the 2<sup>nd</sup> and the 3<sup>rd</sup> quarters for both hunted (30.0%) and live sampling (20.1%).

Table A5.6 displays the number of target species and non-target species sampled by active surveillance in each quarter by MS.

**Annex 5 Table 5 Number of birds (hunted and live healthy birds) tested through active surveillance by Member State and quarter, 2017**

Member State	Quarter 1		Quarter 2		Quarter 3		Quarter 4	
	Hunted	Live	Hunted	Live	Hunted	Live	Hunted	Live
AT	-	-	-	6	-	8	-	1
BE	-	1,338	-	193	197	-	239	394
BG	-	1	-	-	-	-	-	-
CY	-	6	-	10	-	16	-	18
DE	312	1,548	8	456	116	162	592	614
DK	-	31	-	-	-	238	-	627
EE	-	-	-	-	5	-	151	-
ES	84	56	1	50	354	20	209	44
IT	-	-	1	-	-	-	-	-
LU	-	-	-	-	-	20	-	-
PT	-	-	-	1	-	-	-	5
RO	-	1	-	-	1	1	6	-
SK	6	-	1	-	-	-	-	-
EL	-	-	-	2	-	2	-	31
LT	1	10	-	-	-	-	-	-
<b>EU Total</b>	<b>403</b>	<b>2,991</b>	<b>11</b>	<b>718</b>	<b>673</b>	<b>467</b>	<b>1,197</b>	<b>1,734</b>

**Annex 5 Table 6 Number of target species (TS) sampled by Member State and quarter, 2017**

Member State	Quarter 1		Quarter 2		Quarter 3		Quarter 4	
	TS	Non-TS	TS	Non-TS	TS	Non-TS	TS	Non-TS
AT	-	-	-	5	-	2	-	1
BE	833	505	162	30	197	-	560	73
BG	1	-	-	-	-	-	-	-
CY	2	4	6	4	6	10	8	10
DE	1,062	278	334	91	239	14	1,016	10
DK	6	25	-	-	18	220	57	570
EE	-	-	-	-	5	-	151	-
EL	-	-	-	2	-	2	-	31
ES	38	97	6	40	14	358	24	155
LU	-	-	-	-	15	-	-	-
PT	-	-	1	-	-	-	-	5
SK	5	1	-	1	-	-	-	-
LT	11	-	-	-	-	-	-	-
RO	1	-	-	-	2	-	6	-
<b>EU Total</b>	<b>1,959</b>	<b>910</b>	<b>509</b>	<b>173</b>	<b>496</b>	<b>606</b>	<b>1,822</b>	<b>855</b>

Note: 863 birds are not classified as either target species or non-target species (905 birds identified to genus level excluding 40 Swans (*Cygnus sp.*)).



### 8.2.3.4 Overview of Results by Species

Table A5.7 displays the detections of HPAI H5N8 reported by species and the number of those species sampled by active surveillance in each MS.

Table A5.8 displays the detections of LPAI H5 reported by species and the number of those species sampled by active surveillance in each MS.

Table A5.9 displays the detection of LPAI H7 reported by species and the number of those species sampled by active surveillance in each MS.

Table A5.10 displays the detections of all AI types reported by species and the number of those species sampled by active surveillance in each MS.

The aim of these tables is to provide context of AI detections taking into account bird species and the number of birds sampled by MS.

#### Key to tables

Headings	
HPAI H5N8	HPAI H5N6
HPAI H5N5	LPAI H5
LPAI H7	All AI
Not sampled	

Not presenting data, for illustrative purposes only.

**Annex 5 Table 7 Detections of HPAI H5N8 (in brackets) that were reported by TS (in bold) and non-TS and the number of those species sampled by active surveillance in each MS**

HPAI H5N8	AT	BE	BG	CY	DE	DK	EE	EL	ES	IT	LT	LU	PT	RO	SK	EU
<b>Anas platyrhynchos</b>		1149	1		643 (1)	499	11		18		1			5		1828 (1)
<i>Anser sp.</i>					491 (5)											491 (5)
<i>Buteo spp.</i>					22 (2)											22 (2)
<b>Cygnus olor</b>		112			117 (1)	7			1		2	9			4 (2)	245 (3)
<i>Cygnus sp.</i>					40 (1)											40 (1)

Target species indicated with bold text.

**Annex 5 Table 8 Detections of LPAI H5 (in brackets) that were reported in TS (in bold) and non-TS and the number of those species sampled by active surveillance in each MS**

LPAI H5	AT	BE	BG	CY	DE	DK	EE	EL	ES	IT	LT	LU	PT	RO	SK	EU
<i>Anas acuta</i>						21 (1)										21 (1)
<b>Anas crecca</b>		11			27 (2)	59 (4)	7									104 (6)
<b>Anas platyrhynchos</b>		1149 (1)	1		643 (4)	499 (7)	11		18		1			5		2327 (12)
<i>Anas and Mareca sp.</i>					217 (5)					1		5				223 (5)
<b>Anser anser</b>					1074 (2)	55	19		2			6				1156 (2)
<b>Branta leucopsis</b>		1			141	64 (2)	39									245 (2)
<b>Cygnus olor</b>		112 (1)			117	7 (1)			1		2	9			4	252 (2)
<b>Mareca penelope</b>		14			57 (2)	83	25									179 (2)

Target species indicated with bold text.

**Annex 5 Table 9 Detections of LPAI H7 (in brackets) and the number of those species sampled by active surveillance in each MS**

LPAI H7	AT	BE	BG	CY	DE	DK	EE	EL	ES	IT	LT	LU	PT	RO	SK	EU
<b>Anas platyrhynchos</b>		1149 (1)	1		643	499	11		18		1			5		1828 (1)

Target species indicated with bold text.

**Annex 5 Table 10 Detections of all AI types (in brackets) that were reported in TS (in bold) and non-TS and the number of those species sampled by active surveillance in each MS**

All AIV positives	AT	BE	BG	CY	DE	DK	EE	EL	ES	IT	LT	LU	PT	RO	SK	EU
<i>Aix sponsa</i>					2 (2)											2 (2)
<i>Alopochen aegyptiacus</i>		126 (8)			159 (1)											285 (9)
<i>Anas acuta</i>						21 (3)										21 (3)
<b><i>Anas crecca</i></b>		11			27 (3)	59 (10)	7									104 (13)
<b><i>Anas platyrhynchos</i></b>		1149 (96)	1		643 (44)	499 (54)	11 (1)		18		1			5		2327 (195)
<i>Anas and Mareca sp.</i>					217 (19)					1		5				223 (19)
<b><i>Anser albifrons</i></b>					122 (2)		19									141 (2)
<b><i>Anser anser</i></b>					1074 (2)	55 (1)	19		2			6				1156 (3)
<b><i>Anser fabalis</i></b>					13		31 (1)									44 (1)
<i>Anser sp.</i>					491 (17)											491 (17)
<b><i>Ardea cinerea</i></b>		1			22 (1)				2							25 (1)
<b><i>Branta leucopsis</i></b>		1			141 (5)	64 (2)	39									245 (7)
<b><i>Buteo buteo</i></b>		2			46 (2)				17							65 (2)
<i>Buteo spp.</i>					22 (3)											22 (3)
<b><i>Cygnus olor</i></b>		112 (4)			117 (4)	7 (2)			1		2	9			4 (2)	252 (12)
<i>Cygnus sp.</i>					40 (6)											40 (6)
<i>Haliaeetus albicilla</i>					7 (2)											7 (2)
<b><i>Larus ridibundus</i></b>		256			58 (1)				1							315 (1)
<b><i>Mareca penelope</i></b>		14			57 (2)	83 (1)	25									179 (3)

Target species indicated with bold text.

8.2.4 Annex 6 - Scientific and English names of wild bird species

**Annex 6 Table 1 All target species (in bold) as well as all other bird species that tested positive for AI in 2017, giving English and Latin names\* (page 1 of 2)**

Species	Name
<b><i>Accipiter gentilis</i></b>	Northern Goshawk
<i>Accipiter sp.</i>	Hawk
<b><i>Aix sponsa</i></b>	Wood Duck
<i>Alopochen aegyptiaca</i>	Egyptian Goose
<b><i>Anas crecca</i></b>	Eurasian Teal
<b><i>Anas platyrhynchos</i></b>	Mallard
<i>Anas and Mareca sp.</i>	Dabbling duck
<b><i>Anser albifrons</i></b>	Greater White-fronted Goose
<b><i>Anser anser</i></b>	Greylag Goose
<i>Anser anser domesticus</i>	Domestic Goose (feral)
<b><i>Anser brachyrhynchus</i></b>	Pink-footed Goose
<i>Anser cygnoides</i>	Swan Goose
<b><i>Anser erythropus</i></b>	Lesser White-fronted Goose
<b><i>Anser fabalis</i></b>	Bean Goose
<i>Anser sp.</i>	Goose
<i>Ardea alba</i>	Great White Egret
<b><i>Ardea cinerea</i></b>	Grey Heron
<i>Ardea sp.</i>	Heron
<i>Asio otus</i>	Long-eared Owl
<b><i>Aythya ferina</i></b>	Common Pochard
<b><i>Aythya fuligula</i></b>	Tufted Duck
<i>Aythya sp.</i>	Diving duck
<i>Botaurus stellaris</i>	Eurasian Bittern
<b><i>Branta canadensis</i></b>	Canada Goose
<b><i>Branta leucopsis</i></b>	Barnacle Goose
<i>Bucephala clangula</i>	Common Goldeneye
<b><i>Buteo buteo</i></b>	Common Buzzard
<i>Buteo spp.</i>	Buzzard
<b><i>Cairina moschata</i></b>	Muscovy Duck
<b><i>Ciconia ciconia</i></b>	White Stork
<i>Columba livia (livia)</i>	Rock Dove
<i>Corvus corone</i>	Carrion Crow
<i>Corvus corone corone</i>	Carrion Crow
<i>Corvus frugilegus</i>	Rook
<i>Corvus sp.</i>	Corvid
<i>Cygnus atratus</i>	Black Swan
<b><i>Cygnus columbianus</i></b>	Tundra Swan
<b><i>Cygnus cygnus</i></b>	Whooper Swan
<b><i>Cygnus olor</i></b>	Mute Swan
<b><i>Cygnus sp.</i></b>	Swans
<i>Egretta garzetta</i>	Little Egret
<i>Egretta sp.</i>	Egret
<i>Falco cherrug</i>	Saker Falcon
<b><i>Falco peregrinus</i></b>	Peregrine Falcon
<i>Falco sp.</i>	Falcon
<b><i>Falco tinnunculus</i></b>	Common Kestrel
<b><i>Fulica atra</i></b>	Eurasian Coot
<i>Gallinula chloropus</i>	Common Moorhen

\*Avian taxonomy in this report follows that adopted by the Birds Directive (Del Hoyo & Collar 2014, 2016) and may thus differ from previous reports.

**Annex 6 Table 1 All target species (in bold) as well as all other bird species that tested positive for AI in 2017, giving English and Latin names\* (continued, page 2 of 2)**

Species	Name
<i>Haliaeetus albicilla</i>	White-tailed Eagle
<i>Larus argentatus</i>	Herring Gull
<i>Larus argentatus argentatus</i>	European Herring Gull
<i>Larus argentatus cachinnans</i>	Caspian Gull
<b><i>Larus canus</i></b>	Mew Gull
<i>Larus fuscus</i>	Lesser Black-backed Gull
<i>Larus marinus</i>	Great Black-backed Gull
<b><i>Larus ridibundus</i></b>	Black-headed Gull
<i>Larus sp.</i>	Gull
<b><i>Mareca penelope</i></b>	Wigeon
<b><i>Mareca strepera</i></b>	Gadwall
<b><i>Mergus albellus</i></b>	Smew
<i>Microcarbo pygmaeus</i>	Pygmy Cormorant
<i>Oxyura jamaicensis</i>	Ruddy Duck
<i>Passer domesticus</i>	House Sparrow
<i>Pelecanus crispus</i>	Dalmatian Pelican
<i>Pelecanus onocrotalus</i>	Great White Pelican
<i>Pelecanus sp.</i>	Pelican
<b><i>Phalacrocorax carbo</i></b>	Great Cormorant
<i>Phalacrocorax sp.</i>	Cormorant
<b><i>Pica pica</i></b>	Eurasian Magpie
<b><i>Podiceps cristatus</i></b>	Great Crested Grebe
<i>Scolopax rusticola</i>	Eurasian Woodcock
<i>Somateria mollissima</i>	Common Eider
<i>Sterna hirundo</i>	Common Tern
<i>Strix aluco</i>	Tawny Owl
<i>Sturnus vulgaris</i>	Common Starling
<i>Surnia ulula</i>	Northern Hawk-Owl
<b><i>Tachybaptus ruficollis</i></b>	Little Grebe
<i>Tadorna tadorna</i>	Common Shelduck
<i>Troglodytes troglodytes</i>	Winter Wren
<i>Turdus merula</i>	Common Blackbird
<i>Turdus philomelos</i>	Song Thrush
<i>Turdus pilaris</i>	Fieldfare

\*Avian taxonomy in this report follows that adopted by the Birds Directive (Del Hoyo & Collar 2014, 2016) and may thus differ from previous reports.

