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Annual report of the avian influenza surveillance in poultry carried out by Member States in 2006

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Executive summary

- Surveillance for avian influenza (AI) in EU Member States is carried out since 2003 under EU approved programmes and co-financed by the European Commission. Surveillance in poultry is based on serological testing for AI of subtypes H5 and H7, which have shown to have the potential to mutate to highly pathogenic avian influenza (HPAI).
- In 2006, a total of 29 005 poultry holdings for the following categories were sampled by the 25 Member States: Chicken breeders (2130 holdings), Laying hens (8537), Broilers (2383), Turkey Fatteners (1981), Turkey Breeders (150), Backyard Flocks (9051), Ducks and Geese (2176), Game Birds (1500), Ratites (448) and Zoo Birds (649 in one MS).
- The total number of holdings included in the survey varied from 15 (Luxembourg) to 7390 (Spain). Some Member States sampled only the requested samples size or less, others (for example Spain, The Netherlands and Germany) sampled much higher numbers of holdings than requested and in case of the Netherlands most holdings were sampled more than once.
- More Member States included backyard flocks in their surveillance programmes than in previous years and several Member States increased the number of game bird holdings in the survey.
- Eighty-one holdings tested positive for H5 in seven Member States, 10 for subtype H7 in six MS and 54 for other subtypes in four Member States (one holding tested positive for subtypes H5 and H7).
- As in previous years, duck and geese holdings were the most frequent positive holding identified and H5 was the most frequently identified subtype.
- In this year's survey two Member States (Finland and Denmark) found positive holdings through this survey for the first time since 2003. In two Member States (Spain and Germany) AI was detected in more poultry categories than in previous years.
- To improve the outputs of this survey, further collection of epidemiological data and joined analysis with the wild bird surveillance data is required to increase the epidemiological understanding of AI in EU Member States.
- Due to the changing situation of AI in Europe it should be considered to revise the objectives and sampling frame of this survey.

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INTRODUCTION

Experience has shown that some strains of H5 and H7 subtype of AI viruses have the ability to mutate to highly pathogenic strains after having circulated in the poultry population for some time. This situation is liable to lead to high mortality in poultry and severe economic losses to the poultry industry that could be reduced by implementing a screening system in the Member States to allow earlier detection and control of such precursor strains.

The Scientific Committee on Animal Health and Animal Welfare (SCoAHAW, 2000) and the European Food Safety Authority (EFSA, 2005) recommended the implementation of serological surveys of poultry populations in Member States in order to detect the presence of low pathogenic avian influenza (LPAI) viruses of H5 and H7 subtypes.

Surveys for AI in poultry and wild birds in Member States were first carried out in 2003 and since then on an annual basis.

The objectives of the serological surveillance in poultry during 2006 according to the guidelines laid down in Commission Decision 2006/101/EC (EC, 2006a) are:

- To detect infections with AI virus subtypes H5 and H7 in different species of poultry by repeating the screening exercise of 2005/06 in a modified, more targeted manner.
- To further contribute to a cost–benefit study in relation to eradication of all H5 and H7 subtypes from poultry envisaged by the change in definition of AI.
- To contribute to knowledge of the threats to animal health from wildlife.
- To maintain the connection and integration of human and veterinary networks for influenza surveillance.

This report is based upon the results from the fourth survey, in 2006 under Member States' surveillance programmes as approved by Commission Decision 2006/314/EC (EC, 2006b).

MATERIALS AND METHODS

Survey design

The survey design was based upon examination of all categories of poultry in each Member States according to the guidelines laid down in the Annex to Commission Decision 2006/101/EC.

Sampling should have been stratified throughout the whole country so that the results could be considered representative for the whole of each Member State. The sampling period should have covered a period appropriate to the production periods for each poultry category, the winter months and where appropriate, adapted to identified periods where presence of other poultry hosts might pose a greater risk for introduction of disease.

The number of farms sampled by category of poultry, excluding turkeys, ducks and geese, were defined to ensure the identification of at least one infected flock if the prevalence of infected farms was at least 5%, with a 95% confidence interval (see table I). For turkey, quail, duck/geese holdings the number of farms sampled were defined to ensure the identification of at least one infected flock if the prevalence of infected farms was at least 5%, with a 99% confidence interval (see table II).

For all categories except ducks geese and quail, 5 – 10 serological samples were required to be collected from each farm (and from each shed if applicable) to ensure a 95% probability of identifying at least one positive bird if the prevalence of seropositive birds was $\geq 30\%$.

For duck geese and quail holdings 40-50 samples were required to be collected for serological testing. Additional sampling of 10 swabs/faecal samples per holding for virological investigation which were tested as pools of five samples was carried out in some Member States in these categories.

Table 1: Number of holdings to be sampled of each poultry category (except turkey, duck/geese holdings)

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

Table 2: Number of turkey, duck/geese holdings to be sampled

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

The survey programmes

Survey programmes of Member States were evaluated and approved by the European Commission through Decision 2006/314/EC (EC, 2006b).

Details of the survey programmes for each Member States are available on the Internet at http://ec.europa.eu/food/animal/diseases/eradication/2006_314_ec.pdf

Testing of Samples

General Criteria

It was recommended that testing of samples should be carried out at National Laboratories for Avian Influenza or by other laboratories authorised by the competent authorities and under the control of the National Laboratories in Member States.

All results (both serological and virological) were sent to the Community Reference Laboratory (CRL) for collation. Specific protocols to accompany the sending of material to the CRL and reporting tables for collection of survey data were provided. The CRL provided technical support and kept an enlarged stock of diagnostic reagents appropriate to the survey.

All AI virus isolates should have been submitted to the CRL. Viruses of H5/H7 subtype were subjected to the standard characterisation tests (nucleotide sequencing/IVPI) according to Council Directive 92/40/EEC (EC, 1992).

All positive findings should have been retrospectively investigated at the holding and the conclusions of the investigation reported to the Commission and the CRL.

Laboratory tests

Laboratory tests were carried out in accordance with Council Directive 92/40/EEC (EC, 1992). However, if laboratory tests not laid down in the Directive 92/40/EEC or described in the OIE Terrestrial Manual were used, Member States should have provided the necessary validation data to the CRL, when submitting their programme for approval.

All positive serological findings were confirmed by the National laboratories for avian influenza by haemagglutination-inhibition test using designated strains supplied by the Community Reference Laboratory:

- H5**
- a) Initial test using Ostrich/Denmark/72420/96 (H5N2)
 - b) Test all positives with Duck/Denmark/64650/03 (H5N7) to eliminate N2 cross reactive antibody.
- H7**
- a) Initial test using Turkey/England/647/77 (H7N7).
 - b) Test all positives with African Starling/983/79 (H7N1) to eliminate N7 cross reactive antibody.

Result interpretation

Viruses were selected based on broad antigenic reactivity within subtype. Interpretation of positive samples followed international standards as specified in Directive 92/40/EEC (EC, 1992). Sera with HI titres of greater or equal to 2^4 were scored positive. Samples positive in tests with one strain of a particular subtype were subjected to a further test with the additional recommended strain for that H subtype. Overall a serum sample was considered positive if HI titres of greater or equal to 2^4 were obtained in tests with both virus strains of the same subtype.

Data Processing and Completeness

All data records were submitted from the Member States to the CRL via the European Commission. This report is restricted to data that were collected and submitted to the European Commission under EU decisions 2006/101/EC (EC,2006a) and 2006/314/EC(EC, 2006b). Records were checked for data quality and completeness. If deemed necessary, queries were sent out to Member States and their responses were integrated before the data were analysed.

Categorising Results from Member States

The way in which individual Member State's reported and categorised the poultry holdings varied.

Where a Member State had included results for a particular type of poultry holding (e.g. free-range chicken), which did not fit obviously into one of the required poultry categories, the data were put into the most appropriate one (e.g. Broilers).

Where no reliable stratification was available for data submitted as 'Turkeys', so not specified as fattening or breeder, these were included in the fattening turkey category.

Hungary reported 'Hens', which according to their surveillance programme were breeding and egg layers. As there was no reliable stratification the data was included in the laying hens category.

Estonia and Slovak Republic reported data for Ducks and Geese, some of the holdings for which were stated as backyard/non-commercial. These were kept in the Ducks and Geese category.

Hungary reported quails, ostriches, partridges, pheasants, and wild ducks as a single category of “other poultry” which could not be sub-divided and so these were categorized as game birds.

Prevalence Confidence Intervals

Confidence intervals of the prevalence were calculated in the following manner:

If information on the total number of holdings was not available exact binomial confidence intervals were calculated based on the number of positive holdings and holdings tested.

If the total number of holdings was known, the hypergeometric distribution was applied to derive confidence intervals.

Adjustments and assumptions:

If it could be assured that all holdings of a category were sampled or repetitively sampled, no confidence intervals were calculated.

If the total number of holdings was not provided the total number of holdings in a category reported in the previous year was used for the calculation of confidence intervals, if available.

The sensitivity of the diagnostic test was assumed to be 100 percent. As the number of birds sampled is not reported in the current reporting format, it was assumed that the stated procedure was correctly followed and that at least 5-10 birds were selected at random from each holding.

Table 3 Key to Member States abbreviations

Abbreviation	Country
AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
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

RESULTS

Overview of sampling and results

- Unless specified otherwise, all totals and overall proportions refer to 25 EU Member States. In 2006 a total of 362 457 poultry holdings were reported to be present in the Member States and 29 005 of these were sampled by the 25 Member States in their approved AI surveillance programmes.
- The following categories of poultry and number of holdings were included in the 2006 poultry surveillance: Chicken breeders (2130 holdings), Laying hens (8537), Broilers (2383), Turkey Fatteners (1981), Turkey Breeders (150), Backyard Flocks (9051), Ducks and Geese (2176), Game Birds (1500), Ratites (448) and Zoo Birds (649 in one Member State).

Table 4 displays the different categories of poultry included in the 2006 survey. The total number of holdings sampled are shown as well as the total number of holdings reported. A green tick indicates that the appropriate sample size (acc. to Decision 2006/101/EC, EC, 2006a) was collected; a red cross indicates that the sample size was less than the required number.

- In general the survey programmes were quite variable between Member States while some Member States sampled only the requested samples size or less, others (for example Spain, The Netherlands and Germany) sampled much higher numbers of holdings and in case of the Netherlands most holdings were sampled more than once.
- Most Member States collected the required number of holdings in laying hens, but this is not the case for all other poultry categories. The total number of holdings included in the survey varied from 15 (Luxembourg) to 7390 (Spain).
- More Member States included backyard flocks in their surveillance programmes than in previous years and several Member States increased the number of game bird holdings in the survey.

Member States	Table 4 Total number of sampled holdings, total holdings (in parentheses) and proportion sampled by Member States and poultry category
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	Chicken Breeders	Laying Hens	Broilers	Turkey Fatteners	Turkey breeders	Backyard Flocks	Ducks & Geese	Game Birds	Ratites	Others	Total Holdings sampled (proportion of EU total in parentheses)	Total Holdings (proportion of EU total in parentheses)
AT		60 ✓ (1600) 4%		80 ✓ (120) 67%			27 ✗ (40) 67.5%		21 ✓ (21) 100%		188 0.65%	1781 0.49%
BE	208 ✓ (229) 91%	405 ✓ (474) 85%		37 ✗ (46) 80%		9 ✗ (24) 37.5%	33 ✗ (41) 80.5%	21 ✗ (27) 78%	36 ✗ (53) 68%		749 2.6%	894 0.25%
CY	17 ✗ (19) 89.5%	30 ✓ (30) 100%	6 ✗ (119) 5%	7 ✗ (8) 87.5%		93 ✓ (8530) 1%	1 ✓ (1) 100%	5 ✗ (7) 71%	9 ✓ (9) 100%		168 0.58%	8723 2.41%
CZ		51 ✗ (92) 55%		7 ✗ (75) 9.3%	3 ✓ (3) 100%		33 ✓ (33) 100%	33 ✗ (37) 89%			127 0.44%	240 0.07%
DE	5 (NK)	251 ✓ (NK)	8 (NK)	188 ✓ (NK)	2 (NK)	78 ✓ (NK)	435 ✓ (NK)	10 (NK)	47 (NK)		1024 3.53%	0
DK	142 ✓ (151) 94%	133 ✓ (143) 93%	2 ✗ (7) 29%	17 ✗ (40) 42.5%			19 ✓ (17) 100%	298 ✓ (175) 100%			611 2.11%	533 0.15%
EE		13 ✓ (13) 100%					5 (NK)				18 0.06%	13 0.004%
EL	6 (NK)	70 ✓ (NK)	78 ✓ (NK)	26 (NK)			140 ✓ (NK)	22 (NK)	18 (NK)		360 1.24%	0
ES	268 ✓ (483) 55%	861 ✓ (1315) 65.5%	993 ✓ (5904) 17%	456 ✓ (522) 87%	4 ✗ (12) 33%	3514 ✓ (19132) 18%	175 ✓ (134) 100%	381 ✓ (542) 70%	89 ✓ (313) 28%	649 ✓ (3737) 17%	7390 25.48%	32094 25.61%
FI	66 ✓ (66) 100%	55 ✗ (953) 6%		53 ✗ (176) 30%			6 ✗ (16) 37.5%	11 (NK)	2 (NK)		193 0.67%	1211 0.33%
FR		70 ✓ (702) 9.9%	120 ✓ (3807) 3%	157 ✓ (1400) 11%	53 ✗ (311) 17%		451 ✓ (3218) 14%	220 ✓ (NK)	4 (NK)		1075 3.71%	9438 2.6%
HU		67 ✓ (749) 9%		91 ✓ (407) 22%		2294 ✓ (NK)	174 ✓ (800) 22%	53 ✓ (119) 44.5%			2679 9.24%	2075 0.57%
IE	77 ✓ (92) 84%	141 ✓ (183) 77%		77 ✗ (107) 72%	9 ✗ (13) 69%		2 ✓ (2) 100%				306 1.06%	397 0.11%
IT	244 ✓ (251) 97%	1100 ✓ (1288) 85%		408 ✓ (457) 89%	56 ✓ (57) 98%		104 ✓ (160) 65%	325 ✓ (422) 77%	98 ✓ (183) 54%		2335 8.05%	2818 0.78%
LT	2 (NK)	12 (NK)	9 (NK)	2 (NK)		65 ✓ (NK)	74 (NK)	11 (NK)			175 0.60%	0
LU		14 ✓ (14) 100%						1 ✓ (1) 100%			15 0.05%	15 0.004%
LV		26 ✓ (26) 100%		1 ✓ (1) 100%		91 ✓ (NK)	3 ✓ (3) 100%	9 ✓ (9) 100%	3 ✓ (3) 100%		133 0.46%	42 0.01%
MT		71 ✓ (83) 85.5%									71 0.25%	83 0.02%
NL*	919 ✓ (304) 100%	4696 ✓ (1405) 100%	943 ✓ (669) 100%		4 ✓ (3) 100%		61 ✓ (67) 91%				6623 22.83%	2448 0.67%
PL	29 ✗ (43) 67%	102 ✓ (130) 78.5%		93 ✓ (136) 68%			205 ✓ (369) 56%	14 ✓ (14) 100%	15 ✗ (33) 45.5%		458 1.58%	725 0.20%
PT	18 ✓ (18) 100%	78 ✓ (205) 38%	101 ✓ (2463) 4%	95 ✓ (210) 45%		2726 ✓ (236296) 1%	13 ✗ (16) 81%	23 ✓ (23) 100%	40 ✗ (56) 71%		3094 10.67%	239287 66%
SE	40 ✓ (40) 100%	60 ✓ (351) 17%	7 ✗ (25) 28%	26 ✓ (26) 100%	4 ✓ (4) 100%		29 ✗ (30) 97%		15 ✓ (15) 100%		181 0.62%	491 0.14%
SI	12 ✓ (12) 100%	61 ✓ (137) 44.5%		53 ✗ (68) 78%				9 ✗ (10) 90%	15 ✗ (40) 37.5%		150 0.52%	267 0.07%
SK	20 ✗ (50) 40%	30 ✗ (41) 73%	116 ✓ (135) 86%	12 ✗ (15) 80%	4 ✓ (4) 100%	181 ✓ (54509) 0.3%	20 ✗ (14) 100%	24 ✗ (31) 77%	23 ✗ (28) 82%		430 1.48%	54827 15.1%
UK	57 ✗ (992) 6%	80 ✓ (1256) 6%		95 ✓ (575) 16.5%	11 ✗ (141) 8%		166 ✓ (826) 20%	31 ✗ (112) 28%	12 ✗ (153) 8%		452 1.56%	4055 1.12%
EU Total	2130 (2750) 7.38%	8537 (11190) 29.57%	2383 (13129) 8.25%	1981 (4389) 6.83%	150 (548) 0.52%	9051 (318491) 31.36%	2176 (5787) 7.50%	1500 (1528) 5.17%	448 (908) 1.55%	649 (3737) 2.25%	29005	362457

- In total, nine Member States found positive samples in this year's survey. Eighty-one holdings tested positive for H5 in seven Member States, 10 for subtype H7 in six MS

and 54 for other subtypes in four Member States (one holding tested positive for subtypes H5 and H7).

- Table 5 displays the number of holdings tested, the number of positive holdings and the upper 95% confidence limit for the prevalence of H5/H7 for each category.
- As in previous years, duck and geese holdings were the most frequent positive category. The upper 95% confidence limit for H5/H7 prevalence varied from 1.6 % in Poland to 62.5% in Finland. This high upper confidence limit in Finland reflects the small sample size of six holdings, of which two tested positive. No AI was detected in broilers.

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Table 5 Total number of sampled and positive holdings and upper 95% confidence limit for overall prevalence of H5 & H7 by Member States and poultry category											
Member States	Chicken Breeders	Laying Hens	Broilers	Turkey Fatteners	Turkey breeders	Backyard Flocks	Ducks & Geese	Game Birds	Ratites	Others	Total
AT		60 4.8%		80 3.3%			27 9.5%		21 0%		188
BE	208 1.2%	2/ 405 0.8%		37 6.8%		9 4.2%	2/ 33 12.2%	21 11.8%	36 7.2%		749
CY	17 14.2%	30 0%	6 39.2%	7 32.1%		93 3.16%	1 0%	5 28.6%	9 0%		168
CZ		51 5.2%		7 26.7%	3 0%		33 0%	33 7.5%			127
DE	5 45.1%	16/ 251 9.52%	8 31.23%	1/ 188 2.5%	2 77.6%	10/ 78 20.8%	2/ 435 1/ 435 1.8%	1/ 10 39.4%	47 6.18%		1024
DK	142 1.8%	1/ 133 1/ 133#	2 71.4%	17 15.2%			3/ 41 1/ 41	5/ 298* 2/ 298*	6/ 298 X		611
EE		13 0%					5 45.07%				18
EL	6 39.3%	70 3.9%	78 3.7%	26 9.7%			140 2.12%	22 12.73%	18 15.33%		360
ES	268 1.0%	1/ 861 9/ 861 1.6%	993 0.3%	456 0.6%	4 50%	2/ 3514 0.15%	4/ 175 2/ 175 # 6.7%	381 0.7%	2/ 89 6.4%	6/ 649 1.71%	7390
FI	66 0%	55 5.3%		53 5.2%			2/ 6 62.5%	11 23.1%	2 77.6%		193
FR		70 4.1%	120 2.5%	3/ 157 5.43%	8/ 53 24.1%		40/ 451 11.2%	4/ 220 4.1%	4 52.7%		1075
HU		67 4.3%		91 3.1%		2294 0.13%	174 1.6%	53 5.1%			2679
IE	77 3.3%	141 1.8%		77 3.4%	9 26.2%		2 0%				306
IT	244 1.0%	1100 0.2%		408 0.6%	56 4.4%		1/ 104 3.1%	1/ 325 0.95%	98 2.8%		2335
LT	2 77.6%	12 20.6%	9 26.9%	2 77.6%		65 4.5%	74 3.97%	11 23.84%			175
LU		14 0%							1 0%		15
LV		26 0%		1 0%		91 3.24%	3 0%	9 0%	3 0%		133
MT		71 3.6%									71
NL	1/ 919 0.3%	4696 0%	943 0%		4 0%		61 4.1%				6623
PL	29 8.8%	102 2.5%		93 2.8%			1/ 205^^ 1.6%	14 0%	15 17.0%		458
PT	18 0%	78 3.5%	101 2.9%	95 2.9%		2726 0.11%	13 18.5%	23 0%	40 6.4%		3094
SE	40 0%	60 4.7%	7 33.9%	26 0%	4 0%		29 8.4%		15 0%		181
SI	12 0%	61 4.5%		53 4.8%				9 25.6%	15 17.2%		150
SK	20 13.1%	30 8.5%	116 2.2%	12 19.9%	4 0%	181 1.6%	20 11.1%	24 10.4%	23 10.8%		430
UK	57 5.1%	80 3.6%		95 3.0%	11 23.6%		2/ 166 1/ 166- 4.0%	31 8.8%	12 21.9%		452
EU Total	2130	8537	2383	1981	150	9051	2176	1500	448	649	29005
% Of EU total	7.38	29.57	8.25	6.83	0.52	31.36	7.50	5.17	1.55	2.25	
EU Total positive holdings	1	30	0	5	8	12	62	18	2	6	144
% Positive holdings (95% CI)	0.049 (0.15%)	0.35 (0.42%)	0 (0.11%)	0.25 (0.43%)	5.3 (8.76%)	0.13 (0.21%)	2.87 (3.38%)	0.61 (0.73%)	0.45 (0.99%)	0.93 (1.71%)	

Positive H5
Positive H7
Positive for subtypes other than H5 or H7

^^ Positive holding doubtful

x no confidence limit calculated as some holdings tested several times

ES Also had 1/175 virologically positive for H5 and 1/175 virologically positive for H7

DK 2 Flocks at the same holding

- UK Total positive holdings = 3; 1 holding was positive for both H5 and H7

* DK One Mallard holding positive for both H5 and H7

- Tables 6, 7 and 8 display the total number of holdings, number of holdings tested and the upper 95% confidence limit for H5, H7 and other LPAI respectively for positive categories.
- Differently to ducks and geese the upper 95% confidence limit for the prevalence of H5 in other categories is frequently quite low, for example in laying hens the upper 95% confidence interval for H5 prevalence ranges from 0.38% in Spain to 1.40% in Denmark.
- The detected H5 serological reactions in ducks and geese and game birds in Denmark originated from two geese flocks, one duck flock and one Mallard flock for re-stocking (breeding). None of these holdings were found positive by virological tests.
- The three holdings in Denmark that tested positive for H5 by PCR were Mallards for re-stocking (offspring) and virus isolation resulted in the finding of LPAI H5N3 in two holdings and LPAI H5N2 in the other holding. These three holdings were culled. The infection in two of the holdings was thought to have originated from contact with wild birds, while the infection in the third holding was thought to originate from indirect contact with one of the other holdings. None of the birds showed clinical signs in any of the holdings.
- The laying hen holding in Denmark that tested positive on serology for the H5 subtype was a free-range holding and tested negative on PCR.
- Two H5 positive duck and geese holdings in Belgium were found: One free-range parental geese holding, on which one animal tested positive on serology and a fattening duck holding, where two animals tested positive and on which the ducks had been free-range as ducklings.
- On the Belgian H5 positive laying hen holding, one pullet was found serologically positive and there was no history of outdoor keeping. None of the holdings tested positive on follow up testing (Real time RT-PCR for ducks and geese, HI in pullets and virus isolation in laying hens).

Table 6 Holdings positive for subtype H5						
Member States	Poultry Category	Total Holdings	Total Holdings Sampled	Number of Serological Positive Holdings	Number of Virological Positive Holdings	Upper 95% confidence interval for serological prevalence of H5
BE	Laying Hens	474	405	2	-	0.84
	Ducks and Geese	41	33	2	0	12.20
DE	Ducks and Geese	NK	435	2	0	1.44
	Laying Hens	143	133	1	-	1.40
	Ducks and Geese	17	19	3	0	X
DK	Game Birds	175	298	2*	3	X
	Laying Hens	1315	861	1	-	0.38
	Backyard Flocks	19132	3514	2	-	0.15
	Ducks and Geese	134	175	4	1^	6.70
ES	Ratites	313	89	2	-	6.39
	Other	3737	649	6**	-	1.71
FI	Ducks and Geese	16	6	2	0	62.50
FR	Fattening Turkeys	1400	157	1	-	2.86
	Ducks and Geese^^	3218	451	40	2	11.22
	Game Birds	NK	220	4	-	4.11
IT	Ducks and Geese	160	104	1	1	3.13
	Game Birds	422	325	1	0	0.95
UK	Ducks and Geese	826	166	2*	0	3.03
Total		31368	7764	78	7	

* One positive for both H5 and H7, serologically positive holdings were different from virologically positive holdings

** Zoological

^ Positive H5, negative N1

^^ Total no. of virologically positive holdings stated 0, but 2 regions have a H5 virologically positive holding, so assumed 2.

X no confidence interval calculated as flocks in risk areas tested several times per year

so mainly detected in duck and geese holdings (5 out of 7 total H7 positive holdings), but a laying hen holding in Denmark and a chicken breeder holding in the Netherlands was also found positive for this subtype.

- In most Member States the upper 95% confidence limit of the prevalence of the H7 subtype in the relevant poultry category was below 5%.
- The geese flock in Poland that gave a doubtful result on serology for H7 was re-sampled and serum samples as well as tracheal and cloacal swabs were collected, all of which resulted negative. The flock was reported to not have shown any clinical symptoms throughout the 4-year rearing period.
- The two flocks in Denmark that tested positive on serology for H7 were in fact two flocks on the same free-range holding and tested negative on virological testing.

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Table 7 Holdings positive for Subtype H7						
Member States	Poultry Category	Total Holdings	Total Holdings Sampled	Number of Serological Positive Holdings	Number of Virological Positive Holdings	Upper 95% Confidence limit
DE	Ducks and Geese	NK	435	1	0	1
DK	Free range Laying Hens	143	133	1#	-	2.80
	Ducks and Geese	17	19	1	0	X
	Game Birds	175	298	2*	0	X
ES	Ducks and Geese^	134	175	2	1	4.62
NL	Chicken Breeders	304	919	1	-	1.55
PL	Ducks and Geese	369	205	1**	0	1.63
UK	Ducks and Geese	826	166	1*	0	2.18
Total		1813	2074	10	1	

* One positive for both H5 and H7

** PL Positive doubtful

X no confidence interval calculated as flocks in risk areas tested several times per year

DK 2 Flocks at the same holding

Table 8 Holdings serologically positive for subtypes other than H5 or H7						
Member States	Poultry Category	Total Holdings	Total Holdings Sampled	Number of Serological Positive Holdings	Number of Virological Positive Holdings	Upper 95% Confidence limit
DE	Laying Hens	NK	251	16	-	9.52
	Fattening Turkeys	NK	188	1	-	2.5
	Backyard Flocks	NK	78	10	-	20.8
	Game Birds	NK	10	1	-	39.4
DK	Game Birds	175	298*	0	6	X
ES	Laying Hens	1315	861	9	-	1.44
	Fattening Turkeys	1400	157	3	-	4.5
FR	Breeder Turkeys	311	53	8	-	24.4
Total		3218	1785	48	6	

X no confidence interval calculated as flocks in risk areas tested several times per year

* For Game birds excluding Mallards, PCR/Virological the total sampled is 146, serological is 131. Total Mallard holdings tested by serology and PCR is 21.

- Table 9 below shows the number of H5, H7 and other AI detections in Member States that found positive holdings for the years 2004- 2006.
- In this year's survey two Member States (Finland and Denmark) found positive holdings through this survey for the first time since 2003. In two Member States (Spain and Germany) cases were found in more categories of poultry than in previous years.

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Table 9 Total number of holdings positive for AI in 2004, 2005 and 2006 by Member States															
Member States	2004				2005				2006						
	Holdings	Total	Positive Holdings		Holdings	Total	Positive Holdings		Holdings	Total	Positive Holdings				
			Other	H5H7			Other	H5H7			Other	H5H7			
BE					Chicken breeder(3 (2H5)), Laying hens (1 H5) Ducks and Geese (4 H5)	8		7	1	Laying hens (2 H5) Ducks and Geese (2 H5)	4		4		
DE	Ducks and Geese (5 4H5 1 H7)	5		4	1	Ducks and Geese (2, 1H5 1 H7) Ratites (1 H5)	5	2	2	1	Laying hens (16) Turkey Fatteners (1) Backyard flocks (10) Ducks and Geese (2 H5, 1 H7) Game birds (1)	31	28	2	1
DK											Laying hens (1H5 & 1 H7) Ducks and geese(4 3 H5 1H7) Game birds (12 5 H5 2 H7 6 Other)	18	6	9	4
EL	Laying hens (2) Broilers (2) Turkey Fattener (1)	5	5												
ES	Ratites (2 1 H5 1H7)	2		1	1	Ducks and geese (1 H5)	1		1		Laying hens (10, 1 H5) Backyard flocks (2 H5) Ducks and geese (4 H5 2 H7) Ratites (2 H5) Other (6 H5)	26	9	15	2
FI											Ducks and geese (2 H5)	2		2	
FR	Turkey Fatteners(11, 1H5) Turkey Breeders (3) Ducks and geese (20 19H5 1 H7)	35	14	20	1	Turkey Fatteners(3) Ducks and geese (58 55 H5 3 H7)	61	3	55	3	Turkey Fatteners(4, 1 H5) Turkey Breeders(8) Ducks and geese (40 H5) Game birds (4 H5)	56	11	45	
IT	Broiler(2 H7) Turkey Fatteners (27 H7) Ducks and geese (1 H5) Ratites (1H5)	4		2	2						Ducks and geese (1 H5) Game birds (1 H5)	2		2	
MT	Laying hens (14) Does not test ducks and geese)	14	14												
NL	Laying hens (1H7) Ducks and geese (3 H5)	4		3	1						Chicken breeder (1H7)	1		1	
PL	Ducks and Geese (1 H5)	1		1		Ducks and geese (2 H5)	2		2		Ducks and Geese (1 H7)	1		1	
UK						Ducks and geese (1 H5)	1		1		Ducks and geese (3, 2H5 1H7)	3		2	1
Total		70	33	31	6		78	5	68	5		144	54	81	10

Sampling and results according to poultry category

Detailed tables displaying the number of holdings, holdings sampled and holdings positive by Member States and category are shown in Appendix 1.

Ducks and Geese

- This type of holding was sampled in all but three Member States as in the previous year, the sample sizes varied from one (CY) to 451 (FR).
- The overall number of holdings tested increased compared to last year, mainly due to an increase in surveillance in Germany, Greece and Spain. Many Member States sampled holding numbers well in excess of the requirements (DE, EL, ES, FR, HU and PL) and frequently a large proportion of the reported total holdings were sampled (14- 100%).
- With the exception of the Netherlands, where only one holding of chicken breeders was found to be serologically positive for AI, all Member States that found positive holdings in any category also found positive holdings in ducks and geese. In two Member States (PL and UK) this was the only category of poultry where positives were found.
- Almost half of the total number of AI positive holdings were duck and geese holdings (62 out of 144) the large majority of these positive holdings showed antibodies to the H5 subtype.

Chicken breeders

- This category of poultry was sampled by 17 Member States.
- Frequently a large proportion of the reported total number of holdings was sampled (6-100%). Overall chicken breeder holdings made up 7.38% of the total holdings sampled.
- This year only one holding tested positive for subtype H7 in the NL out of a EU total of 2130 tested.
- In the previous year three chicken breeder holdings were found positive in Belgium (two H5 and one H7) out of EU total 2489 tested, none in 2004.

Laying hens

- This category was sampled in all the Member States as in previous years, but the number of holdings sampled has doubled compared to 2005. However this increase is mainly due to a large increase in sampling in the Netherlands where the number of sampled holdings quadrupled.
- It appears that frequently a large proportion of the total holdings were sampled and several Member States sampled well in excess of the required sample sizes. Laying hen holdings accounted for almost 30% of the sampled holdings in 2006.
- A total of 31 positive holdings out of 8537 sampled were found in this year's survey compared to one out of 4494 in the previous year and 17 out of 5494 in 2004.
- Positive holdings were found in four Member States (DE, DK, BE and ES) in three of them AI was not found in laying hens in the previous years.
- In Denmark, where in previous years no positive laying hen holdings were found, one holding tested positive for subtype H5 and one for subtype H7. Both holdings were free-range holdings. On the holding that tested positive for subtype H7, two flocks on the holding tested positive.

Broilers

- More Member States (11) included broilers in their survey programme than in 2005, when eight Member States sampled broiler holdings. This led to an overall increase of broiler holdings sampled compared to 2005.
- As would be expected, frequently these holdings were sampled in low numbers and formed a comparatively low proportion of the total holdings and no positive holdings were detected as in the previous year.
- In 2004 overall four positive holdings were detected, two H7 positive holdings in Italy and two holdings positive for subtypes other than H5 or H7 in Greece.

Turkey Fatteners

- This category was sampled in 21 Member States. The overall number of holdings was largely the same as in the previous year and only in Spain did the number of sampled holdings of this category increase significantly.

- As in previous years France found positive holdings in this category (one subtype H5, and two influenza A virus not H5 or H7).
- Italy, that had detected several positive turkey fattener holdings in 2004 due to a then ongoing outbreak of H7N3, did not detect any positives in this year's survey, as was already the case in 2005. Germany detected one positive holding with a subtype other than H5 or H7.

Turkey breeders

- As in previous years, turkey breeders were sampled in less than half the Member States (10).
- Except in France, where eight out of 53 holdings tested positive for subtypes other than H5 or H7, no positive holdings of this category were found. In the previous survey no positive holdings of this type were detected but in the 2004 survey France detected three out of 82 sampled holdings positive for influenza A virus not H5 or H7.

Backyard flocks

- Six Member States that had not previously included backyard flocks in their surveillance did include them this year in addition to the three Member States that surveyed this type of poultry in the previous survey.
- Due to the large number of holdings in this category, around a third of the total number of holdings sampled in 2006 were backyard flocks. In particular Spain, Hungary and Portugal sampled a large number of backyard holdings.
- In spite of these frequently large sample numbers, positives were only detected in Germany and Spain. In Spain two out of 3514 backyard flocks tested positive for the H5 subtype. In previous years no positive backyard holdings were detected, however, as mentioned above, previously this type of holding was only sampled in low numbers in very few Member States.

Game birds

- These holdings were included in the survey of 18 Member States.

- Although frequently the total number of game birds holdings were not known, where it was known, a relatively large proportion of the reported total holdings were collected (28- 100%).
- The EU total number of game bird holdings that were sampled almost doubled in 2006 compared to 2005 and several Member States increased the number of holdings of this type in their surveillance programme.
- Four out of the 18 Member States that sampled this category found positive holdings:
 - In Germany one holding out of 10 tested positive for AI of subtypes other than H5 or H7.
 - In Denmark 12 out of 298 holdings tested positive, also for subtypes other than H5 or H7.
 - In France four out of 220 holdings tested positive for the H5 subtype. H5 was also detected in Italy in this category where one out of 325 holdings tested positive.
 - In previous years no positive game bird holdings were detected, but the number of game bird holdings included in the survey in 2005 was also half the number of holdings included in this years survey.

Ratite

- This category was sampled in 17 Member States.
- In Member States where the total number of holdings was known, this was below 50. Frequently a large proportion of holdings were sampled.
- Two H5 positive ratite holdings out of 89 tested were found in Spain. While in this Member State no positive ratite holdings were found in 2005, in 2004 two positive holdings, one with subtype H5 and one with subtype H7 were found.

SUMMARY AND DISCUSSION

- Surveillance for AI in EU Member States is carried out since 2003 under EU approved programmes and co-financed by the European Commission. Surveillance in poultry is based on serological testing for AI of subtypes H5 and H7, which have shown to have the potential to mutate to HPAI.
- In 2006, a total of 29 005 poultry holdings for the following categories were sampled by the 25 Member States: Chicken breeders (2130 holdings), Laying hens (8537), Broilers (2383), Turkey Fatteners (1981), Turkey Breeders (150), Backyard Flocks (9051), Ducks and Geese (2176), Game Birds (1500), Ratites (448) and Zoo Birds (649 in one MS). Although there was no large change in the number of holdings sampled in most Member States and categories, sampling increased in some categories for example more Member States included backyard flocks in their surveillance programmes than in previous years and several Member States increased the number of game bird holdings in the survey.
- The total number of holdings included in the survey varied from 15 (Luxembourg) to 7390 (Spain). Some Member States sampled only the requested samples size or less, others (for example Spain, The Netherlands and Germany) sampled much higher numbers of holdings than requested and in case of the Netherlands most holdings were sampled more than once. This variation in sampling has an impact on the comparability of the results, as the proportion of positive holdings in a targeted survey design, where holdings at higher risk were sampled more frequently can not be directly compared to survey results that were collected on the basis of a random sampling frame and this should be kept in mind. If all ten birds from one holding gave negative results, then the upper 95% confidence limit of the prevalence of serologically positive birds within a flock of ≥ 1000 birds is 26%. Thus, at a holding level, the test can only be interpreted as providing evidence of disease freedom if it is accepted that the prevalence of infection, if the virus were present, would be greater than 26%.
- Eighty-one holdings tested positive for H5 in seven Member States, 10 for subtype H7 in six MS and 54 for other subtypes in four Member States (one holding tested positive for subtypes H5 and H7).

- The results of the 2006 AI survey for poultry showed considerable variation amongst Member States. However, one feature with few exceptions is, that almost all Member States that included ducks and geese in their surveillance detected positive holdings in this poultry sector. In two Member States (PL and UK) ducks and geese were the only type of poultry detected with H5 or H7 AI. Although the total number of duck and geese holdings tested accounted only for 7% of the overall number of holdings tested, almost half of all AI infections were detected in this poultry sector. More than half of the serologically positive duck holdings were found in France. These results are consistent with those of last year's survey.
- Predominantly positives in ducks (84%) were attributed to H5 subtype, with less to H7 subtype (11%) and small numbers of unspecified influenza A viruses were detected by some Member States using a prescreening test for influenza A. However a pre-screening test was not conducted in most Member States so on the basis of these findings it can not be assessed whether the proportion of H5 positive holdings compared to the proportion of positives for other subtypes varies in between Member States and categories.
- In this year's survey two Member States (FI and DK) found positive holdings through this survey for the first time since 2003. In two Member States (ES and DE) AI was detected in more poultry categories than in previous years.
- The proportion of positive holdings amongst the sampled in this year's survey did not increase in the majority of poultry categories and Member States compared to 2005 and 2004. Assuming that the survey design in Member States and categories has not changed, this could be an indication that there is no obvious increase of an overall AI prevalence. However it should be kept in mind that the sample numbers calculated for this survey were calculated with the objective to detect infection if it were to be present and not to estimate the prevalence and due to this statement must be taken with care.

Future surveys

Due to the changing situation of AI in Europe, repetitive outbreaks and serologically positive holdings in consecutive years, it should be considered to revise the objectives and sampling frame of this survey.

The data and information collected under the annual EU poultry survey are intended to not only serve to supply required evidence for trading purposes but also contribute to the

recognition of possible changes in the epidemiology of AI in the EU. Since data on AI in wild bird populations is collected throughout Member States, the combination of information from the two data sources offers potential for the enhancement of understanding of AI epidemiology. However, at present the epidemiological information collected under the poultry survey is minimal and greatly restricts further analysis. This will somewhat improve with the implementation of the online reporting system when some additional data such as the location of the sampled holdings will be collected. However to further investigate the importance of possible risk factors for infection, more detailed data is required. Although risk factors are best investigated through a case control study, the annual survey may offer a cost efficient means of collecting extra information.

- Data on the number of birds tested as well as the number of birds present on the holding, information on the results in separate epidemiological groups on one holding (age, different houses) could help to improve knowledge on the spread within a flock, if serological and virological test results are combined.
- Harmonized data capture on the type of housing of the birds, the possibility of exposure to wild birds as well recording of any protective measures implemented to prevent contact with wild birds could help to measure the effectiveness of such measures. Information on the presence and infection status of other types of poultry on holdings could further enhance the epidemiological understanding of AI.
- Attempts to retrieve virus isolates from serologically positive flocks should be maximised as this will aid in the separation of importance of the role of trade and wild birds in the transmission of the virus. All of the above information is very important for the further refinement of control strategies for AI and to establish an evidence-based prioritisation of resources for surveillance and control measures such as vaccination.
- Reporting the outcomes of the epidemiological investigations on positive holding do have the potential to allow a differentiation of the most likely route of introduction of the virus between poultry, fomite and wild birds and are valuable information. Consequently such information should be reported to the CRL for the inclusion in the annual report. In this year only very few Member States did provide some information on the epidemiological investigations.

Compared to the costs and time required to collect serological samples, the required resources for the collection of additional data should be very small.

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ANNEX I

Table 10 Total number of Chicken Breeder holdings, total number sampled and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

Member State	2004			2005			2006											
	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			Total	H5	H7								
AT	-	-	-	-	-	-	-	-	-	-	-	-	-					
BE	-	-	-	-	-	NK	72	3	2	1	229	208	0	0	0			
CY	-	-	-	-	-	21	1	0	0	0	19	17	0	0	0			
CZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
DE	-	-	-	-	-	-	-	-	-	-	NK	5	0	0	0			
DK	70	48	0	0	0	70	44	0	0	0	151	142	0	0	0			
EE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
EL	125	11	0	0	0	-	-	-	-	-	NK	6	0	0	0			
ES	527	120	0	0	0	476	201	0	0	0	483	268	0	0	0			
FI	52	52	0	0	0	65	65	0	0	0	66	66	0	0	0			
FR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
HU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
IE	93	66	0	0	0	92	62	0	0	0	92	77	0	0	0			
IT	288	254	0	0	0	270	224	0	0	0	251	244	0	0	0			
LT	19	11	0	0	0	11	6	0	0	0	NK	2	0	0	0			
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
LV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
NL	665	1391	0	0	0	411	1609	0	0	0	304	919	1	0	1			
PL	252	103	0	0	0	54	54	0	0	0	43	29	0	0	0			
PT	33	33	0	0	0	33	33	0	0	0	18	18	0	0	0			
SE	150	40	0	0	0	47	40	0	0	0	40	40	0	0	0			
SI	16	16	0	0	0	16	16	0	0	0	12	12	0	0	0			
SK	-	-	-	-	-	12	5	0	0	0	50	20	0	0	0			
UK	-	1	0	0	0	509	57	0	0	0	992	57	0	0	0			
Total	2290	2146	0	0	0	2087	2489	3	2	1	2750	2130	1	0	1			
	Upper 95% confidence limit for overall prevalence			0.04%			Upper 95% confidence limit for overall prevalence			0.37%			Upper 95% confidence limit for overall prevalence			0.15%		

Table 11 Total number of Laying hens holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

Member State	2004			2005			2006											
	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			Total	H5	H7								
AT	3500	60	0	0	0	1600	60	0	0	0	1600	60	0	0	0			
BE	-	-	-	-	-	-	204	1	1	0	474	405	2	2	0			
CY	29	10	0	0	0	30	30	0	0	0	30	30	0	0	0			
CZ	171	53	0	0	0	182	53	0	0	0	92	51	0	0	0			
DE	120794	301	0	0	0	87091	90	0	0	0	NK	251	16	0	0			
DK	120	55	0	0	0	-	186	0	0	0	143	133	3	1	1			
EE	-	-	-	-	-	13	13	0	0	0	13	13	0	0	0			
EL	233	31	2	0	0	177	11	0	0	0	NK	70	0	0	0			
ES	1792	250	0	0	0	1336	519	0	0	0	1315	861	10	1	0			
FI	857	105	0	0	0	1585	62	0	0	0	953	55	0	0	0			
FR	1288	161	0	0	0	1040	113	0	0	0	702	70	0	0	0			
HU	-	-	-	0	0	1532	95	0	0	0	749	67	0	0	0			
IE	185	145	0	0	0	183	148	0	0	0	183	141	0	0	0			
IT	1477	939	0	0	0	1360	1101	0	0	0	1288	1100	0	0	0			
LT	19	15	0	0	0	22	11	0	0	0	NK	12	0	0	0			
LU	11	11	0	0	0	11	11	0	0	0	14	14	0	0	0			
LV	26	26	0	0	0	27	27	0	0	0	26	26	0	0	0			
MT	40	38	14	0	0	305	63	0	0	0	83	71	0	0	0			
NL	1400	2660	1	0	1	910	1167	0	0	0	1405	4696	0	0	0			
PL	376	128	0	0	0	96	85	0	0	0	130	102	0	0	0			
PT	268	211	0	0	0	268	211	0	0	0	205	78	0	0	0			
SE	300	60	0	0	0	423	60	0	0	0	351	60	0	0	0			
SI	145	57	0	0	0	139	66	0	0	0	137	61	0	0	0			
SK	159	124	0	0	0	41	18	0	0	0	41	30	0	0	0			
UK	22014	54	0	0	0	1290	90	0	0	0	1256	80	0	0	0			
Total	155204	5494	17	0	1	99661	4494	1	1	0	11190	8537	31	4	1			
	Upper 95% confidence limit for overall prevalence			0.46%			Upper 95% confidence limit for overall prevalence			0.10%			Upper 95% confidence limit for overall prevalence			0.42%		

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Table 12 Total number of Broiler holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

Member State	2004			2005			2006								
	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			Total	H5	H7					
AT	-	-	-	-	-	-	-	-	-	-	-	-	-		
BE	-	-	-	-	-	-	-	-	-	-	-	-	-		
CY	105	20	0	0	0	201	15	0	0	0	119	6	0	0	0
CZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DE	-	-	-	-	-	-	-	-	-	-	NK	8	0	0	0
DK	8	6	0	0	0	8	5	0	0	0	7	2	0	0	0
EE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EL	41	9	2	0	0	842	71	0	0	0	NK	78	0	0	0
ES	-	679	0	-	-	5899	909	0	0	0	5904	993	0	0	0
FI	48	27	0	-	-	-	-	-	-	-	-	-	-	-	-
FR	-	-	-	-	-	-	-	-	-	-	3807	120	0	0	0
HU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IT	3661	1409	2	0	2	-	-	-	-	-	-	-	-	-	-
LT	15	15	0	0	0	20	4	0	0	0	NK	9	0	0	0
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	1150	999	0	0	0	927	941	0	0	0	669	943	0	0	0
PL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PT	2259	0	-	-	-	2259	-	-	-	-	2463	101	0	0	0
SE	-	-	-	-	-	-	-	-	-	-	25	7	0	0	0
SI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SK	-	-	-	-	-	124	22	0	0	0	135	116	0	0	0
UK	1971	1	0	0	0	-	-	-	-	-	-	-	-	-	-
Total	9258	3165	4	0	2	10280	1967	0	0	0	13129	2383	0	0	0
	Upper 95% confidence limit for overall prevalence		0.24%			Upper 95% confidence limit for overall prevalence		0.14%			Upper 95% confidence limit for overall prevalence		0.11%		

Table 13 Total number of Fattening Turkey holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

Member State	2004			2005			2006								
	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			Total	H5	H7					
AT	130	80	0	0	0	120	80	0	0	0	120	80	0	0	0
BE	58	34	0	0	0	-	37	0	0	0	46	37	0	0	0
CY	9	6	0	0	0	8	5	0	0	0	8	7	0	0	0
CZ	12	12	0	0	0	-	-	-	-	-	75	7	0	0	0
DE	2771	167	0	0	0	2769	110	0	0	0	NK	188	1	0	0
DK	39	32	0	0	0	40	30	0	0	0	40	17	0	0	0
EE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EL	12	12	1	0	0	35	34	0	0	0	NK	26	0	0	0
ES	313	127	0	0	0	513	142	0	0	0	522	456	0	0	0
FI	68	60	0	0	0	-	-	-	-	-	176	53	0	0	0
FR	3340	242	11	1	0	2654	224	3	0	0	1400	157	4	1	0
HU	-	-	-	0	0	407	133	0	0	0	407	91	0	0	0
IE	103	89	0	0	0	107	80	0	0	0	107	77	0	0	0
IT	1076	909	27	0	27	560	467	0	0	0	457	408	0	0	0
LT	6	6	0	0	0	4	1	0	0	0	NK	2	0	0	0
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	3	3	0	0	0	2	1	0	0	0	1	1	0	0	0
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	115	156	0	0	0	81	227	0	0	0	-	-	-	-	-
PL	-	111	0	0	0	316	102	0	0	0	136	93	0	0	0
PT	187	112	0	0	0	187	112	0	0	0	210	95	0	0	0
SE	20	26	0	0	0	40	35	0	0	0	26	26	0	0	0
SI	70	61	0	0	0	74	72	0	0	0	68	53	0	0	0
SK	17	10	0	0	0	15	5	0	0	0	15	12	0	0	0
UK	1818	84	0	0	0	-	161	0	0	0	575	95	0	0	0
Total	10167	2339	39	1	27	7932	2058	3	0	0	4389	1981	5	1	0
	Upper 95% confidence limit for overall prevalence		2.11%			Upper 95% confidence limit for overall prevalence		0.32%			Upper 95% confidence limit for overall prevalence		0.43%		

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Table 14 Total number of Breeder Turkey holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

Member State	2004			2005			2006										
	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			Total	H5	H7							
AT	-	-	-	-	-	-	-	-	-	-	-	-					
BE	-	-	-	-	-	2	0	0	0	-	-	-					
CY	-	-	-	-	-	-	-	-	-	-	-	-					
CZ	-	-	-	-	4	4	0	0	0	3	3	0					
DE	-	-	-	-	-	-	-	-	-	NK	2	0					
DK	-	-	-	-	-	-	-	-	-	-	-	-					
EE	-	-	-	-	-	-	-	-	-	-	-	-					
EL	-	-	-	-	-	-	-	-	-	-	-	-					
ES	9	8	0	0	0	9	8	0	0	0	12	4					
FI	-	-	-	-	-	163	75	0	0	0	-	-					
FR	426	82	3	0	0	317	57	0	0	0	311	53					
HU	-	-	-	-	-	-	-	-	-	-	-	-					
IE	20	20	0	0	0	13	12	0	0	0	13	9					
IT	62	55	0	0	0	65	47	0	0	0	57	56					
LT	-	-	-	-	-	2	1	0	0	0	-	-					
LU	-	-	-	-	-	-	-	-	-	-	-	-					
LV	-	-	-	-	-	-	-	-	-	-	-	-					
MT	-	-	-	-	-	-	-	-	-	-	-	-					
NL	6	6	0	0	0	3	14	0	0	0	3	4					
PL	-	3	0	0	0	-	-	-	-	-	-	-					
PT	4	4	0	0	0	-	-	-	-	-	-	-					
SE	-	-	-	-	-	4	4	0	0	0	4	4					
SI	-	-	-	-	-	-	-	-	-	-	-	-					
SK	6	3	0	0	0	-	-	-	-	-	4	4					
UK	-	7	0	0	0	-	27	0	0	0	141	11					
Total	533	188	3	0	0	580	251	0	0	0	548	150					
	Upper 95% confidence limit for overall prevalence		3.38%			Upper 95% confidence limit for overall prevalence			0.86%			Upper 95% confidence limit for overall prevalence			8.76%		

Table 15 Total number of Backyard Flock holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State
*Virological data/results in parentheses

Member State	2004			2005			2006										
	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			Total	H5	H7							
AT	-	-	-	-	-	-	-	-	-	-	-	-					
BE	-	-	-	-	-	24	9	0	0	0	0	0					
CY	-	-	-	-	-	8530	93	0	0	0	0	0					
CZ	-	-	-	-	-	-	-	-	-	-	-	-					
DE	16	10 (12)	0 (0)	0 (0)	0 (0)	-	-	-	-	-	NK	78					
DK	-	-	-	-	-	-	-	-	-	-	-	-					
EE	-	-	-	-	-	-	-	-	-	-	-	-					
EL	-	-	-	-	-	-	-	-	-	-	-	-					
ES	-	-	-	-	-	4371	217	0	0	0	19132	3514					
FI	-	-	-	-	-	-	-	-	-	-	-	-					
FR	-	-	-	-	-	-	-	-	-	-	-	-					
HU	-	-	-	-	-	-	-	-	-	-	NK	2294					
IE	-	-	-	-	-	-	-	-	-	-	-	-					
IT	-	-	-	-	-	-	-	-	-	-	-	-					
LT	-	-	-	-	-	174213	17	0	0	0	NK	65					
LU	-	-	-	-	-	-	-	-	-	-	-	-					
LV	-	-	-	-	-	-	-	-	-	-	NK	91					
MT	-	-	-	-	-	-	-	-	-	-	-	-					
NL	-	-	-	-	-	-	-	-	-	-	-	-					
PL	-	-	-	-	-	-	-	-	-	-	-	-					
PT	-	-	-	-	-	-	-	-	-	-	236296	2726					
SE	-	-	-	-	-	-	-	-	-	-	-	-					
SI	-	-	-	-	-	-	-	-	-	-	-	-					
SK	-	-	-	-	-	-	-	-	-	-	54509	181					
UK	-	-	-	-	-	-	-	-	-	-	-	-					
Total	16	10 (12)	0	0	0	178584	247	0	0	0	318491	9051					
	Upper 95% confidence limit for overall prevalence		18.80% (12.50%)			Upper 95% confidence limit for overall prevalence			1.20%			Upper 95% confidence limit for overall prevalence			0.21%		

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Table 16 Total number of Ducks and Geese holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State
*Virological data/results in parentheses

Member State	2004					2005					2006				
	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			Total	H5	H7			Total	H5	H7
AT	102	33	0	0	0	43	32	0	0	0	40	27	0	0	0
BE	30	24	0	0	0	NK	24	4 (1)	4	0	41	33	2	2	0
CY	4	3	0	0	0	2	2	0	0	0	1	1	0	0	0
CZ	19	19	-	-	-	34	34	0	0	0	33	33	0	0	0
DE	16188	301	5	4	1	15024	187	2 (1)	1	1	NK	435	3	2	1
DK	16	12	-	-	-	18	18	0	0	0	17	19	4	3	1
EE	-	-	-	-	-	-	-	-	-	-	NK	5	0	0	0
EL	-	2	0	0	0	-	37	-	-	-	NK	140	0	0	0
ES	118	38	0	0	0	119	105	1 (1)	1 (1)	0	134	175	4 (1)	4 (1)	2 (1)
FI	12	8	0	0	0	15	15	0	0	0	16	6	2	2	0
FR	1824	215	20	19	1	2856	500	58 (9)	55 (2)	3 (1)	3218	451	40	40 (2)	0
HU	-	-	-	0	0	767	268	0	0	0	800	174	0	0	0
IE	1	1	0	0	0	3	3	0	0	0	2	2	0	0	0
IT	231	101	1	1	0	178	132	0	0	0	160	104	1 (1)	1 (1)	0
LT	1	1	0	0	0	2	1	0	0	0	NK	74	0	0	0
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	4	3	0	0	0	2	1	0	0	0	3	3	0	0	0
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	125	86	3 (3)	3 (3)	0	86	63	0	0	0	67	61	0	0	0
PL	484	140	1	1	0	325	241	2	2	0	369	205	1	0	1
PT	14	14	0	0	0	14	14	0	0	0	16	13	0	0	0
SE	180	46	0	0	0	37	23	0	0	0	30	29	0	0	0
SI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SK	11	9	0	0	0	15	7	0	0	0	14	20	0	0	0
UK	21083	50	0	0	0	1632	88	1	1	0	826	166	3	2	1
Total	40447	1106	30 (3)	28 (3)	2	21172	1795	68 (12)	64 (3)	4 (1)	5787	2176	60 (2)	56 (4)	6 (1)
	Upper 95% confidence limit for overall prevalence		3.65% (0.69%)			Upper 95% confidence limit for overall prevalence		4.58% (1.06%)			Upper 95% confidence limit for overall prevalence		3.38% (0.59%)		

Table 17 Total number of Game Bird holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

Member State	2004					2005					2006				
	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			Total	H5	H7			Total	H5	H7
AT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BE	-	-	-	-	-	NK	12	0	0	0	27	21	0	0	0
CY	3	3	0	0	0	6	2	0	0	0	7	5	0	0	0
CZ	-	-	-	-	-	-	-	-	-	-	37	33	0	0	0
DE	16	16	0	0	0	-	-	-	-	-	NK	10	1	0	0
DK	-	-	-	-	-	-	-	-	-	-	175	298	12	2(3)	2
EE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EL	4	3	0	0	0	4	2	0	0	0	NK	22	0	0	0
ES	398	130	0	0	0	567	198	0	0	0	542	381	0	0	0
FI	34	24	0	0	0	41	19	0	0	0	NK	11	0	0	0
FR	-	-	-	-	-	482	65	0	0	0	NK	220	4	4	0
HU	-	-	-	-	-	79	31	0	0	0	119	53	0	0	0
IE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IT	-	-	-	-	-	506	334	0	0	0	422	325	1	1	0
LT	-	-	-	-	-	-	-	-	-	-	NK	11	0	0	0
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	11	11	0	0	0	9	7	0	0	0	9	9	0	0	0
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PL	-	-	-	-	-	14	14	0	0	0	14	14	0	0	0
PT	24	24	0	0	0	24	24	0	0	0	23	23	0	-	-
SE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SI	4	4	0	0	0	9	9	0	0	0	10	9	0	0	0
SK	27	43	0	0	0	49	49	0	0	0	31	24	0	0	0
UK	17	7	0	0	0	35	4	0	0	0	112	31	0	0	0
Total	538	265	0	0	0	1811	756	0	0	0	1528	1500	18	7(3)	2
	Upper 95% confidence limit for overall prevalence		0.93%			Upper 95% confidence limit for overall prevalence		0.33%			Upper 95% confidence limit for overall prevalence		0.73%		

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Table 18 Total number of Ratite holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

Member State	2004			2005			2006								
	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			Total	H5	H7					
AT	-	-	-	-	-	5	5	0	0	0	21	21	0	0	0
BE	56	19	0	0	0	NK	4	0	0	0	53	36	0	0	0
CY	3	2	0	0	0	8	3	0	0	0	9	9	0	0	0
CZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DE	-	4	0	0	-	-	9	1	1	0	NK	47	0	0	0
DK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EL	23	1	0	0	0	5	3	0	0	0	NK	18	0	0	0
ES	439	95	2	1	1	297	71	0	0	0	313	89	2	2	0
FI	13	10	0	0	0	22	2	0	0	0	NK	2	0	0	0
FR	30	23	0	0	-	-	-	-	-	-	NK	4	0	0	0
HU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IT	566	349	1	1	0	256	68	0	0	0	183	98	0	0	0
LT	3	1	0	0	0	7	1	0	0	0	-	-	-	-	-
LU	1	1	-	-	-	1	1	0	0	0	1	1	0	0	0
LV	3	3	0	0	0	3	2	0	0	0	3	3	0	0	0
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PL	19	19	0	0	0	25	19	0	0	0	33	15	0	0	0
PT	99	94	0	0	0	99	94	0	0	0	56	40	0	0	0
SE	100	11	0	0	0	100	7	0	0	0	15	15	0	0	0
SI	6	4	0	0	0	41	24	0	0	0	40	15	0	0	0
SK	18	18	0	0	0	43	28	0	0	0	28	23	0	0	0
UK	16	8	0	0	0	36	11	0	0	0	153	12	0	0	0
Total	1395	662	3	2	1	948	352	1	1	0	908	448	2	2	0
	Upper 95% confidence limit for overall prevalence		0.86%			Upper 95% confidence limit for overall prevalence		0.95%			Upper 95% confidence limit for overall prevalence		0.99%		

Table 19 Total number of Other holdings, total number sampled, and total number of positive holdings reported for 2004, 2005 and 2006 by Member State

*Virological data/results in parentheses

Member State	2004			2005			2006								
	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			Total	H5	H7					
AT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BE	864	339	0	0	0	NK	5	0	0	0	-	-	-	-	-
CY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DE	40	2 (38)	0	0	0	-	-	-	-	-	-	-	-	-	-
DK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EE	13	13	0	0	0	-	-	-	-	-	-	-	-	-	-
EL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ES	179	49	2	2	-	525	247	0	0	0	3737	649	6	6	0
FI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR	6404	267	2	0	0	4726	156	2	1	0	-	-	-	-	-
HU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MT	24	23	0	0	0	-	-	-	-	-	-	-	-	-	-
NL	350	1251	0	0	0	254	1375	0	0	0	-	-	-	-	-
PL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PT	15	15	0	0	0	38	38	0	0	0	-	-	-	-	-
SE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UK	-	1	0	0	0	-	-	-	-	-	-	-	-	-	-
Total	7889	1958	4	2	0	5543	1821	2	1	0	3737	649	6	6	0
	Upper 95% confidence limit for overall prevalence		0.42% (7.57%)			Upper 95% confidence limit for overall prevalence		2.71%			Upper 95% confidence limit for overall prevalence		1.71%		

ANNEX II DESCRIPTIVE RESULTS FOR MEMBER STATES

Specific comments relating to individual Member State's programmes

The total number of holdings reported for each poultry category is given in parentheses in the text below. Information is also given on whether the required sample size was met, and where the total number of holdings was not reported, if the number sampled was equal to or exceeded the required sample size, then the number sampled was reported as being met.

Austria

- Samples were submitted from laying hens/free range laying hens, fattening turkeys, ducks/geese and ratites.
- 60 laying hen holdings were sampled (1,600 total) as in the previous year.
- 80 fattening turkey holdings were sampled (120 total) as in the previous year.
- 27 duck/geese holdings were sampled (40 total).
- 21 ratite holdings were sampled (21 total).
- Austria sampled the required number of holdings for the categories laying hens, fattening turkeys, and ratites, and insufficient holdings were sampled in the ducks/geese category.
- Austria reported as one region.
- **No positive holdings were reported, as in the previous two years.**

Belgium

- Samples were submitted from chicken breeders, laying hens, fattening turkeys, backyard flocks, ducks/geese, game birds, and ratites.
- 405 laying hen holdings were sampled (474 total)
- 208 chicken breeder holdings were sampled (229 total)

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- 37 fattening turkey holdings were sampled (46 fattening turkey holdings total)
- Nine Backyard Flocks were sampled (24 total)
- 33 duck/geese holdings were sampled (41 total).
- 21 game bird holdings were sampled (27 total)
- 36 ratite holdings were sampled (53 total)
- The required number of holdings were sampled for the chicken breeders, and laying hens categories, however, insufficient numbers were sampled in categories fattening turkeys, backyard flocks, ducks/geese, game birds, and ratites.
- Belgium reported from one region.
- **Two duck and geese holdings (one duck and one goose holding) were serologically positive for H5 influenza A virus.**
- **Two laying hen holdings were serologically positive for H5 influenza A virus.**
- *Nine positive holdings/samples were reported in 2005. Seven holdings were subtype H5, one subtype H7 and one LPAI H3N1.*
- *No positive samples were reported in 2004.*

Cyprus

- Samples were submitted from chicken breeders, laying hens, broilers, fattening turkeys, backyard flocks, ducks/geese, game birds (partridges and pheasants) and ratites.
- 30 laying hen holdings were sampled (30 total).
- Six broiler holdings were sampled (119 total).
- 17 chicken breeder holdings were sampled (19 total)
- Seven fattening turkey holdings were sampled (eight total).
- 93 backyard flocks were sampled (8,530 total)

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- One duck/geese holding was sampled (one total).
- Five game bird holdings were sampled (seven total)
 - These were reported as:
 - Four partridge holdings were sampled (six total)
 - One Pheasant holding was sampled (one total)
- Nine ratite holdings were sampled (Nine total).
- Cyprus sampled the required number of holdings for the categories laying hens, backyard flocks, duck/geese, and ratites, and insufficient samples in the chicken breeders, broilers, fattening turkeys, and game bird categories.
- Cyprus reported as one region.
- **No positive holdings were reported, as in the previous year.**

Czech Republic

- Samples were submitted from laying hens, turkey breeders, turkey fatteners, ducks and geese, and game birds.
- 51 laying hen holdings were sampled (92 total).
- 3 turkey breeder holdings were sampled (3 total).
- 7 turkey fattener holdings were sampled (75 total)
- 33 duck/geese holdings were sampled (33 total).
- 33 game bird holdings were sampled (37 total).
- The required number of holdings were sampled in the turkey breeder and ducks/geese category, however, insufficient numbers were sampled in the categories laying hens, turkey fatteners, and game birds.
- Czech Republic reported as one region.
- **No positive holdings were reported, as in the previous year.**

Denmark

- Samples were reported from layer hens in risk areas/free-range laying hens, broilers, chicken breeders, fattening turkeys, ducks and geese, and game birds (Serology and PCR).
- 142 chicken breeder holdings were sampled (151 total).
- 133 laying hen/free-range laying hen holdings were sampled (143 total).
- Two broiler holdings were sampled (seven total).
- 17 fattening turkey holdings were sampled (40 total).
- 40 duck/geese holdings were sampled (37 total of which 20 were Mallard (offspring and breeding) and 17 were ducks/geese holdings). These were reported as
 - 21 Mallard (PCR- offspring) sampled (20 total)
 - 19 ducks and geese (HI) sampled (17 total)
 - The mallard figures were reported in the game birds category
- 146 game bird holdings were sampled through PCR, whilst 131 were serologically tested so that a total 277 holdings were sampled (155 total). Pheasants, partridges, rock partridges and redlegged partridges were sampled by Denmark in this category.
- Denmark sampled the required number of holdings for the categories chicken breeders, laying hens, ducks/geese, and game birds. The required number sampled was not met in the broilers and turkey fatteners categories.
- Denmark reported as one region.
- **Unlike in the previous two years, positive holdings were reported.**
- **Two free-range laying hen holdings were serologically positive for influenza A viruses (one subtype H5 and one subtype H7. The H7 positives were from two flocks at the same holding).**

- **Four ducks and geese holdings were serologically positive for influenza A viruses (three subtype H5 and one subtype H7).**
- **Three game bird holdings were virologically positive for influenza A viruses (All holdings were other subtype, neither H5 or H7). Three Mallard holdings were serologically positive for influenza A viruses (one subtype H5, one subtype H7 and one positive for both H5 and H7 subtype) In addition six Mallard holdings were virologically positive for influenza A viruses (three subtype H5 and three other subtypes).**

Estonia

- Samples were reported from laying hens, ducks and geese.
- 13 laying hen holdings were sampled (13 total).
- Five ducks and geese holdings were sampled (total not known). These were all stated as backyard holdings.
- Estonia sampled the required number of holdings for the laying hens category, and it is not known if sufficient numbers were sampled in the duck/geese category as the total number of holdings was not reported.
- Estonia reported from 15 regions overall. The number of regions sampled varied by poultry category.
- **No positive holdings were reported, as in the previous year.**

Finland

- Samples were reported from laying hens, chicken breeders, fattening turkeys, ducks/geese, feathered game birds and ratites.
- 55 laying hen holdings were sampled (953 total).
- 66 broiler parent holdings were sampled (66 total). Reported in chicken breeders.
- 53 fattening turkey holdings were sampled (176 total).

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- Six duck/geese holdings were sampled (16 total).
- 11 game bird (pheasant) holdings were sampled (total not known).
- Two ratite holdings were sampled (total not known).
- The required number of holdings were sampled for the category chicken breeders, and insufficient samples in the categories laying hens, fattening turkeys and ducks/geese. It is not known if sufficient numbers were sampled in the game birds and ratite categories as the total number of holdings was not reported.
- Finland reported from four regions overall. The number of regions sampled varied by poultry category.
- **Unlike the previous two years, positive holdings were reported.**
- **Two duck and geese holdings (specifically goose holdings) were serologically positive for influenza A virus subtype H5.**

France

- Samples were reported from laying hens, free-range chickens, free-range and housed meat turkeys, breeding turkeys, ducks and geese, and game birds (pheasants, partridges, quails, guinea fowl, and mallards).
- 70 layer hen holdings were sampled from 11 regions (702 total).
- 120 free-range chicken holdings were sampled from 18 regions (3,807 total). Reported as broilers .
- 157 fattening turkey holdings (free range meat and housed meat turkeys) were sampled from 18 regions (1,400 total).
- 53 turkey breeder holdings were sampled from six regions (311 total)
- 451 ducks/geese holdings were sampled from 23 regions (3,218 total).
- 220 game bird holdings were sampled from 26 regions (total not known).
 - These were reported as:

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- 42 partridge holdings were sampled from 11 regions (total not known).
- 25 quail holdings were sampled from nine regions (93 total).
- 57 guinea fowl holdings were sampled from eight regions (57 total).
- 64 pheasant holdings were sampled from 13 regions (total not known).
- 32 Mallard holdings were sampled from 11 regions (total not known)
- France sampled the required number of holdings for the categories laying hens, broilers, fattening turkeys, ducks/geese and game birds. Insufficient holdings were sampled in the turkey breeder category, and it is not known if sufficient numbers were sampled for the ratite category as the total was not known.
- France reported from 26 regions overall. The number of regions sampled varied by poultry category.
- **Four fattening turkey holdings (two free-range meat turkeys and two housed meat turkeys) were serologically positive for influenza A viruses. One was H5 subtype and this was a free-range meat turkey holding, the three other holdings (one free-range and two housed meat turkey) were serologically positive holdings for a subtype other than H5 or H7.** *(In 2005, three out of 224 holdings of free range and meat turkeys were serologically positive for influenza A viruses, none were positive for H5 or H7 subtype. In the 2004-2005 survey 11 out of 242 holdings of fattening turkeys were positive [one was H5 positive]).*
- **Eight Turkey breeder holdings were serologically positive for influenza A viruses (none were H5 or H7 subtype).** *No positive holdings were found in the previous survey, 2005-2006.*
- **Forty duck and geese holdings were serologically positive for influenza A virus H5 subtype. Two of these were also virologically positive for H5 influenza A virus.** *In comparison in the 2005 survey 46 duck holdings and 12 geese holdings were positive for avian influenza subtypes H5 & H7, with a further two inconclusive for H5 subtype.*
- **Four game bird holdings were serologically positive for H5 influenza A virus. One of these was a pheasant and three were mallard holdings.**

- **No free-range chicken holdings were reported serologically positive as was the case in the previous two years.** *In the 2005 survey two out of 156 free-range chicken holdings tested positive.*

Germany

- Samples were collected from chicken breeders, laying hens (including free-range hens), broilers, fattening turkeys, breeder turkeys, backyard flocks, ducks and geese, game birds and ratites.
- Five chicken breeder holdings were sampled from one region (total not known).
- 251 laying hen holdings (housed and free-range) were sampled from 10 regions (total not known).
- Eight broiler holdings were sampled from two regions (total not known).
- 188 fattening turkey holdings were sampled from eight regions (total not known).
- Two breeder turkey holdings were sampled from one region (total not known).
- 78 backyard flock holdings were sampled from four regions (total not known).
- 435 duck/geese holdings were sampled from 12 regions (total not known).
- 10 game bird holdings were sampled from four regions (total not known).
- 47 ratite holdings were sampled from six regions (total not known).
- The required number of holdings were sampled for the laying hens, fattening turkeys, backyard flocks and duck/geese categories, whilst it is not known whether sufficient holdings were sampled for chicken breeders, broilers, turkey breeders, game birds, and ratites categories as the total was not known.
- Germany reported from 12 regions. The number of regions sampled varied by poultry category.
- **16 laying hen holdings were serologically positive for influenza A viruses, of subtype(s) other than H5 or H7. None of these positives were from free-range hens.**

- **One fattening turkey holding was serologically positive for influenza A viruses, other than H5 or H7.**
- **10 backyard flock holdings were serologically positive for influenza A viruses, other than H5 or H7.**
- **Three duck and geese holdings were serologically positive for H5 (2) or H7 (1), two holdings for subtype H5 and one holding for subtype H7.** *In 2005 two duck/geese holdings were serologically positive for influenza A viruses, one holding for subtype H5 and one holding for H7. One holding was virologically positive for H6N1 influenza A virus.*
- **One game bird holding was serologically positive for influenza A viruses other than H5 or H7**
- **No ratite holdings were serologically positive for influenza A viruses,** *unlike in the 2005 survey when one ratite holding was serologically positive for influenza A virus and a follow-up investigation revealed the presence of H5N3 subtype.*

Greece

- Samples were reported from chicken breeders, laying hens, broilers, fattening turkeys, ducks and geese, game birds and ratites.
- Six chicken breeder holdings were sampled from three regions (total not known).
- 70 laying hen holdings were sampled from 12 regions (total not known).
- 78 broiler holdings were sampled from five regions (total not known).
- 26 fattening turkey holdings were sampled from seven regions (total not known).
- 140 duck/geese holdings were sampled from 26 regions (total not known).
- 22 game bird holdings were sampled (total not known).
- 18 ratite holdings were sampled (total not known).
- The required number of holdings for categories laying hens, broilers, and ducks/geese were sampled. It is not known if sufficient holdings were sampled for

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the categories chicken breeders, fattening turkeys, game birds, and ratites as the total number of holdings was not reported.

- Greece reported from 26 regions overall. The number of regions sampled varied by poultry category.
- **No positive holdings were reported as in the previous survey.** *In 2004-2005 two laying hen holdings, two broiler holdings and one fattening turkey holding were found positive for type A influenza viruses (on ELISA), but negative for subtypes H5 & H7.*

Hungary

- Samples were reported from holdings of chickens (breeding flocks and egg layer holdings), turkeys, “other poultry” holdings (quail, ostriches, partridges, pheasants, wild ducks), ducks and geese, and backyard flocks.
- 67 hen holdings were sampled (total 749). Hens (breeding flocks and table egg layer holdings) were reported as laying hens.
- 91 turkey holdings (no reliable stratification) were sampled (total 407).
- 2294 backyard flocks holdings were sampled (total not known). These were reported as:
 - 836 ‘hen’ holdings sampled (total not known).
 - 232 ‘turkey’ holdings sampled (total not known).
 - 386 ‘other poultries’ holdings sampled (total not known).
 - 840 ‘duck and geese’ holdings sampled (total not known).
 - These were all tested through RT-PCR.
- 174 holdings of ducks/geese were sampled (total 800).
- 53 “other poultry” holdings (quail, ostrich, pheasants, partridges and wild ducks) were sampled (total 119), reported as game birds.

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- Hungary sampled the required number of holdings for the laying hens, fattening turkeys, backyard flocks, ducks/geese, and game birds categories.
- Hungary reported from 20 regions, but the number of regions sampled varied by poultry category.
- **As in the previous year's survey, 2005, no positive holdings were reported.**

Ireland

- Samples were reported from caged laying hens, free range laying hens, broiler breeders, fattening turkeys, breeding turkeys, ducks and geese.
- 77 broiler breeder holdings were sampled (92 total).
- 141 laying hen holdings were sampled (183 total).
 - These were reported as two sub-categories:
 - 66 caged laying hen holdings were sampled (73 total).
 - 75 free-range laying hen holdings were sampled (110 total).
- 77 fattening turkey holdings were sampled (107 total).
- Nine breeding turkey holdings were sampled (13 total).
- Two duck / geese holdings (one duck fatteners and one geese) were sampled (two total).
- Ireland sampled the required number of holdings for the categories chicken breeders, laying hens, and ducks/geese, and insufficient samples in categories fattening turkeys and breeding turkeys.
- Ireland reported from eight regions. The number of regions sampled varied by poultry category.
- **No positive holdings were reported, as in the previous years.**

Italy

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- Samples were reported from chicken breeders, laying hens, fattening turkeys, breeder turkeys, ducks and geese, ratites, and game birds (partridges, pheasants, and guinea fowl).
- 244 chicken breeder holdings were sampled (251 total).
- 1100 laying hen holdings were sampled (1288 total).
- 408 fattening turkey holdings were sampled (457 total).
- 56 breeding turkey holdings were sampled (57 total).
- 104 duck/geese holdings were sampled (160 total).
- 325 game bird holdings were sampled (422 total)
 - These were reported as:
 - 228 partridges and pheasant holdings were sampled. (308 total)
 - 97 guinea fowl holdings were sampled (114 total)
- 98 ratite holdings were sampled (183 total).
- The required number of holdings were sampled for the chicken breeders, laying hens, fattening turkeys, breeder turkeys, ducks/geese, game birds, and ratite categories.
- Italy reported from 20 regions. The number of regions sampled varied by poultry category.
- **In contrast to 2005-2006, positive holdings were reported.**
- **One duck and goose holding was serologically and virologically positive for H5 influenza A virus,**
- **One game bird holding (pheasant and partridge) was serologically positive for H5 influenza A virus.**
- *(In 2004-2005 two broiler holdings were positive for subtype H7 influenza A viruses, 27 fattening turkey holdings were positive for subtype H7 influenza A virus,*

one duck/geese holding was serologically positive for H5 influenza A virus and one ratite holding was also positive for H5 influenza A virus).

Latvia

- Samples were reported from laying hens, fattening turkeys, backyard flocks (laying hens and turkeys in non-commercial holdings), ducks and geese, game birds (guinea fowl, pheasants, and quails) and ratites (ostriches).
- 26 laying hen holdings were sampled (26 total).
- One fattening turkey holdings was sampled from one region (one total).
- 91 backyard flock holdings were sampled (total not known).
- Three duck and geese holdings were sampled from two regions (three total).
- Nine game bird holdings were sampled (nine total).
 - These were reported as:
 - One guinea fowl holding was sampled (one total).
 - Two pheasant holdings were sampled from one region (two total).
 - Six quail holdings were sampled from five regions (six total).
- Three ostrich holdings were sampled from two regions (three total).
- Latvia sampled the required number of holdings for the laying hens, fattening turkeys, backyard flocks, ducks/geese, game birds, and ratites categories.
- Latvia reported from 26 regions, but the number of regions sampled varied by poultry category.
- **No positive holdings were reported, as in the previous year's survey.**

Lithuania

- Samples were reported from chicken breeders, laying hens, broilers, fattening turkeys, ducks and geese, backyard flocks, and game birds (pigeons).

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- Two chicken breeder holdings were sampled (total not known).
- 12 laying hen holdings were sampled (total not known).
- Nine broiler holdings were sampled (total not known).
- Two fattening turkey holdings were sampled (total not known).
- 65 back yard flocks were sampled (total not known).
- 74 duck/goose holdings were sampled (total not known).
- 11 game bird holdings were sampled (total not known).
- Lithuania sampled the required number of holdings for the backyard flock category, but it was not known if sufficient numbers were sampled for the categories chicken breeders, laying hens, broilers, fattening turkeys, ducks/geese, and game birds as the total number of holdings was not reported (and the numbers sampled are less than the highest number required to be sampled).
- Lithuania reported as a single region.
- **No positive holdings were reported, as in the previous year's survey.**

Luxembourg

- Samples were reported from laying hens (barn, caged, free-range and organic) and ratites (ostriches).
- 14 laying hen holdings were sampled (14 total).
 - These were reported as:
 - Seven barn holdings
 - One caged holding
 - Two free-range holdings
 - Four organic holdings
- One ratite holding was sampled (one total).

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- The required number of holdings were sampled for the categories laying hens and ratites.
- Luxembourg reported from one region.
- **No positive holdings were reported, as in the previous year's survey.**

Malta

- Samples were reported from laying hens.
- 71 Laying hen holdings were sampled (83 total)
- 120 layer holdings were due to be sampled in the submitted and approved programme.
- 72 mixed poultry holdings were due to be sampled in the submitted and approved programme.
- One turkey holding was due to be sampled in the submitted programme.
- Malta sampled the required number of holdings for the category laying hens.
- Malta reported from one region.
- **No holdings were positive, as in the previous years survey** (*in 2004-2005 14 laying hen holdings were reported positive for influenza A viruses, all 14 were negative for subtypes H5 and H7*).

The Netherlands

- Samples were reported from chicken breeders, laying hens (including ready to lay pullets), broilers, breeder turkeys, and ducks.
- 919 chicken breeder holdings were sampled (304 total). The holdings of chicken breeders were tested at least once a year; but they also tested every new flock. This included grandparent flocks (layers and broilers), parent flocks (layers and broilers), the layer breeders and the broiler breeders.

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- 4,696 laying hen holdings were sampled (1405 total).
 - These were reported/submitted as:
 - 589 free-range laying hens sampled (297 total).
 - 1,862 laying hens kept inside (898 total).
 - 2,245 ready to lay pullets (210 total).
 - (The holdings were tested at least once a year for laying hens kept inside, and for ready to lay pullets every new flock is tested).
- 943 broiler holdings were sampled (669 total)- all holdings were tested at least once a year.
- 4 breeding turkey holdings were sampled (3 total).
- 61 duck holdings were sampled (67 total).
- In several categories the number of holdings sampled exceeded the total number of holdings given; this is because repeated sampling was carried out. As each holding was sampled at least once, the 95% confidence interval for prevalence was calculated based on the total number of holdings given.
- The Netherlands sampled the required number of holdings for the chicken breeders, laying hens, broilers, breeder turkeys, and ducks/geese categories.
- **One chicken breeder holding was serologically positive for H7 influenza A virus.**
- *No positive holdings were reported in the previous (2005) survey. In 2004 one free range layer holding was serologically positive for H7 subtype and three duck holdings were serologically positive for H5 subtype.*

Poland

- Samples were reported from chicken breeders, laying hens, broiler turkeys, ducks and geese, game birds (pheasants) and ratites.
- 29 chicken breeder holdings were sampled from three regions (43 total).

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- 102 laying hen holdings were sampled from three regions (130 total).
- 93 broiler turkey holdings were sampled from three regions (136 total). Reported as fattening turkeys.
- 205 duck/geese holdings were sampled from four regions (369 total).
- 14 pheasant holdings were sampled from two regions (14 total). Reported as game birds.
- 15 ratite holdings were sampled from two regions (33 total).
- Sufficient numbers of holdings were sampled for the categories laying hens, fattening turkeys, ducks/geese, and game birds, and insufficient numbers were sampled in the categories chicken breeders, and ratites.
- Poland reported from four regions. The number of regions sampled varied by poultry category.
- **One goose breeder holding was initially serologically positive for H7 influenza A virus. In subsequent tests the samples were negative on serology and virology, and so the flock was judged to be negative for AI infection. Therefore in summary no holdings were positive.**
- *In the 2005-2006 survey, two duck/geese holdings were serologically positive for H5 influenza A viruses but the results of the virological tests were negative. In 2004-2005 one duck/geese holding was serologically positive for H5 subtype.*

Portugal

- Samples were reported from chicken breeders, laying hens, broilers, free range broiler hens, fattening turkeys, backyard flocks, ducks and geese, and game birds (quail).
- They also reported samples from zoos, pet shops and wild birds, however these are not reported in this survey as separate numbers/figures from each could not be determined. 4214 total samples from captive wild birds were reported, and 11 positives were found (three H5 subtype, four H7 subtype and four other subtype).

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Due to overlap with wild birds, some may have already been reported in wild birds, and most positives are likely to have been reported in the wild bird survey.

- 18 chicken breeder holdings were sampled (18 total).
- 78 laying hen holdings were sampled (205 total).
- 2362 broiler holdings were reported but none were sampled. In addition 101 free range broiler holdings (reported as 'Hen of the Field') were sampled (101 total).
- 95 fattening turkey holdings were sampled (210 total).
- 2726 backyard flocks (reported as 'Hen of the Field') were sampled
- 13 duck/geese holdings were sampled (16 total).
- 23 game bird holdings were sampled (23 total).
- 40 ratite holdings were sampled (56 total).
- Portugal sampled the required number of holdings in the chicken breeders, laying hens, broilers, fattening turkeys, backyard flocks, and game birds categories, however, insufficient numbers were sampled in the categories ducks/geese and ratites.
- Portugal reported from nine regions, although the number of regions sampled varied by poultry category.
- **No positive holdings were reported, as in the previous year.**

Slovak Republic

- Samples were reported from chicken breeders, laying hens, broilers, fattening turkeys, breeder turkeys, backyard flocks, ducks and geese, game birds and ratites.
- 30 laying hen holdings were sampled from eight regions (41 total)
- 116 broiler holdings were sampled from eight regions (135 total).
- 20 chicken breeder holdings were sampled from six regions (50 total)

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- 12 fattening turkey holdings were sampled from six regions (15 total).
- Four breeder turkey holdings were sampled from one region (four total).
- 181 backyard flocks were sampled from seven regions (54,509 total).
- 20 duck/geese holdings were sampled from three regions (14 total).
- 24 game bird holdings were sampled from six regions (31 total).
- 23 ratite holdings were sampled from five regions (28 total).
- The Slovak Republic sampled the required number of holdings for the categories broilers, breeder turkeys, and backyard flocks, and insufficient numbers were sampled in categories chicken breeders, laying hens, fattening turkeys, game birds and ratites. For the ducks/geese category, although the number sampled was greater than the actual number of total holdings, the number tested was not sufficient as not all holdings reported were sampled as was required.
- Slovak Republic reported from eight individual regions. The number of regions sampled varied by poultry category.
- **No positive holdings were reported, as in the previous year.**

Slovenia

- Samples were reported from chicken breeders, laying hens, fattening turkeys, game birds, and ratites.
- 12 chicken breeder holdings were sampled (12 total).
- 61 laying hen holdings were sampled (137 total).
- 53 fattening turkey holdings were sampled (68 total).
- Nine game bird holdings were sampled (10 total).
 - These were reported as:
 - Eight pheasant holdings (eight total)
 - One quail holding (two total)

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- 15 ratite holdings were sampled (40 total).
- The required number of holdings was sampled for the chicken breeder and laying hens categories, and insufficient samples in the categories fattening turkeys, game birds, and ratites.
- Slovenia reported from one region.
- **No positive holdings were reported, as in the previous year's survey.**

Spain

- Samples were reported from chicken breeders, laying hens, free range laying hens, broilers, fattening turkeys, breeder turkeys, backyard flocks, ducks and geese, farmed game, ratites and others.
- 268 chicken breeder holdings were sampled from 12 regions (483 total).
- 861 laying hen holdings were sampled from 18 regions (1,315 total).
 - These were reported as:
 - 803 laying hen holdings were sampled from 18 regions (1,118 total)
 - 58 free range laying hen holdings were sampled from seven regions (197 total).
- 993 broiler holdings were sampled from 14 regions (5,904 total).
- 456 fattening turkey holdings were sampled from seven regions (522 total).
- Four breeder turkey holdings were sampled from one region (12 total).
- 3514 back-yard flocks were sampled from 15 regions (19,132 total)
- 175 duck and geese holdings were sampled from 14 regions (134 total).
- 381 farmed feathered game holdings were sampled from 16 regions (542 total).
- 89 ratite holdings were sampled from 13 regions (313 total).
- 649 'other' holdings were sampled from 14 regions (3737 total).

- Spain sampled the required number of holdings for the categories chicken breeders, laying hens, broilers, fattening turkeys, backyard flocks, ducks/geese, game birds, ratites, and others. Insufficient numbers were sampled in the category breeder turkeys.
- Spain reported from 19 regions. The number of regions sampled varied by poultry category.
- **10 laying hen holdings were serologically positive for influenza A viruses, one for H5 subtype and the remaining nine of subtypes other than H5 or H7. None of these positive holdings were free-range hens.**
- **Two backyard flocks were serologically positive for H5 subtype which was confirmed by PCR.**
- **Four duck and geese holdings were serologically positive to H5 subtype, of which two were also seropositive for H7 subtype. Of these four holdings, single duck and goose holdings were each virologically positive for the H5 and H7 subtypes.**
- **Two ratite holdings were positive for H5 by PCR.**
- Six 'other' holdings were serologically positive for influenza A viruses, and all of these were identified as subtype H5. These positive holdings were all zoological samples/holdings from the Andalucia region.
- **The number of positives found has increased since last year's survey. *In 2005 one duck/geese holding was positive for H5 subtype on serology and PCR. In 2004, two ratite holdings were positive for influenza A viruses; one was further identified as subtype H5 and the other subtype H7. Two 'other' holdings were also positive for influenza A viruses and were both further identified as subtype H5.***

Sweden

- Samples were reported from layer breeders and broiler breeders, laying hens, broilers, fattening turkeys, breeder turkeys, ducks and geese, and ratites.
- 40 chicken breeder holdings were sampled (40 total).
 - These were subdivided when submitted as:

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- 30 broiler breeders (30 total).
- 10 layer breeders (10 total).
- 60 laying hen holdings were sampled (351 total).
- Seven broiler (free range) holdings were sampled (25 total).
- 26 fattening turkey holdings were sampled (26 total).
- Four turkey breeder holdings were sampled (four total).
- 29 duck/geese flocks were sampled (30 total).
 - These included reported as:
 - One duck holding was sampled (two holdings total).
 - 28 geese holdings were sampled (28 holdings total).
- 15 ratite holdings were sampled (15 holdings which sent birds for slaughter, about 100 in total).
- The required number of holdings were sampled for the categories chicken breeders, laying hens, fattening turkeys, breeder turkeys, and ratites, and insufficient numbers were sampled in the broilers, and duck/geese categories.
- Sweden reported as a single region.
- **No positive holdings were reported, as in the previous year's survey.**

United Kingdom

- Samples were reported from chicken breeders, laying hens, fattening turkeys, breeder turkeys, ducks and geese, game birds (quails) and ratites.
- 57 chicken breeder holdings were sampled from three regions (992 total).
- 80 laying hen holdings were sampled from four regions (1,256 total).
- 95 fattening turkey holdings were sampled from four regions (575 total; 63 in total from Northern Ireland was the total number of turkey flocks with 500+ birds).

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- 11 breeder turkey holdings were sampled from two regions (141 total).
- 166 duck/geese holdings were sampled from four regions (826 total).
- 31 game bird (quail) holdings were sampled from three regions (112 total).
- 12 ratite holdings were sampled from two regions (153 total).
- The UK sampled the required number of holdings in the categories laying hens, fattening turkeys, and ducks and geese. The number of sampled holdings required was not met in the chicken breeders, breeder turkeys, game birds, and ratites categories.
- The UK reported as a four regions, the number of regions sampled varied by poultry category.
- **One goose holding tested positive serologically for H5 subtype, and one duck holding was serologically positive for both H5 and H7 subtypes.**
- *In 2005-2006, one goose holding was serologically positive for H5 subtype but virologically negative.*