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HEALTH & CONSUMERS DIRECTORATE-GENERAL
Unit 04 - Veterinary Control Programmes

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*Programmes for the eradication, control and monitoring of certain
animal diseases and zoonoses*

Survey programme for Avian Influenza in poultry and wild birds

Approved* for 2009 by Commission Decision 2008/897/EC

Ireland

* in accordance with Commission Decision 90/424/EEC

AVIAN INFLUENZA SURVEY PLAN FOR IRELAND 2009

1. Identification of the programme

Member State: IRELAND
Disease: AVIAN INFLUENZA
Year of implementation: 2009
Reference of this document: AI Survey Plan for Ireland 2009
In accordance with guidelines in Commission Decision 2007/268
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2. Description of the programme in poultry

2.1 Objectives, general requirements and criteria

The objectives for poultry survey are:

- Detecting subclinical infections with LPAI of subtypes H5 and H7 thereby complementing early detection systems and subsequently preventing possible mutation of these viruses to HPAI.
- Detecting infections of LPAI H5 and H7 subtypes in specifically targeted poultry populations at specific risk for infection due to their husbandry system or species-specific susceptibility.
- Contributing to the demonstration of a free status from notifiable avian influenza in the frame of international trade according to OIE rules.

The general requirements are:

- Sampling will take place between 1 Jan 2009 and 31 December 2009.
- Sampling will coincide with seasonal production where appropriate for certain poultry categories.
- Samples collected for other purposes will be used where possible.

- Testing will be carried out at the National Reference Laboratory (NRL) for avian influenza.
- All results will be sent to Community Reference Laboratory (CRL) for avian influenza for collation.
- The CRL will provide technical support and diagnostic reagents.

2.2

Design and implementation

Total poultry population

The approximate numbers of domestic fowl and turkeys on commercial sites is shown in Table A below. The number varies according to the time of year e.g. commercial turkeys are more numerous in the months leading up to Christmas.

Category	Species	No. holdings (2008)	Approximate No. birds (x 10 ³)
Broilers	Commercial Broilers	299	10,100
	Commercial Duck	3	324
	Commercial Geese	2	15
	Turkey	126	1,415
	Total	430	11,854
Poultry	GP broiler breeding	5	90
	GP broiler rearing	2	0
	PS broiler breeding	70	518
	PS broiler rearing	23	96
	PS turkey breeding	2	130
	PS turkey rearing	9	59
	Layer breeding	0	6
	Total	111	899
Commercial layers	Caged	91	1,258
	Free range/barn/organic	145	747
	Layer pullets	31	99
	Total	267	1,912
	Grand Total	808	14,665

Table A: Approximate population of commercial fowl & turkeys in Ireland (DAF Databases 2008)

The approximate proportions of the different species are as follows:

domestic fowl	83 %
turkeys	16 %
ducks	0.5 %

The population of poultry in June 2000 was 13.96 million (CSO Farm Census). This is the most recent year for which a complete farm census by region was carried out. A graph showing the number of poultry in each county is shown in **Annex I** below.

Poultry holdings

Figures for the numbers of commercial poultry holdings in each region are available from Department of Agriculture commercial poultry databases in April 2008, and are shown in **Annex II**. Commercial poultry holdings are defined as those that supply approved slaughter plants or local abattoirs, approved/registered hatcheries or registered packing centres and dealers. A map showing the location of the commercial holdings is shown in **Annex III** below.

There are no commercial farmed game (ostrich or quail) holdings in Ireland.

The map in **Annex IV** shows the number of commercial poultry holdings in each region (county).

Backyard flocks

The Department of Agriculture and Food introduced registration of all poultry and other captive bird holdings in 2005. To date, 9621 holdings have been registered. Of these approximately 8784 are considered as back yard flocks. A map showing the kernel density of back yard flocks in each county is included in **Annex IV** below. It is not proposed to sample back yard flocks in 2009.

Countries to be sampled for commercial poultry

- Sampling will be stratified throughout the country, taking account of higher risk categories:
- Located in higher density areas
 - Free range production
 - Multi-age production
 - Use of surface water
 - Longer life span (turkeys, layers, breeders)
 - Presence of more than one species on a holding

The countries to be targeted for sampling will be those with 20 or more commercial poultry holdings as shown in *Table B* below:

County	NUT 2 Region	NUT 3 Region	Total commercial holdings	% of total
Monaghan	IE01	IE011	365	44
Limerick	IE02	IE023	96	11
Cork	IE02	IE025	83	9
Cavan	IE01	IE011	80	9
Waterford	IE02	IE024	32	4
Meath	IE02	IE022	26	3

Table B: Higher density countries to be targeted for sampling

In addition, turkeys in County Laois (NUTS 2 IE01, NUTS 3 IE012) and breeding geese in County Kilkenny (NUTS 2 IE02, NUTS 3 IE024) will be included, as these species are of special interest.

Categories to be sampled

The following categories of poultry will be sampled:

- Commercial turkeys
- Commercial ducks
- Breeding turkeys
- Breeding ducks
- Breeding fowl
- Breeding geese
- Commercial layers (free-range)
- Commercial layers (caged)

Broilers will not be included in this survey, as their short life means that they are unlikely to sero-convert before they are slaughtered.

Number of holdings in each category to be sampled

In the case of turkeys, ducks and geese, the number of holdings to be sampled in each category in each county will be sufficient to give a 99% confidence of detecting at least one infected holding if the prevalence of infected holdings is 5% as in *Table C* below.

No. holdings in Member State	No. holdings to be sampled
Up to 46	all
47 - 60	47
61 - 100	59
101 - 350	80
> 350	90

Table C: Number of turkey, duck and geese holdings to be sampled

The number of holdings to be sampled from each category of **other species** within a region will be sufficient to give a 95% confidence of detecting at least one infected holding if the prevalence of infected holdings is 5% as in *Table D* below.

No. holdings in Member State	No. holdings to be sampled
Up to 34	all
35 – 50	35
51 – 80	42
81 – 250	53
> 250	60

Table D: Number of holdings of species other than turkeys, ducks or geese to be sampled

The number of holdings to be sampled in each category in each county is shown in **Annex V** below. A total of 280 will be sampled. This will amount to approximately **5600** samples at 10 samples per house and an average of 2 houses per site (with two HI tests per sample).

Number of samples to be taken per holding

The number of samples to be tested **per house** on each turkey or chicken holding will be sufficient to give a 95% confidence of detecting at least one infected bird if the prevalence of infected birds is 30% (minimum **10 samples**). Samplers will be asked to take 12 samples per house, to allow for a proportion of samples being unsuitable for testing.

In the case of back yard flocks, **10 samples** will be taken **from each epidemiological unit**.

In the case of ducks, geese, and quail **40-50 samples per holding** will be taken. Birds kept outdoors will be targeted where possible.

Where samples are taken for virological examination, pooling of up to 5 samples from the same holding will be permitted. In the case of duck farms, **10 swabs** will be taken from each holding.

Type of samples

Blood samples for serological testing will be taken from poultry (including ducks and geese).

Location of sampling

Commercial turkeys and ducks will be sampled in the slaughter plant, or if this is not possible fattening turkeys will be sampled on farm. Testing of breeding birds will be carried out on samples submitted under the Poultry Health Programme. Commercial layers and back yard flocks will be sampled on-farm.

Follow-up to positive results in poultry

All positive serological findings will be retrospectively investigated on the holdings, in accordance with Directive 2005/94/EC, and the conclusions reported to the Commission and the CRL.

Samples found positive for H5 or H7 in poultry will be reported to the Commission. Samples found positive for highly pathogenic avian influenza will be notified immediately in accordance with Council Directive 82/894/EC via the Animal Disease Notification System

Action on confirmation of HPAI

The measures on confirmation of HPAI as laid down in Council Directive 2005/94/EC will be applied in the event that HPAI is confirmed.

In the event of confirmation of HPAI H5N1 the additional measures laid down in Commission Decision 2006/415/EC will be applied.

Action on confirmation of LPAI

Directive 2005/94/EC will be applied if LPAI is confirmed.

Table 2.2.1 POULTRY HOLDINGS^(a) (except ducks and geese) TO BE SAMPLED

Serological investigation according to point B of Annex 1 on holdings of broilers/only when at risk/*fattening turkeys*/Schleichen breeders/turkey breeders/laying hens/free range laying hens/fratiles/farmed feathered game (pheasants, partridges, quails...)/"backward flocks"/others *etc.* as appropriate

NLT (2) code ^(b)	Total number of holdings ^(c)	PLEASE USE ONE FORM PER POULTRY CATEGORY			
		Total number of holdings to be sampled	Number of samples per holding (Average 2 houses per holding)	Total number of tests to be performed per method	Methods of laboratory analysis
TE01 (Larbs)	4	4	20	2	HI
TE01 (Cavan)	10	10	20	2	HI
TE02 (Cork)	5	5	20	2	HI
TE02 (Timmerick)	1	1	20	2	HI
TE02 (Meath)	5	5	20	2	HI
TE01 (Monaghan)	69	59	20	2	HI
TE02 (Waterford)	0	0			
Total	94	84			

(a) Holdings equals herds, flocks or establishments as appropriate.

(b) Refer to the location of the holding or origin

(c) Total number of holdings of one category of poultry in concerned ADNS region

Table 2.2.1. POULTRY HOLDINGS^(a) (except ducks and geese) TO BE SAMPLED

Serological investigation according to point B of Annex I on holdings of broilers (only when at risk)/fattening turkeys/chicken breeders/turkey breeders/laying hens/free range laying hens/raites/farmed feathered game (pheasants, partridges, quails...)/"backward flocks"/others [delete as appropriate]

NUT (2) code ^(b)	Total number of holdings ^(c)	PLEASE USE ONE FORM PER POULTRY CATEGORY		Methods of laboratory analysis.
		Total number of holdings to be sampled	Total number of tests to be performed per method	
IF01 (Cavan)	7	7	20	II
IF02 (Cork)	18	13	20	HI
IF02 (Limerick)	22	16	20	II
IF02 (Meath)	2	2	20	HI
IF01 (Monaghan)	23	23	20	HI
IF02 (Waterford)	4	4	20	II
Total	76	65		

(a) Holdings equals herds, flocks or establishments as appropriate.

(b) Refers to the location of the holding of origin.

(c) Total number of holdings of one category of poultry in concerned AEDNS region.

Table 2.2.1 POULTRY HOLDINGS (a) [except ducks and geese] TO BE SAMPLED

Scitological investigation according to point B of Annex 1 on holdings of broilers/only when at risk/fattening turkeys/chicken breeders/**TURKEY breeders/laying hens/free range laying hens/rattles/farmed feathered game (pheasants, partridges, quails...)/"backward flocks"/others (delete as appropriate)**

NUT (2) code ^(b)	Total number of holdings ^(c)	PLEASE USE ONE FORM PER POULTRY CATEGORY			
		Total number of holdings to be sampled	Number of samples per holding	Total number of tests to be performed per method	Methods of laboratory analysis
11-01 (Cavan)	0	0			
1E02 (Cork)	0	0	20	2	HI
1E02 (Limerick)	0	0			
1E02 (Meath)	0	0			
1E01 (Monaghan)	10	10	20	2	HI
1E02 (Waterford)	0	0			
Total	10	10			

(a) Holdings equals flocks, flocks or establishments as appropriate.
 (b) Refers to the location of the holding of origin.
 (c) Total number of holdings of one category of poultry in concerned AONS region.

Table 2.2.1. POULTRY HOLDINGS^(a) (except ducks and geese) TO BE SAMPLED

Serological investigation according to point B of Annex I on holdings of broilers (only when at risk); fattening turkeys; chicken breeders; turkey breeders; **laying hens**; free range laying hens; ratites; farmed feathered game (pheasants, partridges, quails...); "backward flocks"/others *[delete as appropriate]*

PLEASE USE ONE FORM PER POULTRY CATEGORY

NUT (2) code ^(b)	Total number of holdings ^(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests to be performed per method	Methods of laboratory analysis.
DE01 (Cavan)	1	1	20	2	HI
DE02 (Cork)	7	7	20	2	HI
DE02 (Limerick)	0	0	20	2	HI
DE02 (Meath)	1	1	20	2	HI
DE01 (Monaghan)	67	41	20	2	HI
DE02 (Waterford)	0	0	20	2	HI
Total	82	50			

(a) Holdings equids herds, flocks or establishments as appropriate.

(b) Refers to the location of the holding of origin

(c) Total number of holdings of one category of poultry in concerned ADNS region.

Table 2.2.1. POULTRY HOLDINGS^(a) (except ducks and geese) TO BE SAMPLED
 Serological investigation according to point B of Annex I on holdings of broiler/only when at risk/fattening turkeys/schinken breeders/turkey breeders/laying
hens/free range laying hens/ratives/farmed feathered game (pheasants, partridges, quails...)/"backyard flocks"/"others (delete as appropriate)

NLT (2) code ^(b)	Total number of holdings ^(c)	PLEASE USE ONE FORM PER POULTRY CATEGORY				Total number of tests to be performed per method	Methods of laboratory analysis
		Total number of holdings to be sampled	Number of samples per holding				
IE01 (Cavan)	34	22	20		2	HI	
IE02 (Cork)	8	8	20		2	HI	
IE02 (Limerick)	2	2	20		2	HI	
IE02 (Meath)	12	12	20		2	HI	
IE01 (Monaghan)	30	20	20		2	HI	
IE02 (WATERFORD)	3	3	20		2	HI	
Total	89	67					

(a) Holdings equals herds, flocks or establishments as appropriate.
 (b) Refers to the location of the holding of origin.
 (c) Total number of holdings of one category of poultry in concerned AONNs region.

3. Description of the programme in wild birds:

3.1 Objectives, general requirements and criteria

Objectives for wild bird survey

Virological surveillance for avian influenza in wild birds aimed at identifying the risk of introduction of AI viruses (LPAI and HPAI) to domestic poultry by:

- ensuring early detection of HPAI H5N1 by investigating increased incidence of morbidity and mortality in wild birds, in particular in selected "higher risk" species.
- in the event that HPAI H5N1 is detected in wild birds, then surveillance of live and dead wild birds will be enhanced to determine whether wild birds of other species can act as asymptomatic carriers or "bridge species".
- continuing a "baseline" surveillance of different species of free living migratory birds as part of continuous monitoring of LPAI viruses. Anseriformes (water fowl) and Charadriiformes (shorebirds and gulls) will be the main sampling targets to assess if they carry LPAI viruses of H5 and H7 subtypes (which would in any case also detect HPAI H5N1 and other HPAI, if present). "Higher risk species" must be targeted in particular.

General requirements

- (1) Sampling will take place between 1 Jan 2009 and 31 December 2009.
- (2) Testing of samples will be carried out at the NRL.
- (3) All results shall be sent to the CRL for collation.
- (4) The CRL shall provide technical support and keep a stock of diagnostic reagents. Antigens for use in the surveillance will be supplied to NRL by the CRL to ensure uniformity.
- (5) All avian influenza virus isolates of cases in wild birds will be submitted to the CRL in accordance with Community legislation, unless a derogation according to paragraph 4 of Chapter V under Differential diagnosis in the avian influenza Diagnostic Manual laid down in Decision 2006/437/EC is granted. Viruses of H5/H7 subtype will be submitted without delay and will be subjected to the standard characterisation tests (nucleotide sequencing/IVPI) according to the said diagnostic manual.

Design and implementation

The survey will comprise two parts - active surveillance of hunted wild birds and passive surveillance of wild birds found dead.

Active surveillance in hunted wild birds

This will be targeted at:

- a) species presenting a higher risk (see list in **Annex VI**), based on their origin and migratory pathways, the number of these species in the country and their likelihood of contact with poultry.
- b) birds from sites at risk, based on those sites where high numbers of migratory birds of different species mix (particularly high risk species), proximity to domestic poultry farms and location along migratory routes.

The list of species in **Annex VI** will be amended in line with up-to-date information received from the Commission. Of the current 24 high-risk species and 4 medium risk species listed in **Annex VII**, 13 are species that are hunted in Ireland. Sampling will predominantly take place during the hunting season, which is September 1st to January 31st for ducks and golden plover, October 16th to January 31st for Canada geese, September 1st to October 15th for greylag geese, except for Cork and Wexford where close is January 31st, and November 1st to November 30th for curlew. Sampling of hunted birds will be carried out by hunters in association with Regional Game Councils.

Passive surveillance in wild birds found dead

This will primarily target "high and medium risk species" (**Annex VI**), or other species where an abnormally high mortality or significant disease outbreak occurs. The latter may act as "bridge species" between higher risk species such as migratory water fowl and poultry. They may include species that act as scavengers (corvidae, some raptors) and some passerine species. This will be carried out in cooperation with the National Parks and Wildlife Service and BirdWatch Ireland. Samples notified by the public, National Parks and Wildlife Service or Birdwatch Ireland will be collected by Department of Agriculture staff.

Sampling will be targeted at:

- a) high risk species listed in **Annex VI**, and birds living in contact with them listed in **Annex VII**.
- b) birds from countries at risk as referred to in **Section 5.1.2** below
- c) birds from sites where mortality in several species occurs.

Number of samples to be taken from wild birds

A total of **1000** samples will be taken. These will comprise:

- **500** from passive surveillance
- **500** from active surveillance.

Samples

Oropharyngeal swabs and cloacal swabs, containing faeces or fresh faeces will be taken from hunted birds. Tissue samples (from the brain, heart, lung, kidney and intestines) will also be taken from birds found dead. Pooling of up to 5 samples from birds of the same species collected at the same site at the same time will be permitted in the laboratory. Where pooled samples are taken, it will be ensured that individual samples can be retested, in the event of a positive finding in order to verify the species, location and date of sampling.

Samples will be transported to the CVRL in transport medium at 4°C within 48 hours.

Follow-up to positive results in wild birds

All negative and positive results will be reported quarterly to the Commission. In the event that HPAI H5N1 is suspected or confirmed, the measures laid down in Commission Decision 2006/563/EC will be applied.

Within the high-risk area, active surveillance will be carried out on wild birds of both high-risk and “bridge” species. A list of possible “bridge species” is included in **Annex VII**.

Table 3.2.1 WILD BIRDS - investigation according to Annex II

NUT (2) code ^(a)	Wild birds to be sampled	Total number of samples to be taken for active survey	Total number of samples to be taken for passive survey
IE01			
IE02			
Total	1000	500	500

(a) Refers to the place of collection of birds/samples

3.3 Laboratory testing: description of the used laboratory tests

For wild birds, the polymerase chain reaction (PCR) test will be used. Samples will be screened with the RRT PCR (M gene) test, with rapid testing of positives for H5 and H7 (within 2 weeks). Virus isolation test will be carried out on all positive samples. All viruses isolated will be sent to the CRL. H5 and H7 subtypes will be subjected to characterisation (nucleotide sequencing) to determine whether they are highly pathogenic or low pathogenic at the NRI. Characterisation of neuraminidase will be carried out at the CRL.

The results will be submitted quarterly by the end of the month following the end of each quarter, in the format laid down by the Commission.

4. Description of the epidemiological situation of the disease in poultry during the last five years

Outbreaks of both highly pathogenic and low pathogenic avian influenza have occurred in Ireland. The last outbreak of highly pathogenic avian influenza occurred in 1983. There have been 6 introductions of low pathogenic avian influenza into poultry flocks since that time. Low pathogenic strains of avian influenza have also been isolated from wild birds in each year of the EU survey. A list of all isolates of avian influenza that have been detected in Ireland is given in *Table E* below.

Year	Subtype	Pathogenicity	Flocks from which isolates were detected
1983	H5N8	HPAI	2 commercial turkey 1 broiler 1 duck
1987	H9N2	LPAI	1 turkey breeder
1989	H7N7	LPAI	1 broiler breeder
1991	H6N2	LPAI	1 commercial turkey 1 broiler breeder
1993	H3N8 H9N3	LPAI	1 imported mallard ducks
1995	H7N7	LPAI	2 commercial turkeys
1997	H9N2	LPAI	1 breeding pheasants
1998	H7N7	LPAI	28 commercial turkeys 2 commercial turkeys (NI) 1 broiler breeder

Table E: Isolates of avian influenza viruses from poultry in Ireland

	Nov 2002- May 2003	Mar-Dec 2004	July 2005- Jan 2006	Feb-Dec 2006	Jan-Dec 2007
No. poultry holdings sampled	248	321	305	306	302
No. positive	0	0	0	0	0

Table F: Results of serological monitoring of poultry in Ireland under the EU Survey for H5 and H7

4.1 Measures included in the programme for poultry survey

4.1.1 Designation of the central authority charged with supervising and coordinating the departments responsible for implementing the programme

The Department of Agriculture and Food is responsible for supervising and coordinating the programme in poultry.

4.1.2 System in place for the registration of holdings

Holdings containing birds of any type and number must be registered with the Department of Agriculture, under S.I. No. 42 of 2008. Registration is carried out at the local District Veterinary Office. The register is maintained on the Animal Health Computer System (AHCS).

4.1.3 Data on vaccination

Vaccination of zoo birds against avian influenza is carried out in Ireland under Commission Decision 2007/598/EC. Two zoos currently contain vaccinated birds. The vaccine subtype used is H5N2. Vaccination of poultry against avian influenza is prohibited.

5. Description of the epidemiological situation of the disease in wild birds during the last five years

Surveillance of wild birds for avian influenza has been carried out since 2003. The results of the surveys are shown in Tables G and H below.

	Nov 2002- May 2003	Mar-Dec 2004	July 2005- Jan 2006	Feb-Dec 2006	Jan-Dec 2007
Wild birds	449 submissions (VIT)	360 submissions (VIT)	757 submissions (VII)	1908 samples 1,070 birds (PCR +/- VIT)	728 birds (PCR +/- VIT)
Positive	LPAI H10	LPAI H6, 10 & 11	12 LPAI (not H5/H7)	3 LPAI (2 H11, 1 H5)	4 LPAI (3 H5)

Table G. Results of avian influenza surveys carried out in wild birds in Ireland (2003-2006)

Year	Subtype	Pathogenicity	Birds from which isolates were detected
2003	H10N5	LPAI	Wild mallards
2004	H6N6	LPAI	Wild wigeon
	H10N7	LPAI	Wild mallards
	H11N9	LPAI	Wild mallards
2005	Not H5 or H7 (subtypes not determined)	LPAI	Wild wigeon
		LPAI	Wild mallards
2006	H11	LPAI	Ornamental duck in a wildlife park
	H11	LPAI	Wild duck
	H5	LPAI	Wild teal
2007	H5 (3)	LPAI	Wild teal
	Not H5 or H7 (subtypes not determined)	LPAI	Wild teal

Table H. Avian influenza viruses isolated from wild birds in Ireland

5.1. Measures included in the programme for wild birds survey

5.1.1 Designation of the central authority charged with supervising and coordinating the departments responsible for implementing the programme:

The Department of Agriculture is responsible for supervising and coordinating the implementation of the programme. The Department is assisted in the collection of active wild bird samples by hunters (members of the Regional Game Councils).

5.1.2 Description and delimitation of the geographical and administrative areas in which the programme is to be applied:

Hunted birds in Monaghan, Cavan, Louth will be targeted because of the density of commercial poultry in Monaghan and Cavan and the proximity to wintering waterfowl habitat in Dundalk Bay and the inland waterways of Monaghan and Cavan; Limerick and Clare because of the number of wintering waterfowl on the Shannon Estuary and Callows and their proximity to poultry farms in county Limerick; and Wexford because of the number of waterfowl using the Wexford Slobs (see map in Annex VIII below). Sampling will be carried out by gun club members trained by DAF staff, and coordinated by DAF with the cooperation of the National Association of Regional Game Councils. The remainder of samples will be taken as part of the passive surveillance.

5.1.3 Estimation of the local and/or migratory wildlife population

Ireland has an abundance of wetlands - both coastal and inland. Winter bird counts are taken at some 690 sites annually, as part of the Irish Wetland Bird Survey. Sites of international importance, supporting a mean of more than 20,000 birds in the 1998/99 to 2002/3 surveys are as follows:

- Wexford Harbour & Slobs
- Dundalk Bay
- Shannon & Fergus Estuary
- Lough Foyle
- Lough Corrib
- Dublin Bay
- Little Brosna Callows
- Tralee Bay, Lough Gill & Akeragh Lough
- Lough Swilly
- Ballynacoda
- Shannon Callows
- Rogerstown Estuary

Waterbirds wintering in Ireland include wild fowl (swans, geese, ducks, divers, grebes and cormorant), waders (includes oystercatcher, plover, lapwing, sandpiper, curlew and woodcock) and gulls. Almost 140 water bird species have been recorded, of which 58 species occur in

significant numbers at a variety of sites (33 wildfowl, 20 wader, 5 gull). Overall, 20 waterbird species occur in internationally important numbers at one or more wetland sites. There are 18 waterbird species on the quarry list (three goose species, 12 ducks, and three waders), and the hunting of most of these species is confined to the period 1 September to 31 January.

Most wintering waterbird species in Ireland are migratory and arrive between July and early November. There are two principal flyways: the East Atlantic Flyway and the Eastern or Baltic Flyway. The east Atlantic Flyway includes Iceland and Greenland, and is used as a staging area for species that breed further west in the Canadian Arctic. Species that use this flyway include the light bellied Brent goose and Greenland white fronted goose. The Eastern Flyway extends from Scandinavia to Siberia. Birds that breed in Siberia migrate from there in a south westerly direction along the Arctic Ocean shoreline or across the tundra to the Baltic Sea and then on to the North Sea and countries of north western Europe. The breeding origin of most species wintering in Ireland, are countries in northerly (Arctic) latitudes. However, Ireland supports small numbers of some species during the breeding season. These are considered as partial migrants (some remain all year in Ireland, whilst others migrate further south in winter).

During winter, there is regular movement of waterbirds between roosting and feeding sites. Many swans and geese fly up to 20 km to wetland roosts at night. Large-scale movements also occur, which are directly related to weather conditions. In particular, during cold snaps, species move from inland wetlands to larger riverine or coastal locations, which are less likely to freeze. In cold weather periods in Europe, a number of species from northern Europe and Britain move west to Ireland. In extreme situations, wigeon and teal move south to France and Iberia where they may mix with populations breeding on the Black Sea/Mediterranean.

6. Measures in place as regards the notification of the disease

Arrangements to notify the Department of Agriculture of any unusual mortalities in wild birds have been made with the following organisations:

- National Parks and Wildlife Service (NPWS which is part of the Department of Environment, Heritage and Local Government)
- National Association of Regional Game Councils
- BirdWatch Ireland

The list of target species has been circulated to staff/members of these organisations.

A protocol for cooperation has been agreed between the NPWS and the Department of Agriculture. This has been updated in April 2007 and circulated to NPWS and DAF staff.

The list of target species and a poster showing pictures of these species is available on the Department of Agriculture website. The poster has been circulated to Department of Agriculture District Offices, Local Authorities and local libraries.

An avian influenza help-line to deal with reports of dead wild birds is operated by the Department of Agriculture, Department of Agriculture veterinary and technical staff at local level are available to recover dead wild birds.

7. Costs

7.1. Detailed analysis of the costs:

7.1.1 Poultry

The detailed analysis of the costs for the survey in poultry is set out in Annex IX below.

7.1.2 Wild birds

The detailed analysis of the costs for the survey in wild birds is set out in Annex X below.

7.2 Summary of the costs

7.2.1 Poultry survey

Methods of laboratory analysis	Measures eligible for co-financing survey in poultry		Total cost
	Number of tests to perform per method	Unitary test cost (per method)	
Serological pre-screening ¹			
Haemagglutination-inhibition-test (HI) for H5/H7 ²	5600	€10 (double HI)	€56,000
Virus isolation test			
PCR test			
Other measures to be covered	Specify activities (Annex IX)		
Sampling	Collection cost (on-farm)		€2,400
Sampling	Collection cost (at 4 plants)		€0
Others	Equipment and postage		€600
Total			€59,000

¹ Specify the laboratory test to be used

² Specify number of tests for H5 and for H7

7.2.2 Wild bird survey

Measures eligible for co-financing survey wild birds (Annex X)		
Methods of laboratory analysis	Number tests to perform per method	Unitary test cost (per method)
Serological pre-screening		
Haemagglutination-inhibition test (HI) for H5N1	50	€60 (50% recoverable)
Virus isolation test	2000 (1000 birds)	€10,50
PCR test	Specify activities covered	€1500
Other measures to be covered		€21,000
Airport charges for isolates to CRI		
Sampling	Collection costs	€200
Others	Equipment and postage	€39,000
Total		€62,300

The estimated total actual cost of the programme is as follows:

Poultry	€59,000 (testing and sampling)
Wild birds	€63,800 (testing and sampling)
TOTAL	€122,800

The estimated eligible costs for testing of poultry and of wild birds are set out in Annexes IX and X. The total sums are as follows:

Poultry	€56,000	
Wild birds	€22,500	(capped VIT)
TOTAL	€78,500	

This excludes any follow-up testing resulting from positive samples.

The estimated total actual cost of sampling of wild birds is (Annex V) is: €39,600

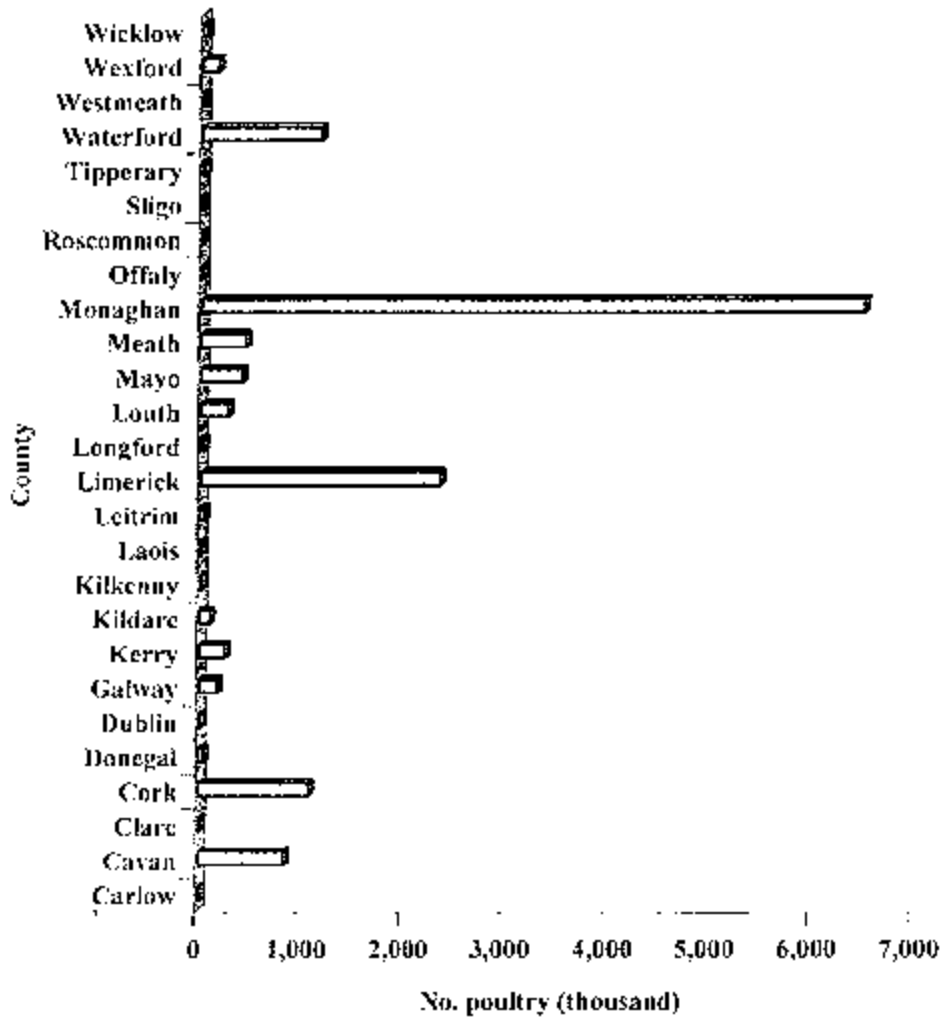
The estimated eligible costs for sampling wild birds (€20 per bird sampled lump sum) is: €20,000

The estimated total claimable is as follows (at 50% of the eligible costs of testing and lump sum for sampling wild birds):

Poultry	€28,000	(testing only)
Wild birds	€31,250	(testing & sampling)
TOTAL	€59,250	

ANNEX I

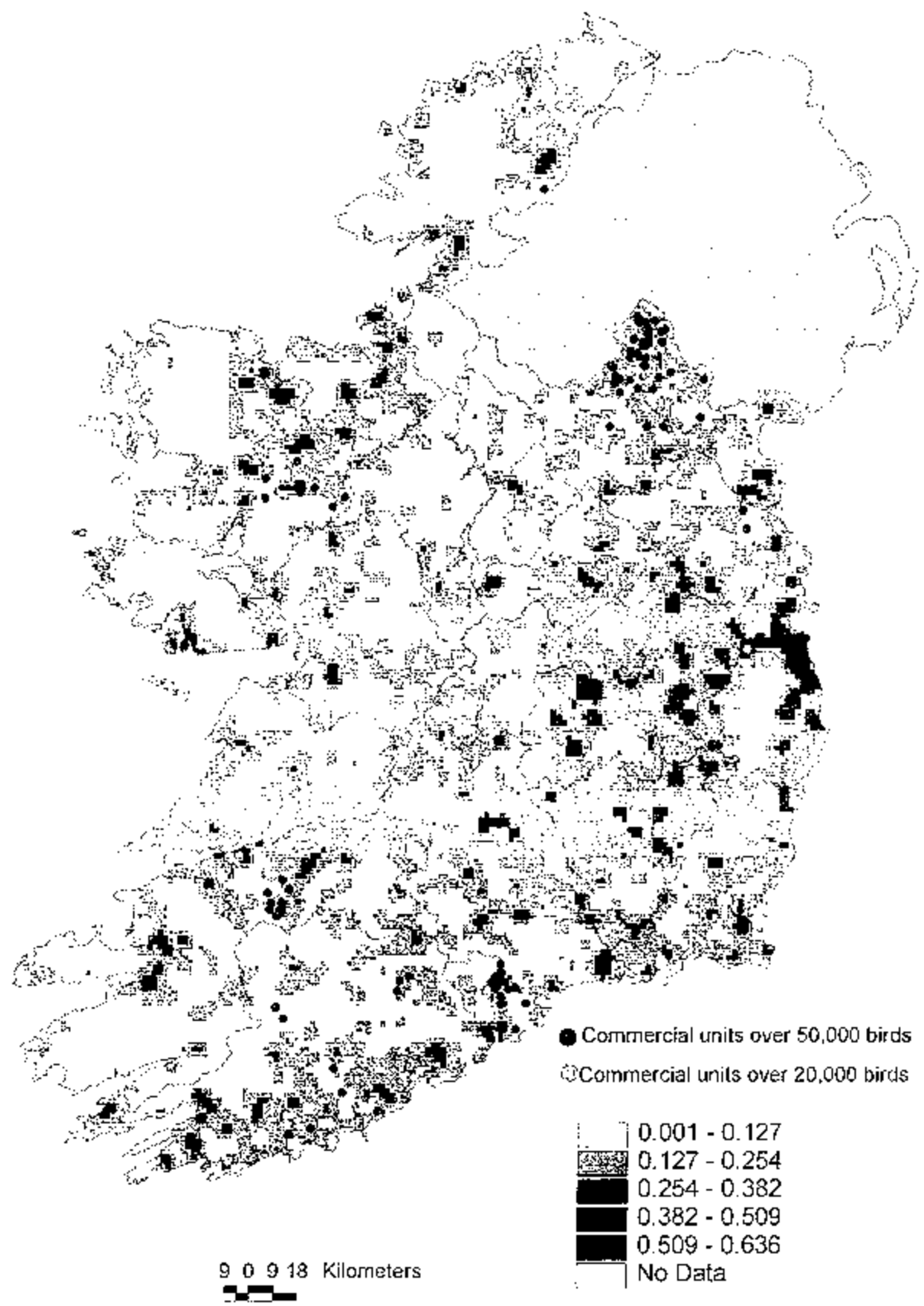
Number of Poultry in each County (June 2000 CSO Farm Census)



ANNEX II COMMERCIAL POULTRY SITES IN IRELAND (2008 DAF Database)

	Comml. broilers	Organic Range broilers>250	Comml. turkey flocks>250	Comml. turkeys	Comml. ducks	Supply local abattoir	Supply Dealing	GP rearing	GP laying	PS PS	PS PS	Turkey breeder rearing	Turkey breeder laying	Goose breeder rearing	Duck breeder rearing	Duck breeder laying	Free range layers	Pulled broilers rearing	Free range layers	Caged layers	TOTAL sites with birds	% sites with birds	
Carlow	0			4													2	0	2	0	6	1%	Carlow
Cavan	19		3	10		1	1			3	4						34	4	1	1	80	9%	Cavan
Clare																	2		2		2	0%	Clare
Cork	27	1	1	5		8	4			5	13						8	2	7	7	81	9%	Cork
Donegal				1						3							2		2		6	1%	Donegal
Dublin																	0		3		3	0%	Dublin
Galway	1						2										8		1		12	2%	Galway
Kerry	1																5		0		6	1%	Kerry
Kildare	2	2		6				2	2	3	1						1				19	2%	Kildare
Kilkenny				1		2	1							1			6		0		9	1%	Kilkenny
Laois				4													2		1		7	1%	Laois
Ladrim	1				1												2		2		4	0%	Ladrim
Limerick	70	0	1	1						7	15						2		0		96	11%	Limerick
Loughford																	1		1		3	0%	Loughford
Louth	2			1						1	0						3		4		21	2%	Louth
Mayo	13																2		1		18	2%	Mayo
Meath	3								2								12		2		26	3%	Meath
Monaghan	132	0	3	72	2	2				6	17	8	2		1	0	30	23	67		365	44%	Monaghan
Offaly				2		1															3	0%	Offaly
Roscommon							2										2		1		5	1%	Roscommon
Sligo		0															5				5	1%	Sligo
Tipperary		1															3		0		5	1%	Tipperary
Waterford	23					1				1	3						3				32	4%	Waterford
Westmeath										3							2				6	1%	Westmeath
Wexford																	3		1		5	1%	Wexford
Wicklow	0	1		3										1			7		2		14	2%	Wicklow
TOTAL	294	5	10	116	3	15	11	2	5	23	70	9	2	3	1	1	145	31	145	91	637	100%	

ANNEX III
MAP SHOWING DENSITY OF COMMERCIAL AND BACKYARD UNITS IN IRELAND
 (from AHCS data April 2008)



Data provided by AHCS on 01 Apr 2008

**ANNEX V
NUMBER OF COMMERCIAL FLOCKS TO BE SAMPLED IN EACH REGION**

	Meat birds		Breeders				Layers		TOTAL
	Turkey	Duck	Greese	Turkey	Duck	D/Fowl	Caged	Free Range	
Cavan	10	0	0	0	0	7	1	22	40
Cork	5	0	0	0	0	16	7	8	36
Kilkenny	0	0	1	0	0	0	0	0	1
Laois	4	0	0	0	0	0	0	0	4
Limerick	1	0	0	0	0	16	0	2	19
Meath	5	0	0	0	0	2	1	12	20
Monaghan	59	2	0	10	1	23	41	20	156
Waterford	0	0	0	0	0	4	0	3	4
	84	2	1	10	1	65	50	67	280

ANNEX VI
LIST OF WILD BIRD SPECIES PRESENTING HIGHER RISK IN RELATION TO AVIAN INFLUENZA

COMMON NAME	SPECIES	TYPE	STATUS IN IRELAND	HABITAT	AI RISK
Mute swan	<i>Cygnus olor</i>	Swan	Resident	Freshwater & coast	High
Whooper swan	<i>Cygnus cygnus</i>	Swan	Winter immigrant	Freshwater & coast	High
Greylag goose*	<i>Anser anser</i>	Goose	Resident & winter immigrant	Estuaries & arable land	High
Canada goose*	<i>Branta canadensis</i>	Goose	Resident	Freshwater, estuary, arable land	High
Shelduck	<i>Tadorna tadorna</i>	Dabbling duck	Resident, moult and winter immigrant	Estuaries	High
Wigeon*	<i>Anas penelope</i>	Dabbling duck	Winter immigrant	Freshwater & coast	High
Gadwall*	<i>Anas strepera</i>	Dabbling duck	Resident & winter immigrant	Freshwater & brackish	High
Teal*	<i>Anas crecca</i>	Dabbling duck	Resident & winter immigrant	Freshwater & coast	High
Mallard*	<i>Anas platyrhynchos</i>	Dabbling duck	Resident & winter immigrant	Freshwater & coast	High
Pintail*	<i>Anas acuta</i>	Dabbling duck	Winter immigrant	Freshwater & coast	High
Shoveler*	<i>Anas clypeata</i>	Dabbling duck	Resident & winter immigrant	Freshwater & coast	High
Pochard*	<i>Aythya ferina</i>	Diving duck	Winter immigrant (some resident)	Freshwater	High
Tufted duck*	<i>Aythya fuligula</i>	Diving duck	Resident & winter immigrant	Freshwater	High
Goldeneye*	<i>Bucephala clangula</i>	Diving duck	Winter immigrant	Freshwater & coast	High
Coot	<i>Fulica atra</i>	Rail	Resident & winter immigrant	Freshwater & estuaries	High
Moorhen	<i>Gallinula chloropus</i>	Rail	Resident (some winter immigrants)	Freshwater	High
Golden plover*	<i>Pluvialis apricaria</i>	Wader	Summer & winter visitors (some possibly resident)	Uplands, inland wetlands, farmland and coast	High
Lapwing	<i>Vanellus vanellus</i>	Wader	Resident & winter immigrant	Inland wetlands, farmland and coast	High
Curlew*	<i>Numenius arquata</i>	Wader	Resident & winter immigrant	Inland wetlands, farmland and coast	High
Black-headed gull	<i>Larus ridibundus</i>	Gull	Resident & winter immigrant	Inland wetlands, farmland and coast	High
Common gull	<i>Larus canus</i>	Gull	Resident & winter immigrant	Inland wetlands, farmland and coast	High

ANNEX II

* Species hunted in Ireland

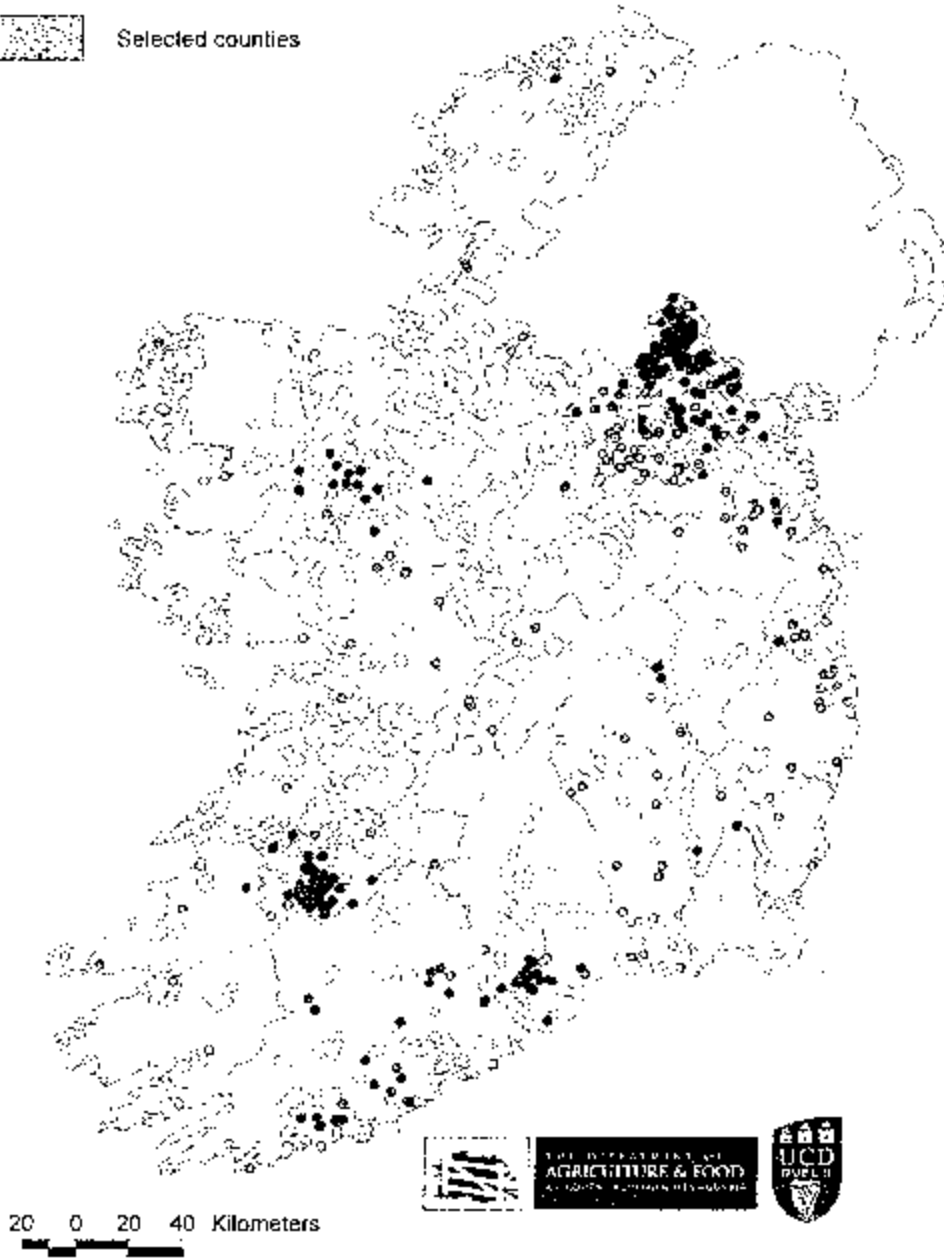
**ANNEX VII
LIST OF BIRDS LIVING IN PROXIMITY TO DOMESTIC POULTRY**

Common name	Scientific name	Probability of
Group 1. Species intimately associated with poultry production in Europe		
Domestic Goose	<i>Anser anser</i>	High
Domestic Mallard	<i>Anas platyrhynchos</i>	High
Domestic Muscovy Duck	<i>Cairina moschata</i>	High
Feral Pigeon	<i>Columba livia</i>	High
House Sparrow	<i>Passer domesticus</i>	High
Group 2. Species which may share farmland also used by domesticated		
Eurasian Golden Plover	<i>Pluvialis apricaria</i>	Low
Northern Lapwing	<i>Vanellus vanellus</i>	Medium
Black-headed Gull	<i>Larus ridibundus</i>	High
Common Gull	<i>Larus canus</i>	High
Herring Gull	<i>Larus argentatus</i>	Low
Wood Pigeon	<i>Columba palumbus</i>	High
Eurasian Collared Dove	<i>Streptopelia decaocto</i>	High
Ring-necked Pheasant	<i>Phasianus colchicus</i>	High
Larks species	<i>Alauda & Galerda spp</i>	Low
Pipits		Low
Wagtails		Medium
Fieldfare	<i>Turdus pilaris</i>	Medium
Redwing	<i>Turdus iliacus</i>	Medium
Black-billed Magpie	<i>Pica pica</i>	High
Eurasian Jackdaw	<i>Corvus monedula</i>	High
Rook	<i>Corvus frugilegus</i>	Medium
Carrion Crow	<i>Corvus corone</i>	Medium
Raven	<i>Corvus corax</i>	Low
Starling	<i>Sturnus vulgaris</i>	High
House Sparrow	<i>Passer domesticus</i>	High
Finches		Medium
Buntings	<i>Millina, Emberiza spp</i>	Medium
Group 3. Species which may share wetlands also used by domesticated		
Egrets	<i>Egretta spp</i>	Low
Hérons	<i>Ardea and other spp</i>	Medium
Comorant	<i>Phalacrocorax carbo</i>	Medium
Mute Swan	<i>Cygnus olor</i>	Medium
Graylag Goose	<i>Anser anser</i>	Medium
Canada Goose	<i>Branta canadensis</i>	Low
Ducks	<i>Anas & Aythya spp.</i>	Low
Mallard	<i>Anas platyrhynchos</i>	High
Common Coot	<i>Fulica atra</i>	Medium
Moorhen	<i>Gallinula chloropus</i>	Medium

ANNEX VIII

COUNTIES TARGETED FOR ACTIVE WILD BIRD SURVEILLANCE

- Commercial units above 20K birds
- ⊕ Free-range units
- Waterfowl habitat
- ▨ Selected counties



ANNEX IX ESTIMATED COSTS OF SAMPLING AND TESTING POULTRY

Total Estimated Costs of Sampling and Testing	
Estimated costs of laboratory testing:	
Method of laboratory	Number tests performed per
Serological testing of	5600 @ €10 (double H1)
Total	56,000
	56,000
	Costs (€)
Specific costs	Costs (€)
Sampling	600
Equipment & postage	600
Collection costs (on-farm)	600
Collection costs (at 4 plants)	600
Subtotal	3000
	ni
	3000
	Costs (€)
Sampling & testing	59,000
GRAND TOTAL	59,000

Estimated total costs for sampling and testing of poultry: €59,000

Maximum reimbursable costs per test (A.9 of Decision 2007/782):

ELISA	€1
AGID	€1.2
Double HI	€12
PCR	€15
VIT	€30

ANNEX X
ESTIMATED COSTS OF SAMPLING AND TESTING WILD BIRDS

Total Estimated Costs of Sampling and Testing		
Estimated costs of laboratory testing:		
Method of laboratory	Number tests performed per	Costs (€)
Serological pre-screening		
PCR	2000 @ €10.50	21,000
HI test for H5/H7		
Virus isolation test	50 @ €60	3,000
Airport charges (isolates to		200
	Subtotal	€24,200
1.2. Estimated costs of sampling:		
	Specific costs	Costs (€)
Sampling	Equipment & postage	600
	Collection costs 500 active @ €8	4,000
	Subtotal	39,600
	GRAND TOTAL	€63,800

*Passive surveillance numbers will vary, depending on public awareness and interest, and also media coverage. Reports from the public are made to an Avian Influenza Helpline. Birds of targeted species are collected by DAF staff, and delivered to one of 6 Regional Veterinary Laboratories for sampling. Each submission consists of 1.5 birds on average. Estimates of €90/submission and €70/bird have been made, based on claims made in 2006.

Estimated total costs for sampling and testing of wild birds: €64,300

Maximum reimbursable costs for testing and sampling (A.9 of Decision 2007/782):

ELISA	€1
AGID	€1.2
Double HI	€12
PCR	€15
VIT	€30
Sampling wild birds	€20/bird

