



EUROPEAN COMMISSION  
HEALTH AND CONSUMERS DIRECTORATE-GENERAL

Director General

SANCO/10251/2013

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

## **Survey programme for Avian Influenza**

**Sweden**

**Approved\* for 2013 by Commission Decision 2012/761/EU**

\* in accordance with Council Decision 2009/470/EC

# Standard requirements for the submission of surveillance programmes for avian influenza

version : 2.2

## 1. Identification of the programme

Member state : SVERIGE

Disease : avian influenza in poultry and wild birds

Request of Community co-financing from beginning of :

2013

to end of

2013

### 1.1 Contact

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## 2. Description and implementation of the surveillance programme in poultry

### 2.1.1 Designation of the central authority in charge of supervising and coordinating the departments responsible for implementing the programme

(max. 32000 chars) :

The Swedish Board of Agriculture (SBA) is the authority under the Ministry of Agriculture with mandate to decide about sampling, disease surveillance, eradication of epizootic diseases etc. SBA also compensates the farmer for economic losses due to decisions taken in accordance with the act on epizootic diseases.

The National Veterinary Institute (SVA) is also an authority under the Ministry of Agriculture and the National Reference Laboratory for Avian Influenza. SVA has been appointed by SBA to organize and perform the surveillance programme for avian influenza in poultry since 2002. The Department of Animal Health and Antimicrobial Strategies is responsible for the programme at SVA and handles the planning of the programme, administration, giving instructions to veterinarians involved in the

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sampling, sending out sampling material etc. The Department of Virology, Immunobiology and Parasitology performs the analyses.

The National Food Administration (SLV, an authority under the Ministry of Agriculture) has official veterinarians employed regionally. These veterinarians are responsible for the sampling at the slaughterhouses.

## 2.1.2 System in place for the registration of holdings

(max. 32000 chars) :

The different Swedish poultry registers are briefly presented in the table below. All registers are administered by SBA.

Register	Population covered	EU-legislation	National legislation
The Swedish poultry register	All commercial poultry holdings	Council Dir. 2005/94/EC Council Dir. 92/66/EEC	Statens jordbruksverks föreskrifter (2006:11) om registrering av anläggningar med fjäderfän
The Swedish register of laying hens	All holdings with a capacity of 350 laying hen and sell eggs for consumption	Council Dir. 1999/74/EC Commission Dir. 2002/4/EC	Statens jordbruksverks föreskrifter (2003:20) om registrering av anläggningar med värphöns
Establishments for poultry fjäderfä	All holdings with breeders for broiler laying hen and turkey	Council Dir. 2009/158/EC	Statens jordbruksverks föreskrifter (2010:58) om obligatorisk hälsoövervakning av
OMNIS	All poultry holdings approved within the voluntary and preventive salmonella control programme	NA	Statens jordbruksverks föreskrifter (2007:78) om frivillig och förebyggande kontroll avseende salmonella hos fjäderfä

## 2.1.3 Design (risk based or surveillance based on representative sampling)

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(max. 32000 chars) :

For the year 2013 Sweden has designed a surveillance programme based on the representative sampling method in Annex I to Decision 2010/367/EU. Blood samples will be taken according to point 5, Tables 1 and 2, of this annex. For detailed information please see point 3, Tables 5.1 and 5.2. Samples will always be accompanied by referrals specially designed for the surveillance programme for avian influenza 2013.

It is mandatory for the person taking the samples to fill in information on name and address of the animal owner and the farm, species sampled, identity of the flock, date of sampling, place of sampling and name of the person taking the samples. This information will be filed at SVA.

All positive results will be followed up by further investigation at the holding and the Commission and the EURL will be informed of all results in accordance with Decision 2010/367/EU.

## 2.1.3.1 Short description of predominant poultry population and types of poultry production

(max. 32000 chars) :

The poultry production in Sweden is mainly concentrated to the south parts of the country.

### Laying hens

The number of laying hen holdings is 359. Of these 359, 102 have a free range holding system. 6 have both indoor and free range holding systems (March 2012).

### Chicken breeders

In April 2012, 34 parent flocks of laying hens and broilers were registered in the Poultry Health Control Programme.

### Turkey breeders

In April 2012, 3 parent flocks of laying hens and broilers were registered in the Poultry Health Control Programme.

### Fattening turkeys

There are approximately 22 holdings of fattening turkeys in Sweden.

### Fattening ducks

In 2011, 310 ducks from 6 holdings were slaughtered in Sweden.

### Fattening geese

In Sweden, geese are mainly bred and slaughtered in the most southern parts of the country. The majority of these birds are slaughtered during October and early November. In 2011, 20 holdings sent geese for slaughter.

### Farmed game birds (gallinaceous)

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Pheasants are the most common farmed gallinaceous game bird in Sweden. In 2011, there were 15 holdings with breeders of pheasants sampled by a veterinarian at the holding. Partridges have been excluded from the sampling programme since they are a small population bred under conditions with low risk for an introduction of AIV.

Farmed game birds (waterfowl)

In 2011, there were 9 holdings with breeders of mallards sampled by a veterinarian at the holding.

Ratites

In 2011, 499 ostriches from 5 farms were slaughtered in Sweden.

Broilers

Birds from all holdings with small-scale or organic broiler production sending their birds to small-scale slaughterhouses or the slaughterhouses for laying hens (n=39 in 2011) will be included in the sampling programme. These broiler holdings have less developed biosecurity than large commercial broiler holdings.

## 2.1.3.2 Criteria and risk factors for risk based surveillance<sup>(1)</sup>

(max. 32000 chars) :

NA

- (1) Including maps showing target sampling sites identified as being particularly at risk for the introduction of avian influenza virus, taking into account criteria set out in point 4 of Annex I to Commission Decision 2010/367/EC.

## 2.2 Target populations (2)

(max. 32000 chars) :

Laying hens

The number of laying hen holdings, incl. free-range, is 359 (March 2012). Of these 359, 102 have a free range holding system (March 2012). 6 of the 359 holdings have both indoor and free range holding systems and are therefore included in the summing of both categories. Swedish laying hens are

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slaughtered at two slaughterhouses. One of these slaughtered 2.6 of the 3.9 million layers slaughtered in 2011. For 2013, 60 of these holdings will be sampled.

## Free range laying hens

The number of free range laying hen holdings is 102 (March, 2012). For 2013, 53 of these holdings will be sampled.

## Chicken breeders

Samples taken in parent flocks of laying hens and broilers within the Poultry Health Control Programme (n=34, April 2012) will be used for the surveillance programme. Ten samples from one flock per holding taken from the last sampling occasion within the programme will be analyzed. For 2013, 34 of these holdings will be sampled.

## Turkey breeders

Samples taken in parent flocks of turkeys within the Poultry Health Control Programme (n=3, April 2012) will be used for the surveillance. Ten samples from one flock per holding taken from the last sampling occasion within the programme will be analyzed. For 2013, 3 of these holdings will be sampled.

## Fattening turkeys

All holdings that send their birds for slaughter will be sampled at the slaughterhouse. This will result in approximately 22 sampled holdings. Blood samples will be collected from ten birds per holding. For 2013, 22 of these holdings will be sampled.

## Fattening ducks

In 2011, 310 ducks were slaughtered in Sweden and 6 holdings were sampled within the surveillance programme for avian influenza. Should any producer send ducks for slaughter in 2013, twenty samples per holding will be taken. If less than 20 birds are slaughtered all ducks will be sampled. For 2013, 6 of these holdings will be sampled.

## Fattening geese

In Sweden, geese are mainly bred and slaughtered in the most southern parts of the country. The majority of these birds are slaughtered during October and early November. All Swedish holdings that send geese for slaughter (in 2011, 20 holdings) will be sampled. Twenty samples per holding will be taken at slaughter, when less than 20 birds are slaughtered all birds will be sampled. For 2013, 20 of these holdings will be sampled.

## Farmed game birds (gallinaceous)

Pheasants are the most common farmed gallinaceous game bird in Sweden. Partridges have been excluded from the sampling programme since they are a small population bred under conditions with low risk for an introduction of AIV. All holdings with breeders of pheasants (in 2011, 15 holdings) will be sampled by a veterinarian at the holding. Ten blood samples per holding will be taken. If all pheasantbreeders have birds 2013, 28 of these holdings will be sampled.

## Farmed game birds (waterfowl)

All holdings with breeders of mallards (in 2011, 9 holdings) will be sampled by a veterinarian at the

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holding. Twenty blood samples per holding will be taken. For 2013, 9 of these holdings will be sampled.

## Ratites

Ratites are slaughtered at three Swedish slaughterhouses. In 2011, 499 ostriches from 5 holdings were slaughtered. All holdings that send birds to slaughter will be sampled. Ten blood samples will be collected from each holding, when less than 10 birds are slaughtered all birds will be sampled. For 2013, 5 of these holdings will be sampled.

## Broilers

Birds from all holdings with small-scale or organic broiler production sending their birds to small-scale slaughterhouses or the slaughterhouses for laying hens (n=39 in 2011) will be included in the sampling programme. These broiler holdings have less developed biosecurity than large commercial broiler holdings. Blood samples will be taken from ten birds from each holding at slaughter. For 2013, 39 of these holdings will be sampled.

The Commission will be informed of any major changes in the Swedish poultry population or production that will lead to consequences for the programme. Sweden will also provide additional information on request from the Commission.

(2) including MS specific exceptional circumstances as described in Annex I point 3 of Commission Decision 2010/367/EU)

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## 2.2.1 POULTRY HOLDINGS (a) (except ducks, geese and farmed game birds (waterfowl e.g. mallards) to be sampled

Serological investigation according to Annex I to Commission Decision 2010/367/EU

Category : broilers

delete this category

SE	NUITS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis	
SE11		0	0	0	0	NA	X
SE12		1	1	10	10	ELISA test	X
SE21		0	0	0	0	NA	X
SE22		33	33	10	330	ELISA test	X
SE23		5	5	10	50	ELISA test	X
SE31		0	0	0	0	NA	X
SE32		0	0	0	0	NA	X



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SE33	0	0	0	0	0 NA	X
<b>Total</b>	39	39	30	390		
Add a new row						

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Category : fattening turkeys

delete this category

NUTS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	0	0	0	0 NA	X
SE12	1	1	10	10 ELISA test	X
SE21	0	0	0	0 NA	X
SE22	18	18	10	180 ELISA test	X
SE23	3	3	10	30 ELISA test	X
SE31	0	0	0	0 NA	X

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SE32	0	0	0	0	0	0 NA	<b>X</b>
SE33	0	0	0	0	0	0 NA	<b>X</b>
<b>Total</b>	22	22	30	220			
<b>Add a new row</b>							

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Category : chicken breeders

**delete this category**

NUTS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	0	0	0	0 NA	<b>X</b>
SE12	12	12	10	120 ELISA test	<b>X</b>
SE21	4	4	10	40 ELISA test	<b>X</b>
SE22	17	17	10	170 ELISA test	<b>X</b>
SE23	3	3	10	30 ELISA test	<b>X</b>

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SE31	0	0	0	0	0	0	0	0	0	NA	X
SE32	0	0	0	0	0	0	0	0	0	NA	X
SE33	0	0	0	0	0	0	0	0	0	NA	X
<b>Total</b>	36	36	36	40	360						

Add a new row

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Category : turkey breeders

delete this category

NUTS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis	
SE11	0	0	0	0	NA	X
SE12	0	0	0	0	NA	X
SE21	0	0	0	0	NA	X
SE22	0	0	0	0	NA	X

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SE23	1	1	10	10	10	ELISA test	X
SE31	2	2	10	10	20	ELISA test	X
SE32	0	0	0	0	0	NA	X
SE33	0	0	0	0	0	NA	X
<b>Total</b>	3	3	20	30			
<b>Add a new row</b>							

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Category : laying hens

**delete this category**

NUTS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	5	1	10	10	ELISA test
SE12	77	17	10	170	ELISA test
SE21	34	13	10	130	ELISA test

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SE22	43	6	10	60	ELISA test	X
SE23	81	17	10	170	ELISA test	X
SE31	9	5	10	50	ELISA test	X
SE32	7	2	10	20	ELISA test	X
SE33	7	2	10	20	ELISA test	X
<b>Total</b>	263	63	80	630		

Add a new row

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Category : free range laying hens

delete this category

NUTS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	2	1	10	10	ELISA test
SE12	36	21	10	210	ELISA test

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SE21	24	9	10	90	ELISA test	X
SE22	17	10	10	100	ELISA test	X
SE23	13	7	10	70	ELISA test	X
SE31	8	2	10	20	ELISA test	X
SE32	2	0	0	0	NA	X
SE33	0	0	0	0	NA	X
<b>Total</b>	102	50	60	500		

Add a new row

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Category : ratites

delete this category

NUTS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	0	0	0	0	NA

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SE12	2	2	10	20	ELISA test	X
SE21	0	0	0	0	NA	X
SE22	1	1	10	10	ELISA test	X
SE23	1	1	10	10	ELISA test	X
SE31	1	1	10	10	ELISA test	X
SE32	0	0	0	0	NA	X
SE33	0	0	0	0	NA	X
<b>Total</b>	5	5	40	50		

Add a new row

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Category : farmed game birds (gallinaceous)

delete this category

NUTS (2) (b)	Total number of holdings(c)	Total number of holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
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SE11	2	2	10	20	ELISA test	X
SE12	6	6	10	60	ELISA test	X
SE21	1	1	10	10	ELISA test	X
SE22	15	15	10	150	ELISA test	X
SE23	3	3	10	30	ELISA test	X
SE31	0	0	0	0	NA	X
SE32	0	0	0	0	NA	X
SE33	1	1	10	10	ELISA test	X
<b>Total</b>	28	28	60	280		

Add a new row

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

(b) Refers to the location of the holding of origin. In case NUTS (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member States is requested

(c) Total number of holdings of one category of poultry in concerned NUTS 2 region.

Add a category



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<b>Total Poultry</b>	498	246	360	2 460					

## 2.2.2 DUCKS, GEESE AND FARMED GAME BIRDS (WATERFOWL e.g. MALLARD) HOLDINGS (a) to be sampled.

### Serological investigation according to Annex I to Commission Decision 2010/367/EU

Category : fattening ducks

delete this category

	NUJTS (2) (b)	Total number of duck and geese holdings	Total number of duck and geese holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	0	0	0	0	0 NA	X
SE12	1	1	1	20	20 ELISA test	X

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SE21	0	0	0	0	0	0	0 NA	X
SE22	4	4	20	80	ELISA test			X
SE23	1	1	20	20	ELISA test			X
SE31	0	0	0	0	0 NA			X
SE32	0	0	0	0	0 NA			X
SE33	0	0	0	0	0 NA			X
<b>Total</b>	<b>6</b>	<b>6</b>	<b>60</b>	<b>120</b>				

Add a new row

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

(b) Refers to the location of the holding of origin. In case NUTS (2) code can not be used, region as defined in the programme by the Member State is requested

Category : fattening geese

delete this category

NUTS (2) (b)	Total number of duck and geese holdings	Total number of duck and geese holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	0	0	0	0 NA	
SE12	1	1	20	20	ELISA test

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SE21	0	0	0	0	0	0	0	0	0	ELISA test	X
SE22	17	17	0	20	340	ELISA test	X				
SE23	2	2	0	20	40	ELISA test	X				
SE31	0	0	0	0	0	NA	X				
SE32	0	0	0	0	0	NA	X				
SE33	0	0	0	0	0	NA	X				
<b>Total</b>	20	20	60	400							
<b>Add a new row</b>											

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

(b) Refers to the location of the holding of origin. In case NUTS (2) code can not be used, region as defined in the programme by the Member State is requested

Category : farmed game (waterfowl e.g. mallards)

delete this category

NUTS (2) (b)	Total number of duck and geese holdings	Total number of duck and geese holdings to be sampled	Number of samples per holding	Total number of tests	Method of laboratory analysis
SE11	0	0	0	0	NA
SE12	2	2	20	40	ELISA test



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Ducks and geese	Total	35	35	160	700
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<b>Grand Total Poultry + Ducks/Geese</b>		533	281	520	3 160

## 2.3 Sampling procedures, sampling periods and frequency of testing

(max. 32000 chars) :

The surveillance programme for avian influenza will run from 1 January to 31 December 2013. Holdings will be sampled once annually after taken into consideration possible seasonal factors in the production. Laying hens will be sampled through out the year, by taking a blood sample either at the holding or at the slaughter house. Broilers, fattening turkeys, ratites, geese and ducks will be sampled at the slaughter house. Geese and ducks are mainly slaughtered in October-November, while for the other categories the slaughter (and thereby the sampling) is rather evenly distributed throughout the

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year. For parent flocks of laying hens, broilers and turkeys, samples taken within the Poultry Health Control Programme will be used for the surveillance programme. These samples are taken through out the year. Farmed feathered game is sampled at the holding, mainly during the first half of the year.

## 2.4. Laboratory testing : description of the laboratory tests used and follow up investigations

*Description of the used serological tests : (max 32000 chars)*

All laboratory investigations will be carried out in accordance with the avian influenza diagnostic manual (Commission Decision 2006/437/EC) and point 9 of Annex I to Decision 2010/367/EU. An ELISA will be used for the serological analysis. (Reference: Terregino C. Evaluation of sensitivity and specificity of a commercial competitive avian influenza type A antibody ELISA kit (IDVET® Screen Influenza A), Istituto Zooprofilattico Sperimentale delle Venezie, Legnaro (Padova), Italy, OIE-FAO and National Reference Laboratory for Newcastle Disease and Avian Influenza). Positive results will be confirmed with haemagglutination inhibition tests (for subtypes H5 and H7) in accordance with the guidelines.

If any sample turns out to be positive the holding is further investigated for any signs of ongoing avian influenza infection. Cloacal and oropharyngeal swabs from 60 birds (or all birds if less than 60) of each bird category in the holdings are then taken. The samples are analysed for the detection of avian influenza virus genome by using an M-gene realtime PCR (Spackman et al). Positive samples are further analysed for detection and identification of H5 and H7 viruses, including virus pathotyping by amplicon sequencing (Slomka et al, 2007) (Avian Diseases: Vol. 51, No. s1, pp. 227-234).

All laboratory testing will be performed at the National Veterinary Institute (SVA), Uppsala, Sweden. All virus isolates will be sent to the EU Reference Laboratory (EURL). The Swedish Board of Agriculture (SBA) will report to the Commission in accordance with Art 4. of Decision 2010/367/EU .

## 3. Description and implementation of the surveillance programme in wild birds

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**3.1.1 Designation of the central authority in charge of supervising and coordinating the departments responsible for implementing the programme and relevant collaborating partners (e.g. epidemiologists, ornithologists, nature bird observation and hunter organisations).**

(max. 32000 chars):

The programme will be supervised of the Swedish Board of Agriculture in close cooperation with a working group on wild birds and the National Veterinary Institute. The working group on wild birds consists of ornithologists as well as epidemiologists.-

**3.1.2 Description and delimitation of the geographical and administrative areas in which the programme is to be applied**

max. 32000 chars):

The passive surveillance will be carried out in the whole area of Sweden.

**3.1.3 Estimation of the local and/or migratory wildlife population**

(max. 32000 chars):

In Sweden there are in total 490 different bird species identified. Around 200 are staying the whole year and the rest are migratory birds in more or less extent. The majority of the birds are staying in south and middle Sweden and a smaller part in the northern part.

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In summer there are around 550 million bird individuals and 450 millions leave Sweden in the end of the summer or in autumn. The majority of the migratory birds arrive to Sweden in Mars to June, depending on climatic conditions, from south and east and a very limited number from north.

The Swedish ornithologists work with a report system called Svalan where the movements of migratory birds can be followed each year. The Swedish Board of Agriculture and the National Veterinary Institute are using this reporting system to continuously update the wild birds situation. <http://www.artportalen.se/birds/default.asp>

## 3.2 Design, criteria, risk factors and target population(3)

(max. 32000 chars) :

The passive surveillance will be carried out in the whole area of Sweden.

- (3) *Areas at risk (wetlands in particular where links with high density poultry populations), previous positive findings as referred to in point 2 of Part 1 of Annex II to Commission Decision 2010/367/EC should be taken into account and if possible complemented by a map.*



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## 3.2.1 WILD BIRDS focussed on target species

Investigations according to the surveillance programme set out in Part 2 of Annex II to Decision 2010/367/EC

NUTS (2) code/region (a)	Wild birds to be sampled (b)	Total number of birds to be sampled	Estimated total number of samples to be taken for active surveillance (c)	Estimated total number of samples to be taken for passive surveillance
SE 11-33 (whole territory of Sweden)	500	500	0	500 <b>X</b>
<b>Total</b>	500	500	0	500
<b>Add a new row</b>				

(a) Refers to the place of collection of birds/samples. In case NUTS 2 (Nomenclature of Territorial Units for Statistics) can not be used, region as defined in the programme by the Member State is requested. Please fill-in these values directly in the field.

(b) General description of the wild birds are intended to be sampled in the framework of the active and passive surveillance.

(c) Voluntary, to be included for information purposes, not eligible for cofinancing.

## 3.3 Sampling procedures and sampling periods

max 32000 chars :

Wild birds found dead or moribund are send by post by the finder in existing routines to the National Veterinary Institute in Uppsala for sampling and analysis. In case of enhanced investigations, in forehand contracted organisations will do local examinations for dead or moribund wild birds for further examination and sampling at NRL.

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## 3.4 Laboratory testing : description of the laboratory tests used

max 32000 chars :

From dead birds, swab samples (mostly both cloacal and tracheal) are collected. The samples are analysed for the detection of avian influenza virus genome by using an M-gene realtime PCR (Spackman et al). positive samples are further analysed for detection and identification of H5 and H7 viruses, including virus pathotyping by amplicon sequencing (Slomka et al). If virus genome is detected virus isolation and further subtyping are performed. The viruses isolated are sent to CRL.

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

max 32000 chars :

Within the EU surveillance programme for AIV, the following numbers of holdings have been tested during the years 2007-2011:

	2007	2008	2009	2010	2011
Laying hens	60	65	61	62	91 (61 housed indoor, 31 free ranging)
Turkeys	23	23	17	21	22
Ducks	3	8	3	4	6
Geese	16	30	13	11	20
Broilers <sup>1</sup>	17	28	27	24	39
Ratites	10	10	6	4	5
Breeding hens (parents)	40	42	33	34	36

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Breeding turkeys (parents)	4	2	4	3	3
Game birds (mallards)	7	6	6	7	9
Game birds (pheasants)	23	23	20	17	15
Backyard flocks	0	0	6	0	0

(<sup>1</sup> Small-scale production)

Before 2006 AIV had never been detected in Swedish poultry. In March 2006 highly pathogenic avian influenza virus subtype H5 was isolated in samples, taken due to findings in the wild bird population, from a mallard on a Swedish game farm. There were no clinical signs in the flock. Since 2006 no findings of low pathogenic H5 or H7 or high pathogenic strains of AIV have been done in Swedish poultry flocks. Several investigations have been performed, though, due to positive serological findings within the surveillance programme.

In 2007, farmed game birds were included in the Swedish AI surveillance programme for the first time. Holdings with breeders of mallards and pheasants were sampled. Three holdings with mallard breeders were serologically positive against AIV subtype H5 and H7. Further investigations in these holdings, by PCR-analysis of cloacal and oropharyngeal swabs, were all negative (no AIV detected on the holding).

In 2008, antibodies against AIV subtype H5 were found in blood samples from two holdings with farmed mallard breeders and one holding with breeder geese. Cloacal and oropharyngeal swabs were taken for further investigations of these holdings:

- Swabs taken from mallards on one of the game bird farms were negative for AIV when these were analyzed by PCR (no AIV detected on the holding).
- From the other mallard flock AIV subtype H4N6 was isolated.
- Swabs from breeder geese were found to be PCR-positive for AIV but H5 and H7 negative. No virus could be isolated.

In 2009, one goose and two ducks on a 4H club farm were serologically positive against AIV subtype H5. Following-up investigations including PCR analyses of oropharyngeal and cloacal swabs taken out from 95 different birds at the farm were all negative. This year also mallard breeders from one holding were serologically positive against AIV/H5. PCR-analysis of oropharyngeal and cloacal swabs were all negative in following-up investigations.

In 2010, antibodies against AIV subtype H5 were found in four holdings with mallard breeders. The holdings were further investigated by cloacal and oropharyngeal swab sampling. No AIV could be detected by PCR-analysis of swab samples from two of the holdings. In samples from the other two holdings influenza A virus genome was detected in the M-gene PCR. Further analyses of these samples including PCR for H5 and H7 and virus isolation

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attempts were negative.

In 2011, antibodies against AIV subtype H5 were found in two holdings with mallard breeders. The holdings were further investigated by cloacal and oropharyngeal swab sampling. No AIV could be detected by PCR-analysis of swab samples from the two holdings

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

(max. 32000 chars) :

Until spring 2006 highly pathogenic avian influenza virus (HPAI) has never been detected in wild birds in Sweden. Previous surveillance since autumn 2002 at the bird conservation station at Ottenby, Öland, has demonstrated that HPAI was not present during that period. Mallards are the species that most samples come from.

At the National Veterinary Institute surveillance in all diseased or dead bird species is ongoing since a long period (exceeding the last five years). In birds found dead or diseased in the wild necropsy is performed and if changes are observed that lead to a suspicion concerning AI or ND further tests are performed. At the moment all birds found dead are tested for AI.

HPAI has been detected in 65 wild birds during spring 2006. Low pathogenic avian influenza virus (LPAI) has been found in Mallards with a quite high prevalence but has also been found in several other species like for example Black headed gull, Mew gull, bean goose and Teal. During 2009 and 2010 no case of HPAI has been detected in Sweden in wild birds. LPAI has been found in 69 of the 3 863 sampled birds, mostly in Mallards and in a few Eurasian wigeons in the active surveillance during the autumn 2009.

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

(max. 32000 chars) :

Avian influenza is included in the Swedish act on epizootic diseases (Epizootilagen, SFS 1999:657). According to this act both animal owners and

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veterinarians are obliged to report suspect cases of avian influenza. This applies to both clinical and laboratory suspicions. If AI is suspected or confirmed on a farm, measures will be taken according to Council Directive 2005/94/EC and Commission Decision 2010/367/EU).

## 7. Costs

### 7.1 Detailed analysis of the costs

#### 7.1.1 Poultry

(max. 32000 chars):

Administration (planning, administration of the programme, information, reporting, follow up etc)	190 000 SEK
Sampling (collecting samples at slaughterhouses)	85 000 SEK
Sampling (collecting samples at holdings)	218 500 SEK
(92 500 SEK om räknar på 37 viltfågelbesättningar provtas a 2500 kr/besättning samt 126 000 SEK om vi räknar med att 50 värphönsbes. provtas på slakteri så skulle det alltså handla om 63 bes. värphöns som provtas på gård a 2000 kr/besättning)	
Sampling equipment (tubes, plastic bags, envelopes etc) and transport costs	15 000 SEK

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**Serology:**  
 Total number of tests: 3160  
 ELISA cost per sample 80 SEK (the cost will also include necessary confirmation with HI-test)

Total serology: 252 800 SEK

## PCR and Virus isolation:

Estimated no of seropositive holdings = 3

Holding no. 1 with two poultry categories

Holdings nos 2 and 3 with one poultry category of which holding no 3 analysed out of normal working hours (+ 50% cost/test)

	No of samples	No of holdings	No of tests	Cost/test	Laboratory costs
M-gene PCR holding no. 1	240	1	120	500	60 000 SEK
M-gene PCR holding no. 2	120	1	60	500	30 000 SEK
M-gene PCR holding no. 3	120	1	60	750	45 000 SEK
H5-PCR	25	2	50	335	16 750 SEK
H7-PCR	25	2	50	335	16 750 SEK
Sequencing	5	2	10	1250	12 500 SEK
Virus isolation	5	2	10	680	6 800 SEK

Total PCR and virus isolation: 187 800 SEK

## 7.1.2 Wild birds

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(max. 32000 chars) :

Collection, transport and sampling of wild birds	500	500	530 SEK	265 000
M-gene realtime PCR (pooled)	500	500	500 SEK	250 000
H5/H7-PCR (confirmatory test)	200	100	335 SEK	33 500
Gene sequencing	50	50	1 250 SEK	62 500
Virus isolation	50	50	680 SEK	34 000

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Total sampling, PCR and virusisolation

645 000 SEK

This application does not cover the costs following an eventual and extensive AI outbreak among wild birds that may require expanded active sampling and analysis of dead and sick birds in specific areas in accordance with Commission Decision 2010/367/EU.

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## 7.2 Summary of the costs

### 7.2.1 Poultry surveillance

#### Detailed analysis of the cost of the programme - poultry

Laboratory testing	Number of tests	Unitary test cost (per method) in €	Total cost (€)
ELISA test	3 160	8.89	28092.4
agar gel immune diffusion test	0	0	0
Haemagglutination-inhibition-test (HI) for H5 (specify number of tests for H5)	0	0	0
Haemagglutination-inhibition-test (HI) for H7 (specify number of tests for H7)	0	0	0
Virus isolation test	10	75.56	755.6
PCR test	240	64.78	15547.2
Sequencing	10	138.89	1388.9
H5/H7 PCR test (confirmatory test)	100	37.22	3722
Other please specify here	0	0	0





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## 7.2.2 Wild bird surveillance

### Detail analysis of the cost of the programme - wild birds

Laboratory testing				
Methods of laboratory analysis	Number of tests	Unitary test cost (per method) in €	Total cost (€)	
Virus isolation test	50	75.56	3778	
PCR test	500	55.56	27780	
H5/H7 PCR test (confirmatory test)	100	37.22	3722	
Other please specify here	0	0	0	
				<b>Add a new row</b>
Sampling				
Samples	Number of samples	Unitary cost in €	Total cost (€)	
	500	58.89	29445	

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Other measures				
	Number	Unitary cost in €	Total cost (€)	
Gene sequencing	50	138.89	6944.5	X
			<b>Add a new row</b>	
<b>Total wild birds Testing + Sampling + Other measures</b>	1200		71 669,50 €	
<b>Grand Total Poultry + Wild birds</b>	11040		177 676,40 €	

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## Attachments

### IMPORTANT :

- 1) The more files you attach, the longer it takes to upload them .
- 2) This attachment files should have one of the format listed here : [.zip](#), [.jpg](#), [.jpeg](#), [.tiff](#), [.tif](#), [.xls](#), [.doc](#), [.bmp](#), [.pna](#).
- 3) The total file size of the attached files should not exceed 2 500Kb (+- 2.5 Mb). You will receive a message while attaching when you try to load too much.
- 4) IT CAN TAKE **SEVERAL MINUTES TO UPLOAD** ALL THE ATTACHED FILES. Don't interrupt the uploading by closing the pdf and wait until you have received a Submission Number!
- 5) Zip files cannot be opened (by clicking on the Open button). All other file formats can be opened.