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# Highly Pathogenic Avian Influenza

## France

### 12 January 2016



# Outline of presentation

- Chronology of events
- Measures implemented
- Sanitary situation
  - Epidemiological situation
  - Knowledge on the viruses strains
  - Interpretation by Anses
- Adaptation of control measures
- Assessment of efficacy



# Chronology of events 24/11 – 2/12

- Confirmation of the first case, clinical suspicion, on the 24/11th in a hobby keeper → emergency response to an exotic disease
- Immediate implementation of protection zone of 3km radius, surveillance zone of 10 km
- Awareness of clinical surveillance, prohibition of bird meetings in Dordogne
- 2 additional outbreaks detected in Dordogne (serological surveillance and clinical) and identification of H5N1 and H5N2
  - 2/12: adoption of supplementary restricted zone according to EU decision 2006/415 + restriction of international trade for all Dordogne



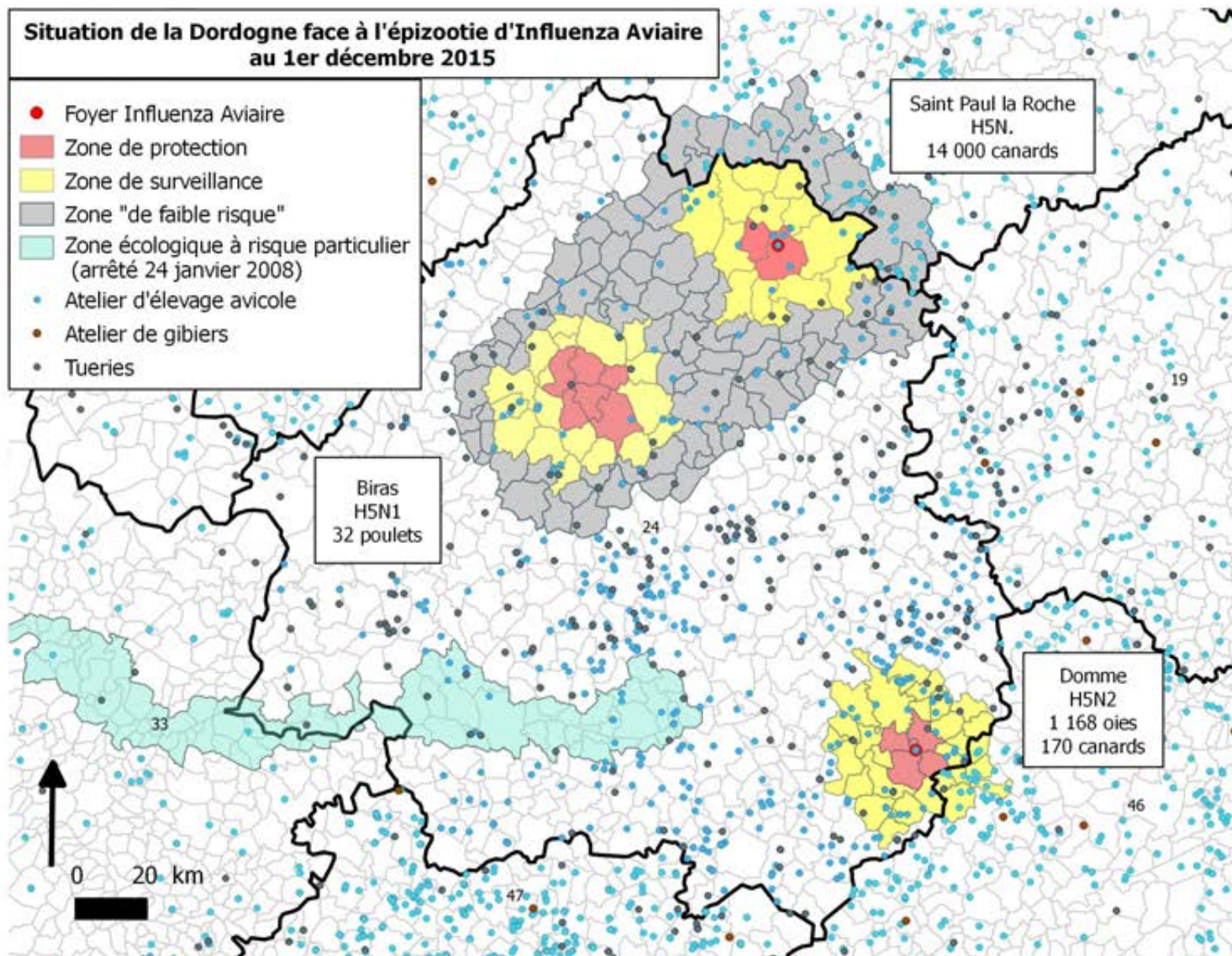


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### Situation de la Dordogne face à l'épizootie d'Influenza Aviaire au 1er décembre 2015

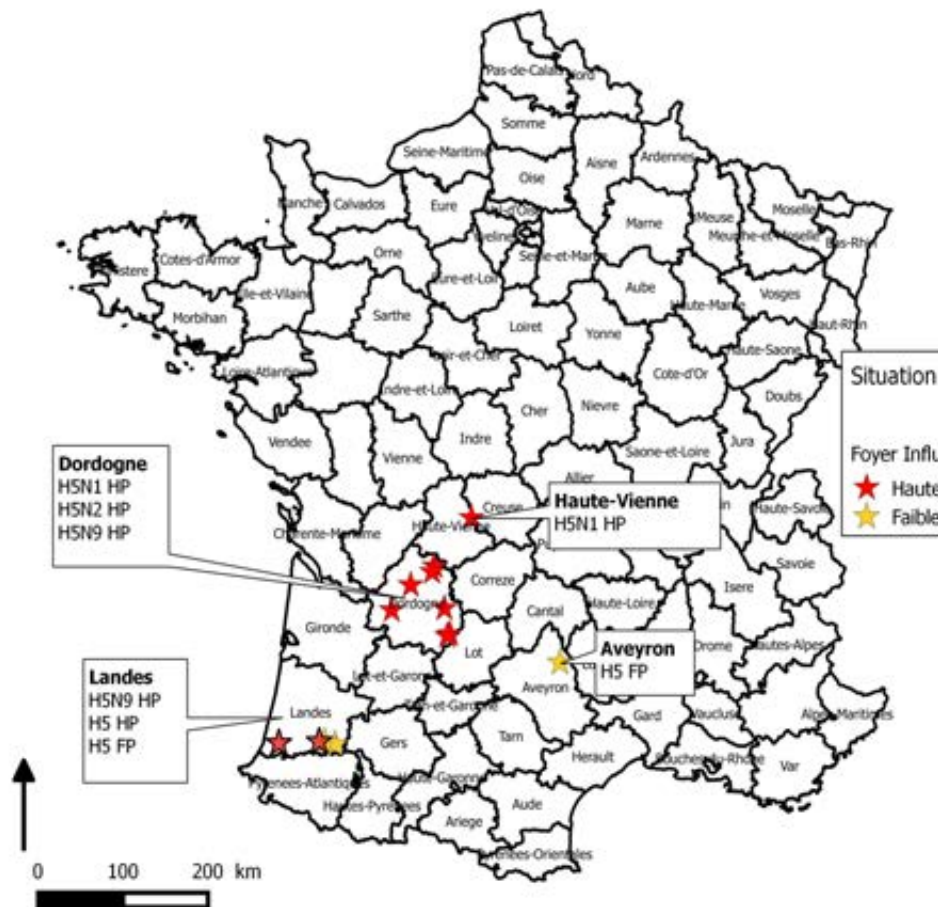
- Foyer Influenza Aviaire
- Zone de protection
- Zone de surveillance
- Zone "de faible risque"
- Zone écologique à risque particulier (arrêté 24 janvier 2008)
- Atelier d'élevage avicole
- Atelier de gibiers
- Tueries





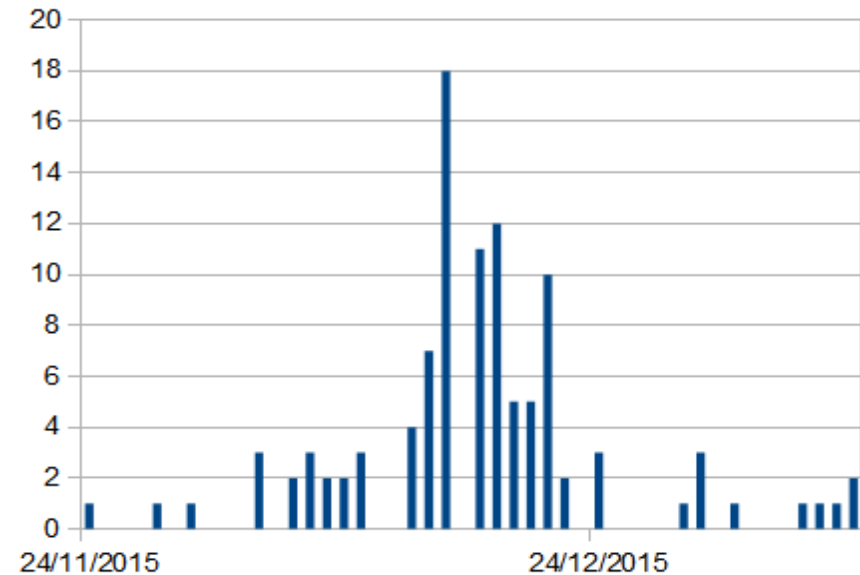
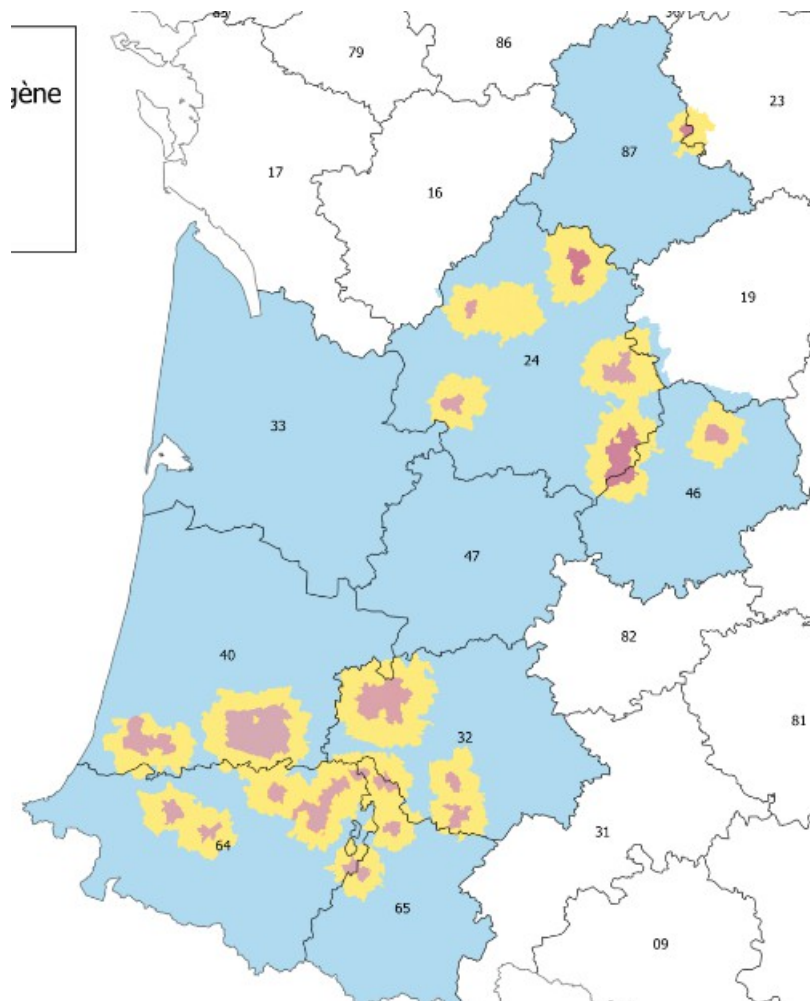
# Chronology of events 2/12 – 11/12

- From 2/12 to 10/12 : additional strain of HPAI, discovery of HPAI in Landes + FPAI → 11/12 further restriction zones in Landes



# Chronology of events 11/12 – 11/1

Restriction zones on 9 départements  
+ communes of some départements



Total of 67 outbreaks  
Situation looks more like an  
enzootic disease than an exotic  
recent extension  
Management as emergency  
response → overwhelming of  
capacity  
17/12 stop of systematic testing of  
ducks sent to slaughterhouse

# Population in the restricted zone

Zone	Gallinaceans	Palmipeds	Farmed game birds
Zone de protection (ZP)	803	1153	0
Zone de surveillance (ZS)	1768	2247	6
Zone de restriction hors ZP et ZS	5129	3700	29
Autre (reste du territoire continental)	48479	3347	420
<b>Total</b>	<b>56179</b>	<b>10447</b>	<b>455</b>

48 % ( $7100/(7700+7100)$ ) of farms in the restricted zone : Palmipedes  
68 % of French Palmipedes farms in the restricted zone (and 14 % of Gallinaceans farms)



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# Measures implemented

- Culling and disposal in outbreaks
- Cleaning and disinfection
- Securisation of transport
- Control of movements
- Epidemiological investigations
- Surveillance





# Culling and safe disposal

- Specialised company (GT Logistic) in 28 sites and 52 by other methods (euthanasia by veterinarians or close slaughterhouses, mostly for small flocks of finished ducks)
- Systematically
  - Supervision by DDPP
  - Protection of staff
  - Preliminary disinfection (VIRKON ND)
  - Collect of carcasses to rendering plant
- Human care : psychological support to farmers, advice for medical follow up





GT Logistics  
ZI du Lay  
Saint Jean de Brevelay (56)  
2 bennes Micodan (propriété publique)



SIFDDA  
Route de Niort  
Benet (85)  
2 bennes Micodan (propriété publique)



GT logistics à Denain (59)  
4 cadres et 6 sphères CO2



GT Logistics  
66 quai Français  
Bassens (33)  
2 bennes Micodan (propriété publique)  
2 bennes Micodan (propriété GT)  
2 chaînes électriques  
20 sphères CO2  
30 bacs et matériels RF2  
8 sas gonflables dont 4 avec douches  
2 groupes électrogènes  
2 aires de lavage  
1 porteur 19 t + remorque  
1 porteur 19 t plateau

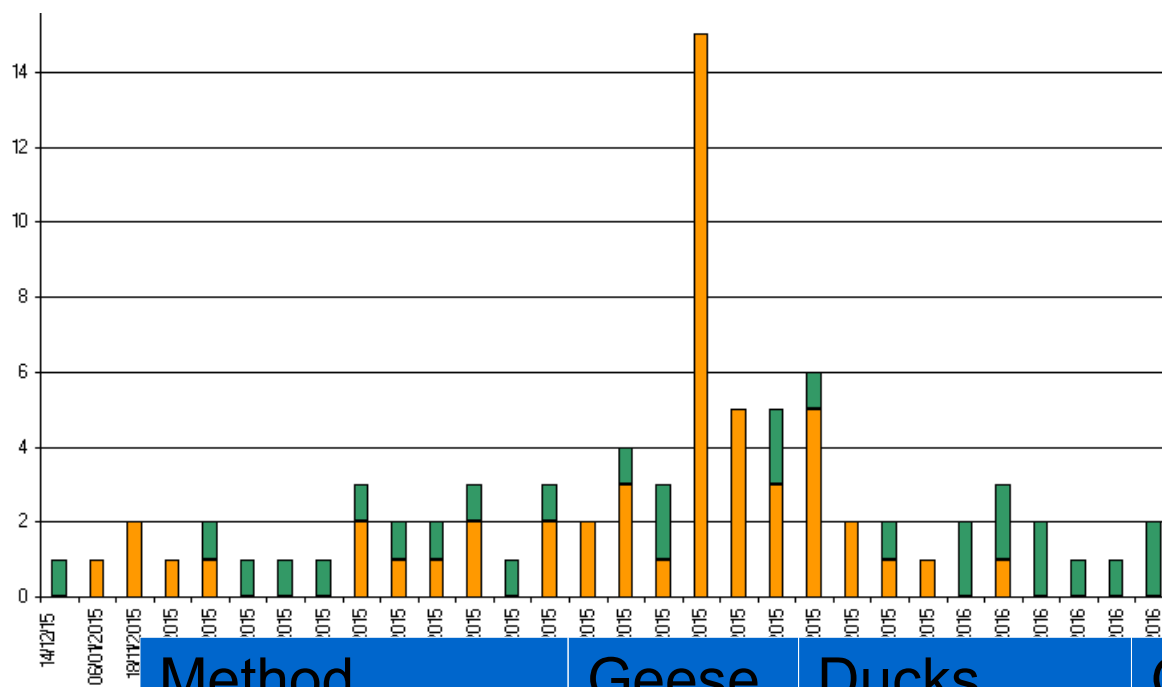


SARIA  
ZI de Vaugris  
Reventin Vaugris (38)  
2 bennes Micodan (propriété publique)

# Figures on culling

Green : GT Logistic = large units (mean 4500 ducks, median 1755)

Orange : slaughterhouse or vet = small units (mean 1000 ducks, median 805)



Method	Geese	Ducks	Guinea Fowls	Chicken
Other	4,078	49,140	130	1,430
GT Logistic	965	72,610	9,200	32,406
<b>Total</b>	<b>5,043</b>	<b>121,750</b>	<b>9,330</b>	<b>33,836</b>

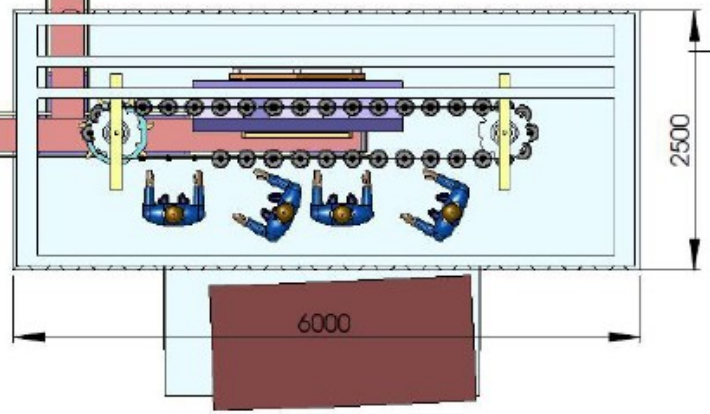
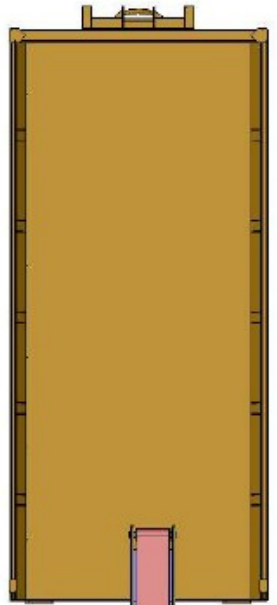
# Technical aspects for ducks



SCOTT mask « phantom PPR 2000 »



half mask « sundstrom SR 100 »











# Cleaning and disinfection

- Premises
  - Preliminary aspersion of disinfectant
  - Cleaning is the responsibility of the farmer → assistance if difficulties
  - Once cleaning, 2 steps of disinfection by local private companies using approved disinfectant (mostly ammonium) with at least 7 days between (2nd disinfection not necessary if preliminary done in a cleaned place)
- Difficulties encountered for free ranging surfaces



# Cleaning and disinfection

- Manure and slurry
  - Manure : burnt, composted for 6 months, stacked with lime and covered for 42 days
  - Duck slurry → methanisation or quicklime to elevate pH up to 12 or stored for 60 days
- Restocking : minimum of 21 days of empty period and surveillance for 21 days (no restocking has yet started in outbreak)





# Securisation of transport

- Instruction to avoid incoming vehicles in farms in protection / surveillance zones
- If not possible, organisation of tours from low risk to high risk and disinfection when living the high risk area
- When exemption for movement restriction, approval by the DDPP of the itinerary



- Disinfection of vehicles
  - Use of built in disinfection units when existing
  - Carriable disinfection material more reliable in time



# Control of movements

- Protection zone and surveillance zone
  - Interdiction of movements
  - Movements of day old chick/hatching eggs from zones allowed to restriction zone if inspection of hatchery and testing of breeder flock
  - Movements for slaughtering :
    - Initially derogations for slaughter after visit, sampling if clinical suspicion and systematic test for palmipeds
    - After assessement of virus non-zoonotic capacity, systematic testing of palmipeds suspended, maintenance of systematic clinical visits in protection zones
  - In any case caution for movement of animals (disinfection, control itineraries)



# Control of movements

- Restriction zone
  - No movement of poultry outside the zone except day old chicks in some conditions (inspection of hatcheries and test of breeder flocks + approval of MS if EU trade)
  - Movements within the zone allowed with biosecurity measures for transport, cleaning and disinfection and minimal period before restocking





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# Epidemiological investigations

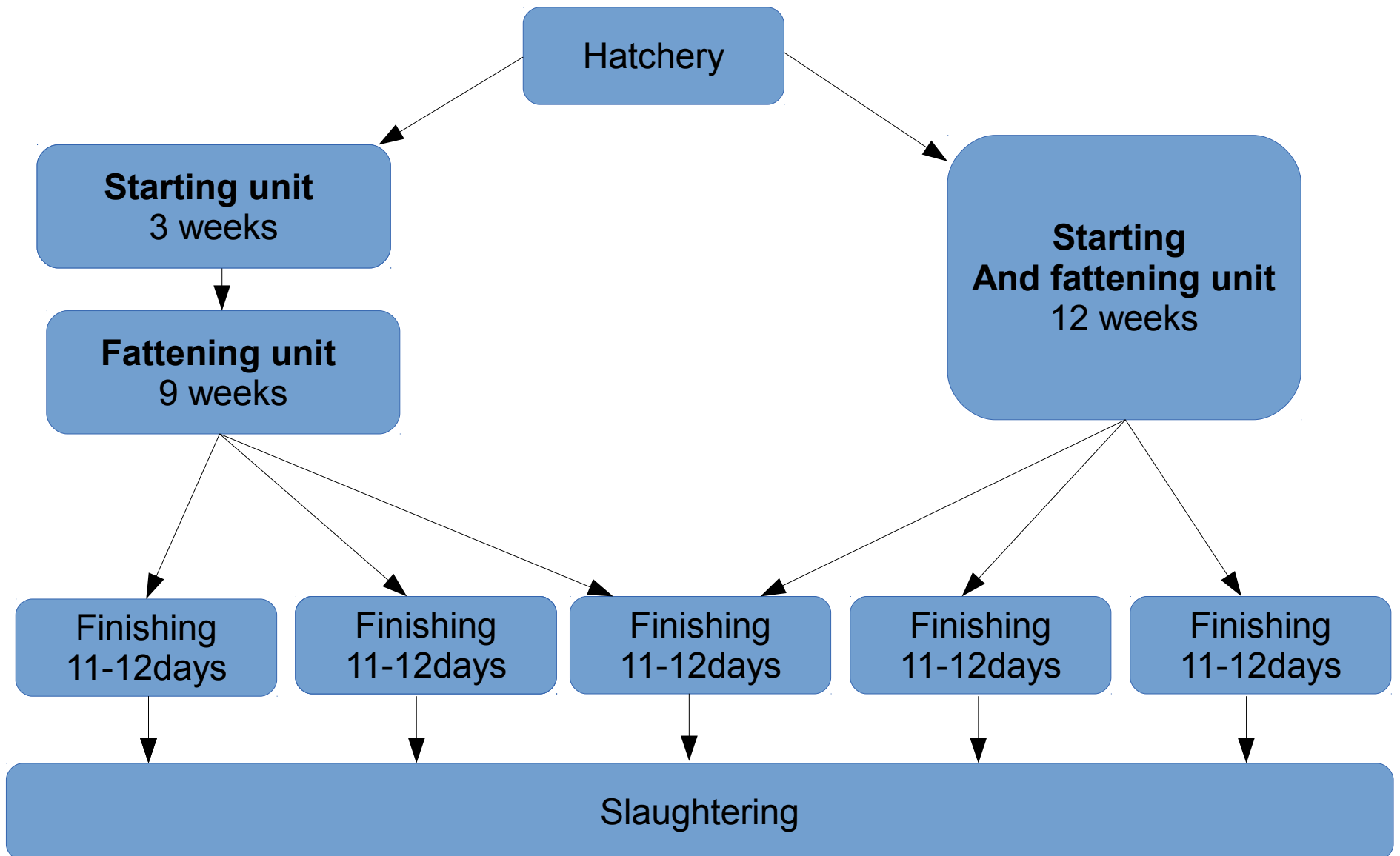
Complex traceback of epidemiological links – done for 38 / 67

- For a single band of fattening ducks : one or more hatcheries and many breeder flocks
- For a single band of « finished » ducks : 3 to 14 « brother » flocks & 3 bands within 40 days
- Field teams overwhelmed with cullings, awareness and communication on measures and administrative tasks / difficulties to feed back with data reports
- Approach at the outbreak level combined with approach at the organisation level : analysis of flow, commercial links
  - Special attention to identify links outside the restriction zone
  - Traceback of breeder flocks

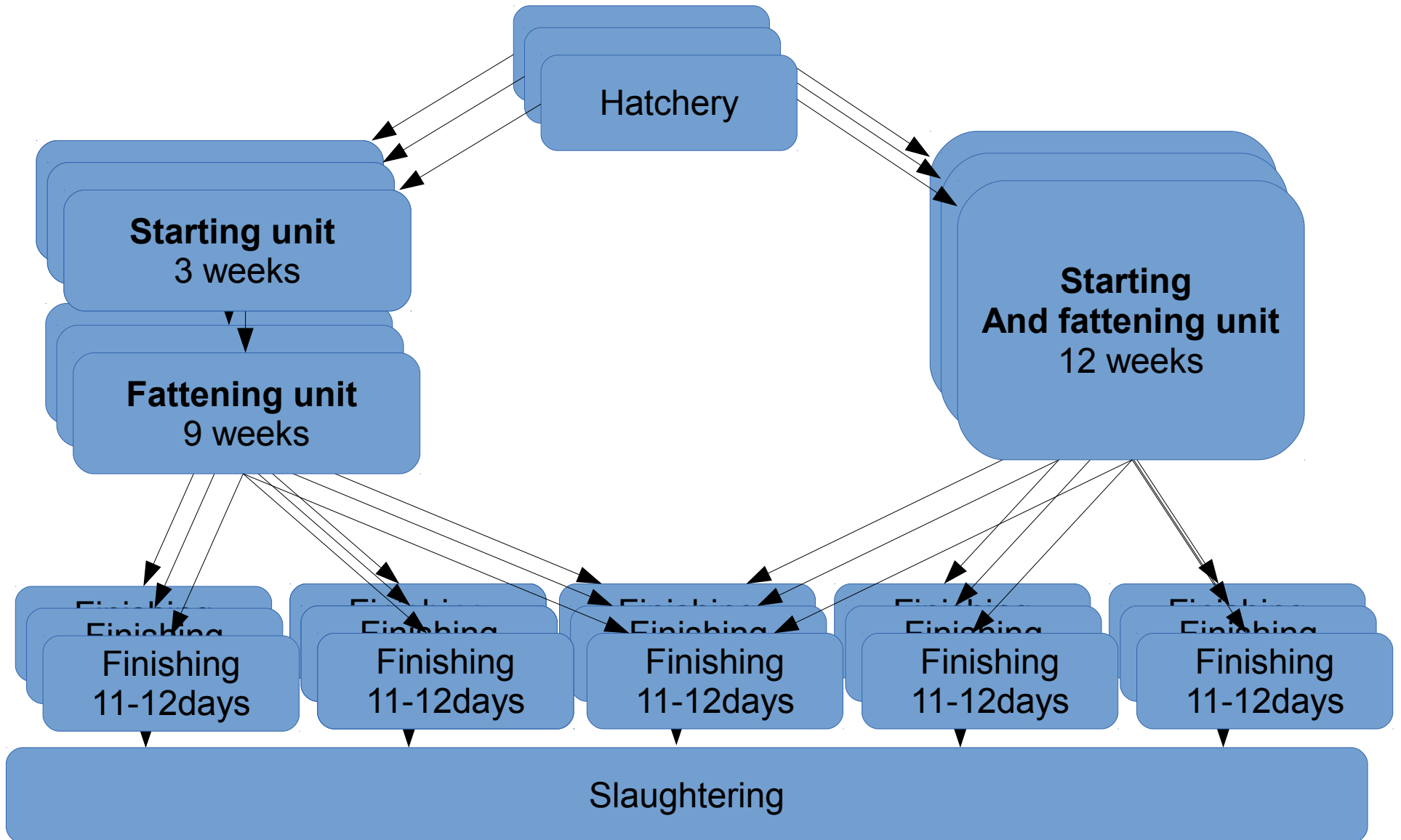




# Complex organisation



# To very complex organisation





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# Surveillance modalities

## Clinical surveillance

- Farmers and vets have to report any clinical suspicion of avian influenza.

## Active surveillance :

- Clinical inspection (and sampling < 17th of December) of farms before any movements out of the restricted zones
- Visit of farms epidemiologically link to an outbreak of HPAI
- Inspection and sampling of farms in the protection and surveillance zones (including non commercial farms in protection zone)



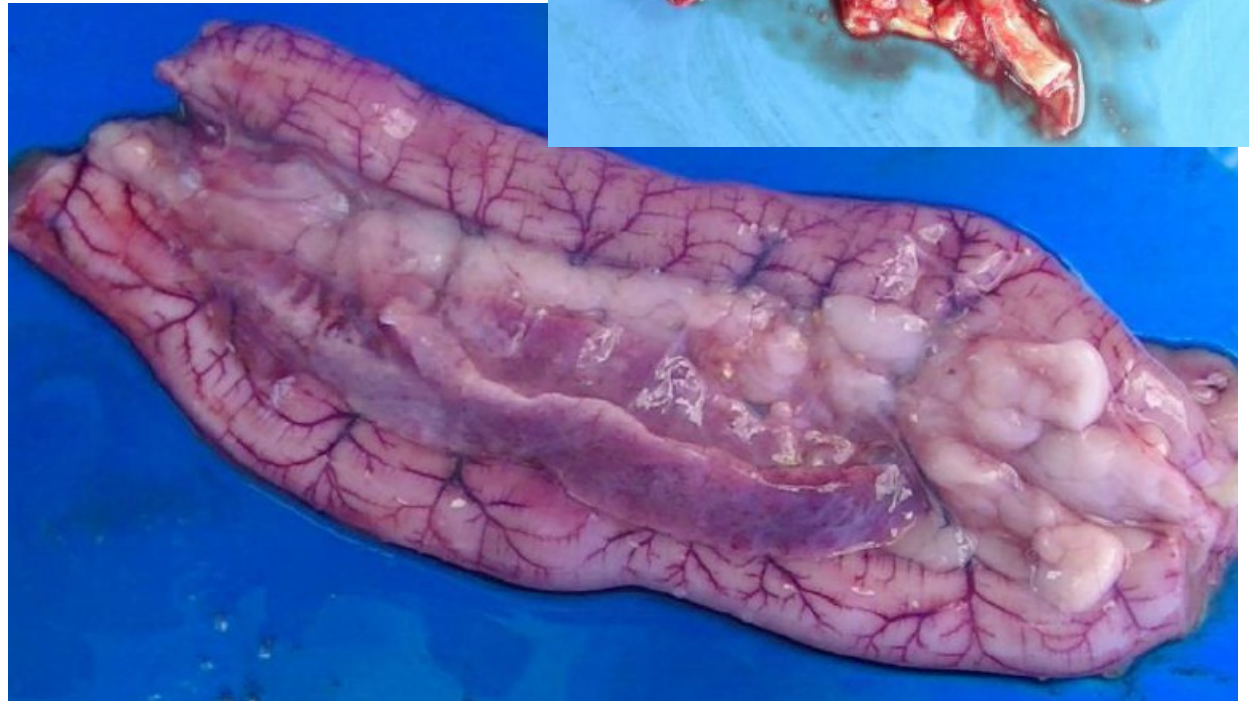
# Clinical surveillance



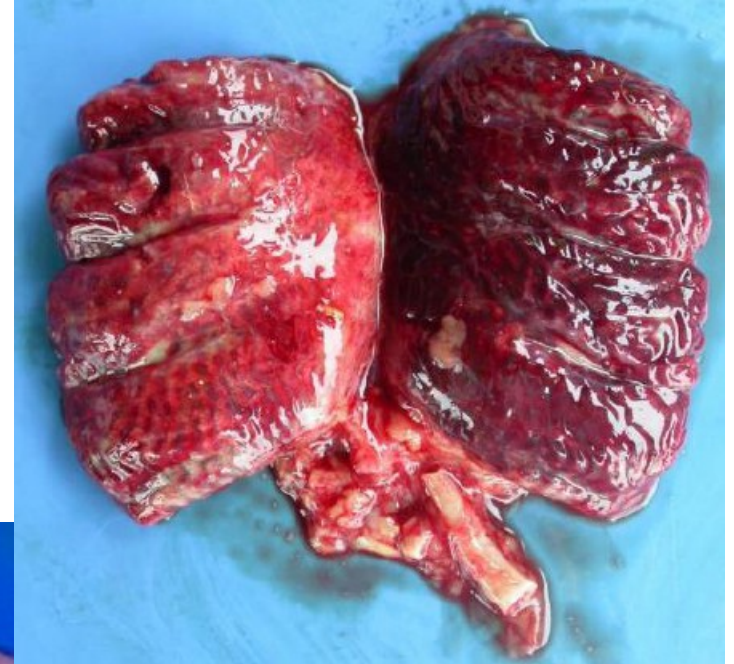
Facial oedema

Crédit  
Pr Jean-Luc GUERIN  
ENVT

Pancreatitis

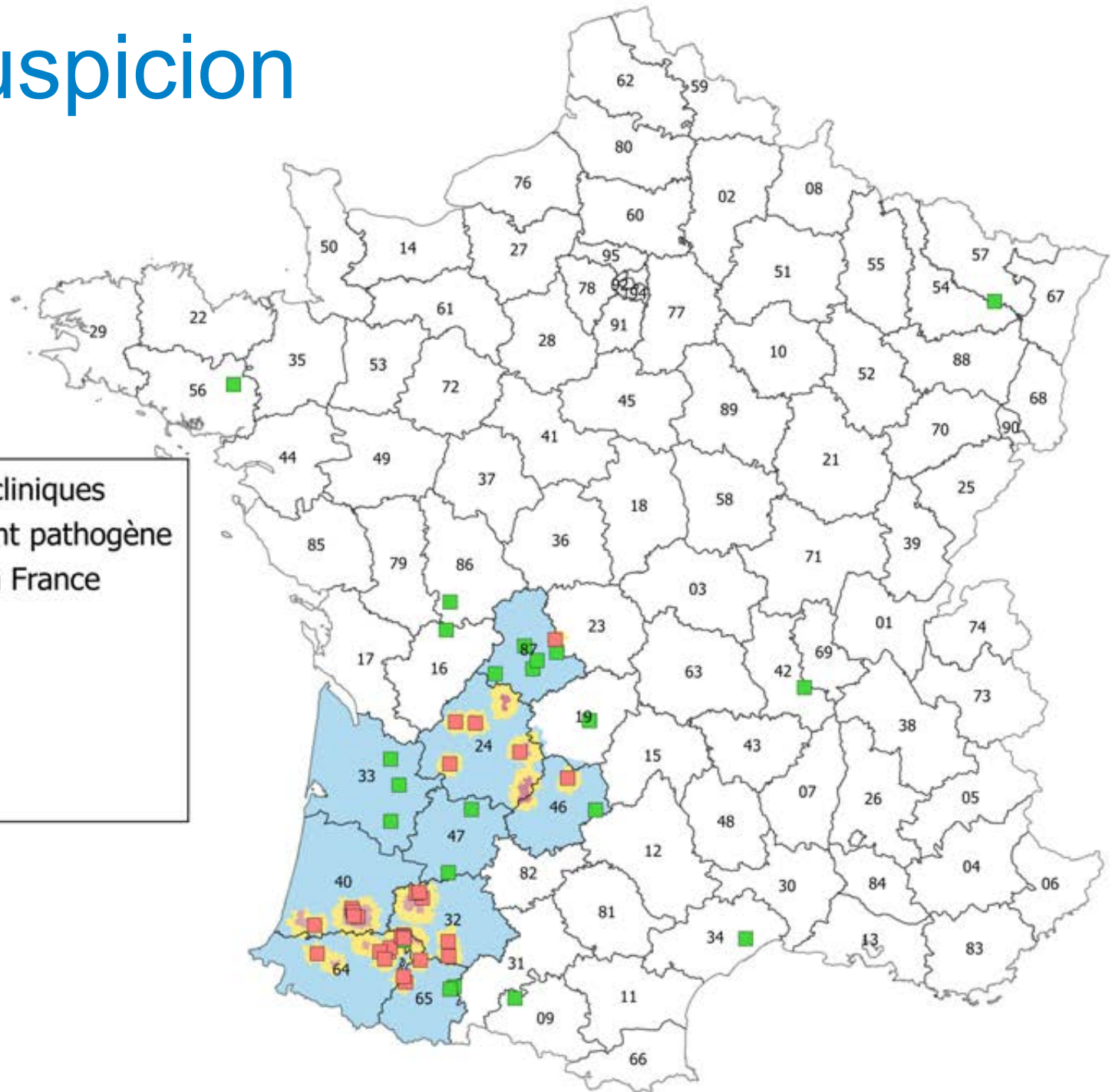
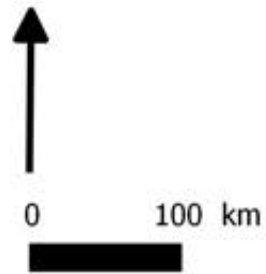
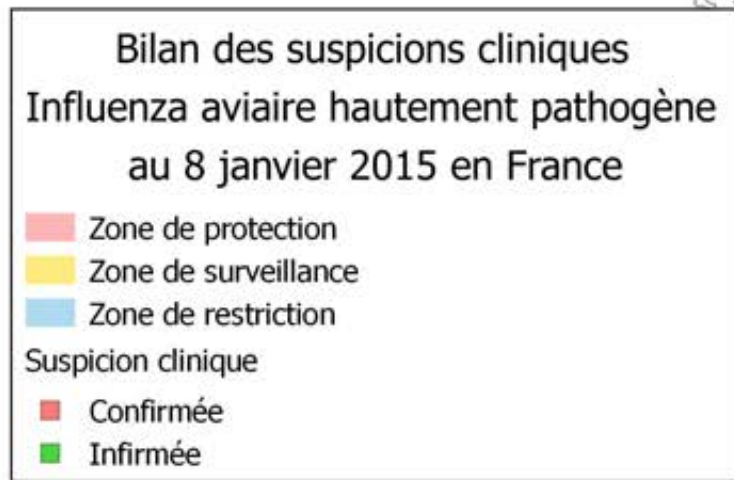


Pulmonary oedema





# Clinical suspicion



# Surveillance results (active surveillance)

Zone	Species	Number of farms with clinical inspection (and sampling)
Zone de protection	Gallineceans	54 - 7 % of farms (4)
	Palmipedes	105 - 9 % of farms (17)
Zone de surveillance	Gallineceans	150 - 8 % of farms (11)
	Palmipedes	509 - 23 % of farms (45)
Zone de restriction (hors ZP et ZS)	Gallineceans	426 - 8 % of farms (3)
	Palmipedes	263 - 7 % of farms (17)

Among the 86 farms with Palmipedes visited and sampled : 36 confirmed H5 HP (42 % of farms)

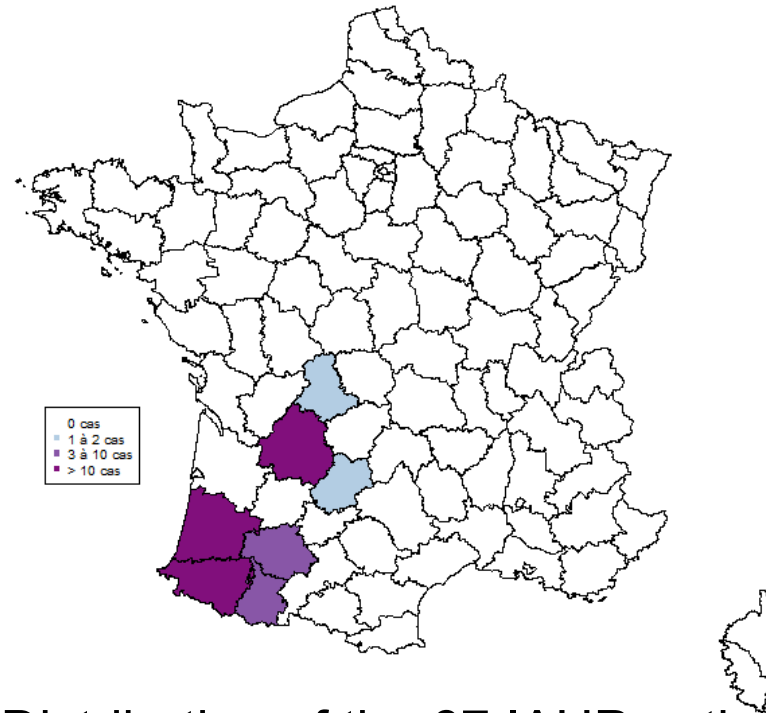


# Number and geographical distribution of IA outbreaks in France

## January 8, 2016

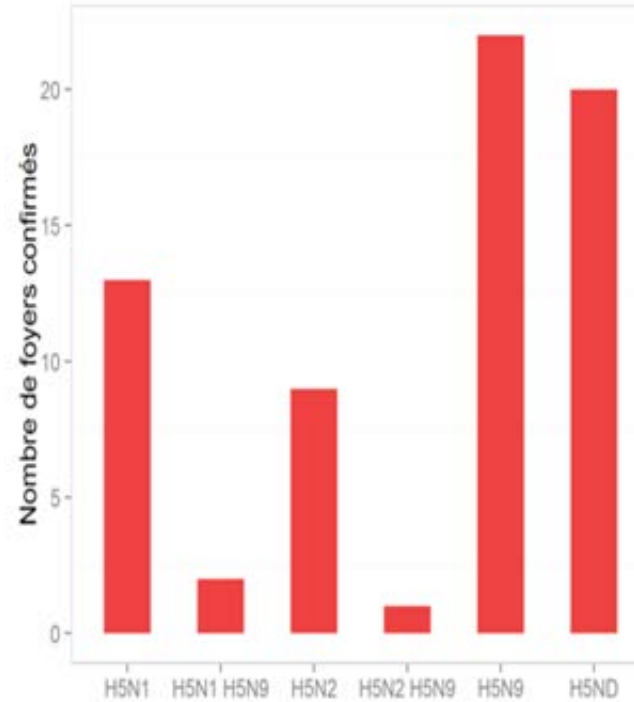
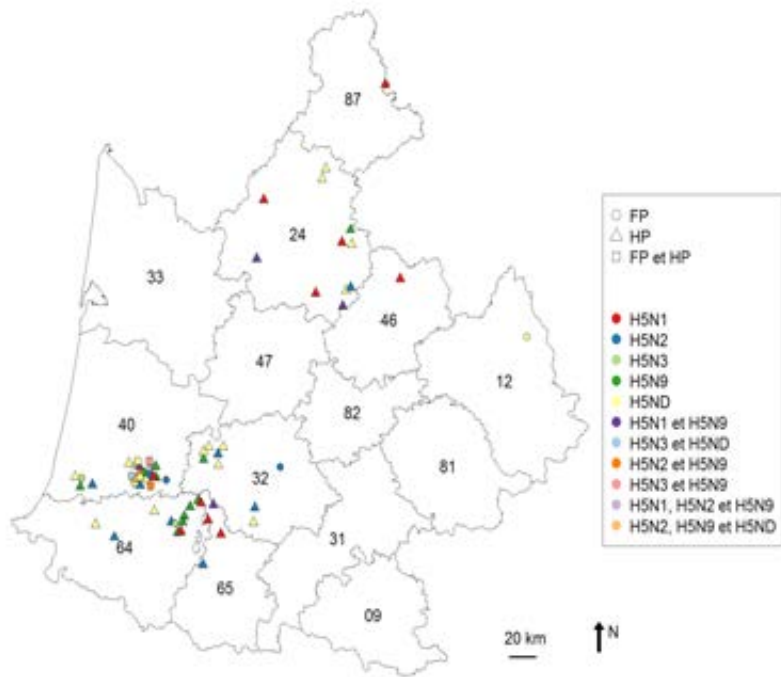
129 suspicions :

- 45 negative results
- 3 pending results
- 81 positive results
  - 67 IAHP cases
  - 14 IAFP cases



Distribution of the 67 IAHP outbreaks

# Number and geographical distribution of the french IA outbreaks January 8, 2016



- Several serotypes (H5HP N1, N2, N9) sometimes in the same flock

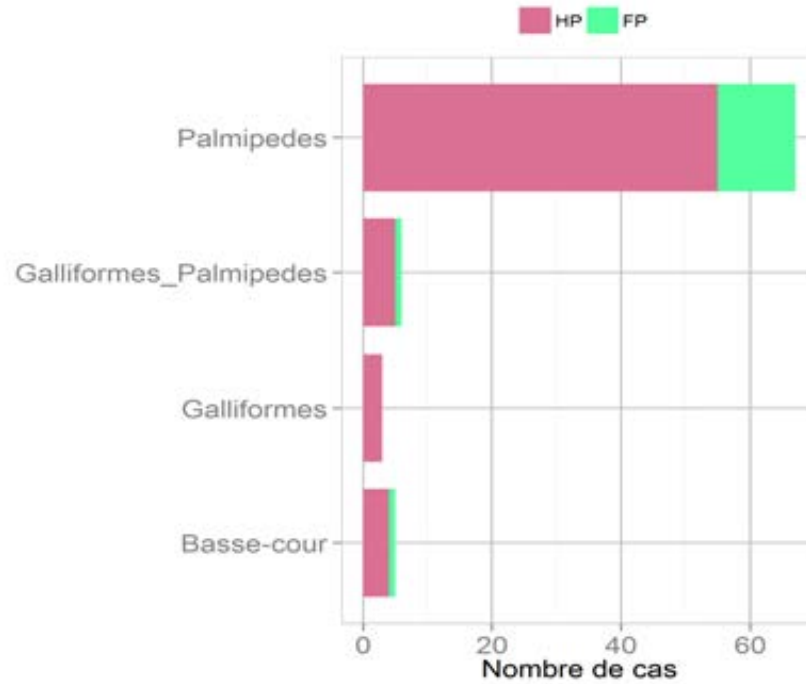
# Type of suspicion (Origin)

	HP positive	FP positive	negative	Suspect	Total
Clinical suspicion	25	0	31	2	58
National system of active surveillance	3	4	0	0	7
Epidemiological link	3	2	11	0	16
Movements	36	7	1	1	45
No data		1	2		3
<b>Total</b>	<b>67</b>	<b>14</b>	<b>45</b>	<b>3</b>	<b>129</b>


- 43% of the clinical suspicions are confirmed
- High level of contamination in the controlled zones



# Repartition of the cases (IAHP and FP) depending on the type of production (commercial/private)



# First results of the epidemiological investigations

- Specificity of the duck production for « foie gras »
    - Limited area (South West of France)
    - Short cycles of production (10-11 days)
    - Low number of birds/flock (around 1000)
- 
- Very high level of movements (trucks, birds, persons)
  - Number of epidemiological links +++
  - Most of them in the restricted area (except for hatcheries)

# Serological surveillance for H5 Avian Influenza viruses in domestic poultry since 2009

Not detected in:

Species / Prod		
Quail breed		

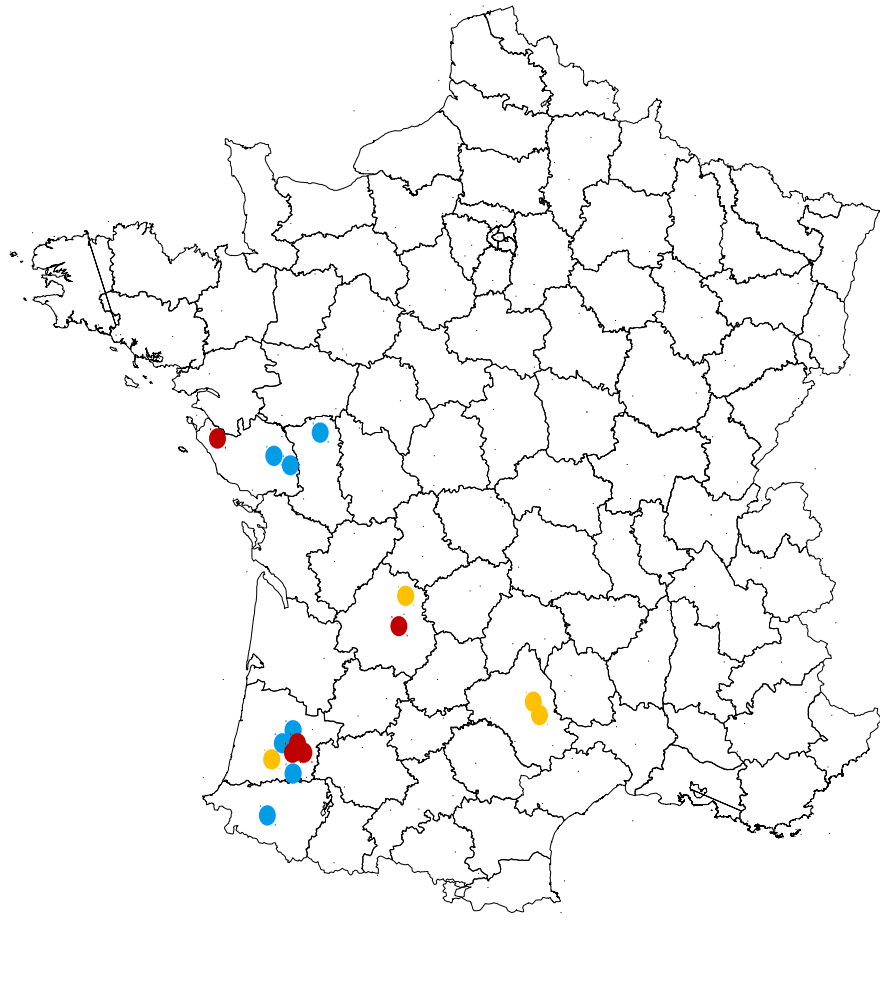
# Serological surveillance for H5 Avian Influenza viruses in domestic poultry since 2009

Detected in (nb positive / nb tested):

	2009	2010	2011	2012	2013	2014	2015
<b>Mallard (game)</b>	3/12	4/20	1/18	0/18	0/20	0/14	0/15
	25,0%	20,0%	5,6%	0,0%	0,0%	0,0%	0,0%
<b>Meat ducks</b>	3/55	2/74	0/74	0/76	0/82	2/35	0/31
	5,5%	2,7%	0,0%	0,0%	0,0%	5,7%	0,0%
<b>Breeder ducks and future breeders</b>	14/68	18/85	19/72	14/72	24/78	8/77	7/72
	20,6%	21,2%	26,4%	19,4%	30,8%	10,4%	9,7%
<b>Ready for fatty liver ducks</b>	6/71	1/85	6/91	5/93	5/93	3/59	4/56
	8,5%	1,2%	6,6%	5,4%	5,4%	5,1%	8,9%
<b>Breeding geese and future breeders</b>	4/11	6/13	2/19	2/16	4/16	5/35	5/28
	36,4%	46,2%	10,5%	12,5%	25,0%	14,3%	17,9%
<b>Pheasant</b>	1/29	1/48	0/39	0/37	0/34	0/19	0/20
	3,4%	2,1%	0,0%	0,0%	0,0%	0,0%	0,0%
<b>Guinea Fowl</b>	/	1/60	0/54	0/56	0/49	0/65	0/57
		1,7%	0,0%	0,0%	0,0%	0,0%	0,0%

# Serological surveillance for H5 Avian Influenza viruses in domestic poultry in 2015

## Detection of 16 seropositive poultry in 2015:



- Ready for fatty liver ducks (n=4)
- Breeder ducks & future breeders (n=7)
- Breeding geese & future breeders (n=5)



# Risk factors identified

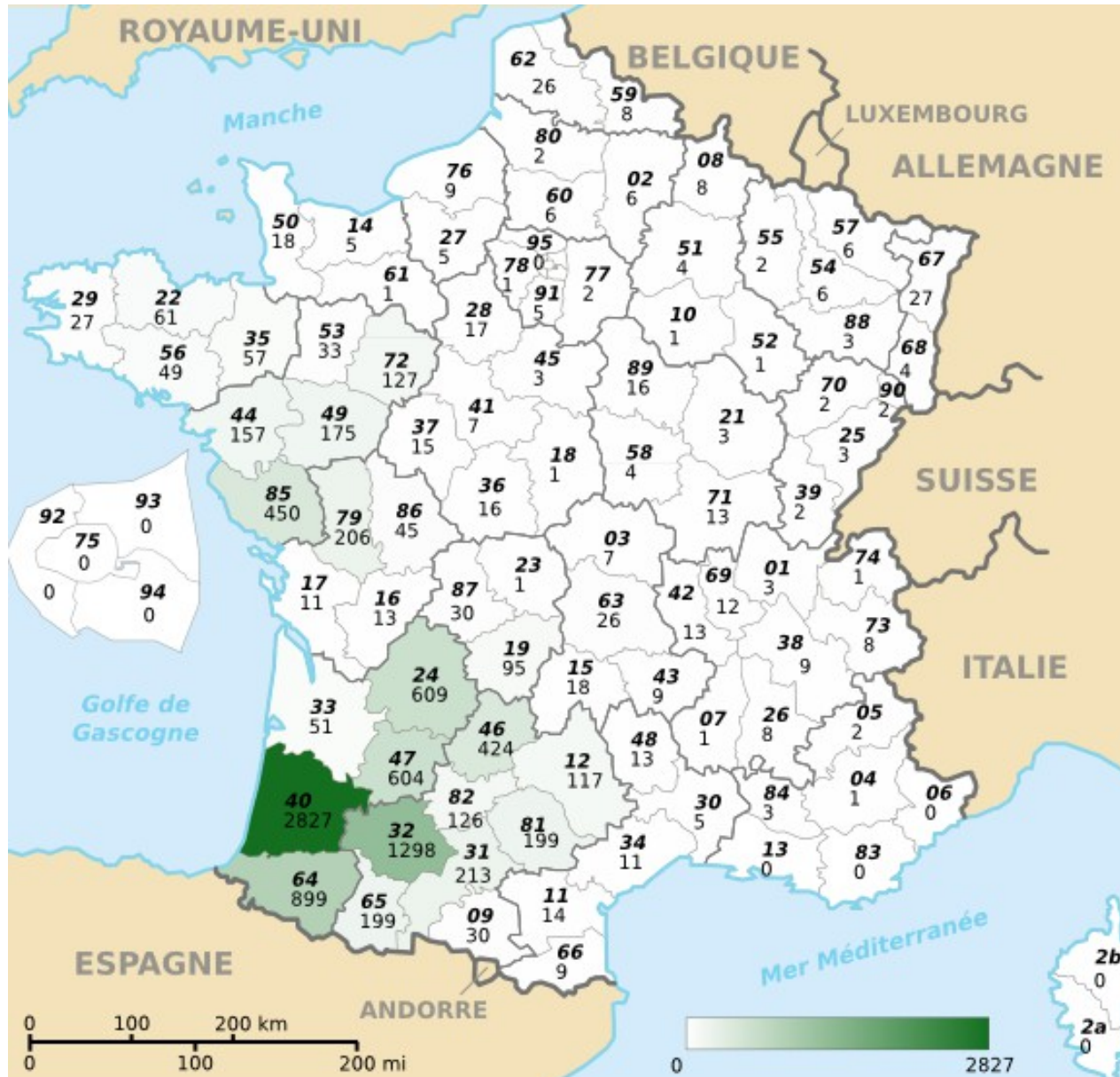
Galliniforms breeding sector seems secured (biosecurity measures regularly controlled towards salmonellosis)

Duck production concentrates the risk :

- At the fattening level biosecurity is weak
  - Cleaning and disinfection of premises and transports, no unique flocks, hygienisation of manure, human practices of biosecurity
  - Absence of systematic control of incoming animals
- At the breeder flocks level, biosecurity can be improved :
  - No systematic inspection of hatcheries
  - No qualification of parental flock status

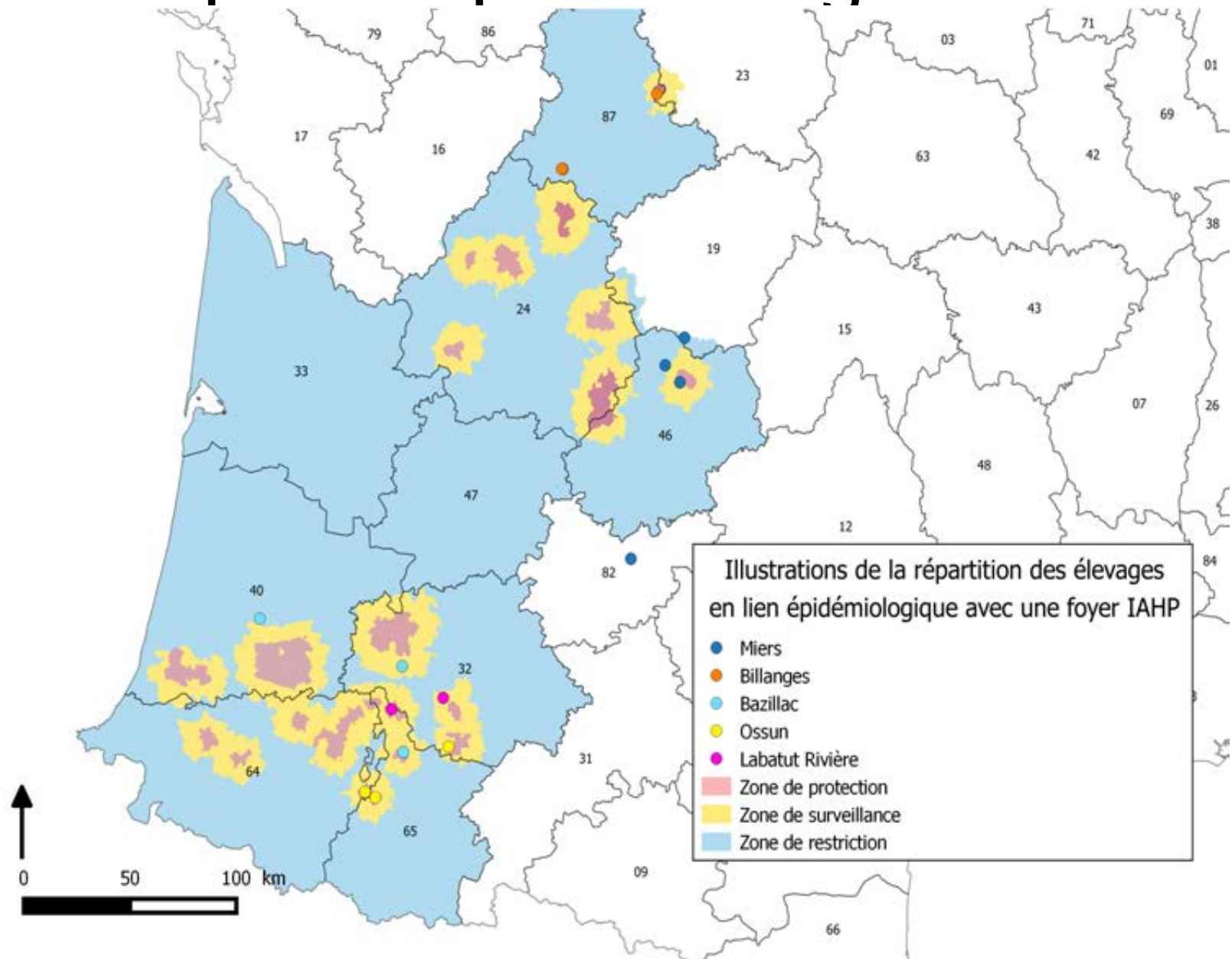


# Distribution of duck production



70 % of the duck farms within the current restriction zone

# Exemple of epidemiological links





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# Adaptation of strategy of control to an unique situation

- Objective = Eradication
- No evidence of zoonotic capacity
- Silent disease in duck and the chicken/turkeys apparently not infected
- The situation to handle is not epizootic resulting from the introduction of an exotic virus → usual methods of control need to be adapted
- Rapidity of action versus sustainability
- Expected time to eradication 3 to 6 months







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# Strategy to handle the disease

- To eradicate
  - Regulatory biosecurity measures in all poultry farms
  - Surveillance measures in all poultry sectors
  - Progressive planned eradication in the infected areas
- To prevent
  - Maintenance of biosecurity measures in all poultry farms
  - Qualification of breeders
  - Single database for owners registration and movements
  - Compartmentisation





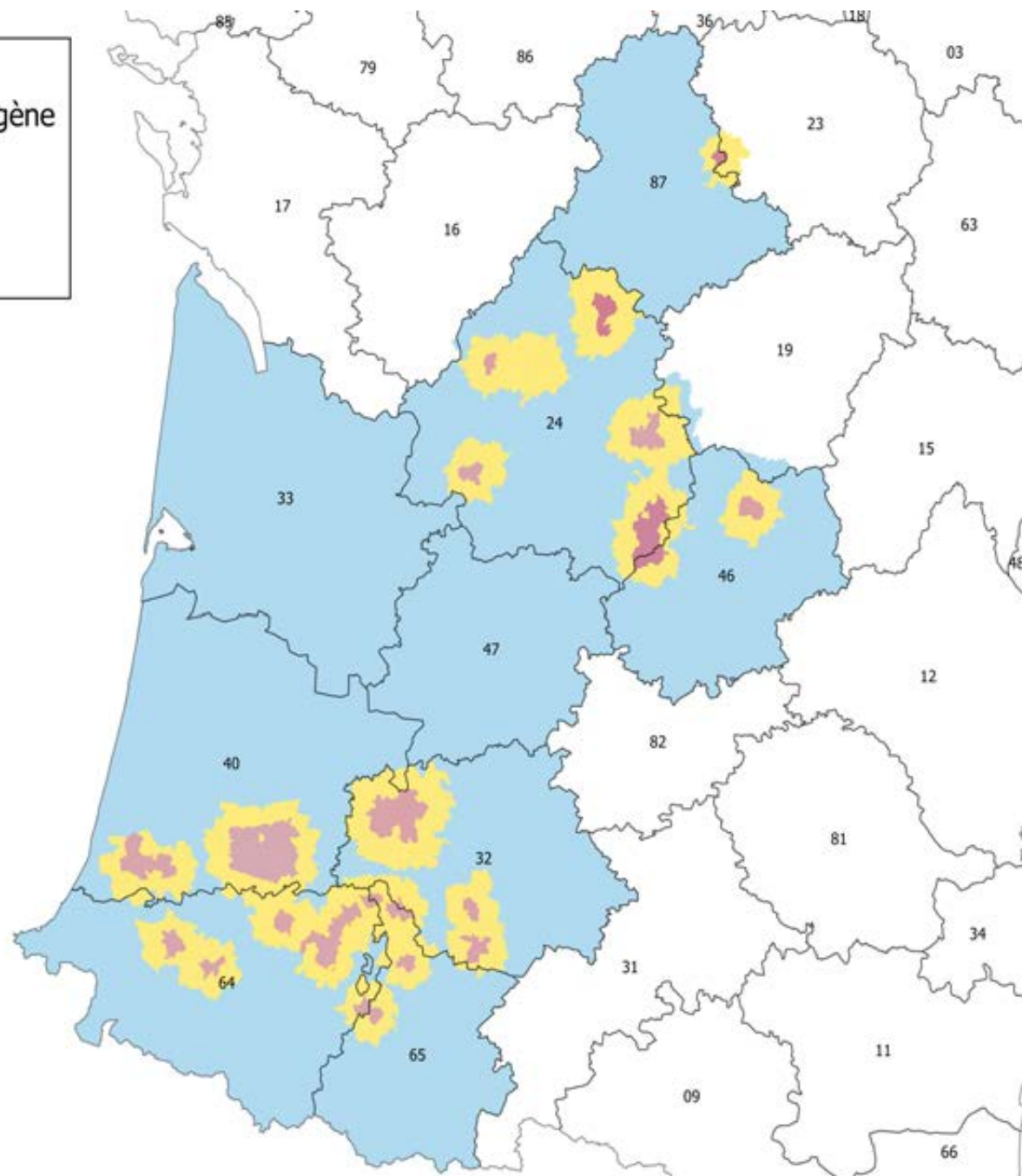


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### Zones réglementées Influenza aviaire hautement pathogène au 8 janvier 2016 en France

- Zone de protection
- Zone de surveillance
- Zone de restriction



# Biosecurity measures

- Single band of age
- Empty period
- Cleaning and disinfection
- Management of manure and slurry
- Protection of farms (surrounding, cleaning and disinfection, staff,...)
- Transport
- Education and awareness programme





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# Progressive planned depopulation

- Immediate culling of detected infected flocks
- Definition of smaller areas of management
  - Spontaneous depopulation of finished flocks without restocking
  - Management of transport to finishing unit and to slaughterhouse
  - Accelerated depopulation



# Objectives of surveillance

- Challenge the free zone
  - Immediate investigation of epidemiological links and clinical suspicion
  - Planned visits and systematic sampling in all breeder sectors if possible within 2 months (target prevalence limit of 1%)
  - Survey in other poultry sector
- Surveillance in restricted zone
  - Rapid visits and sampling in all breeder sectors
  - Tests for movement authorisation when requested
  - Assessment of status of flocks triggered by level of depopulation to lift the restriction zones
- Surveillance of wildlife
  - Collection and testing of found dead birds
  - Testing of animals collected in wildlife clinics







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# Assessment of efficacy

- Testing of flocks after restocking, for removal of protection zone, surveillance zone and restriction zone
- Implementation of qualification of breeder flocks and hatcheries
- Annual serological survey



# Conclusion

- Unprecedented situation
- Several non zoonotic viruses
- Almost exclusive to palmipeds
  - Production particularly important in France
  - Production with sanitary weaknesses
- All the French stakeholders are committed to eradication





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