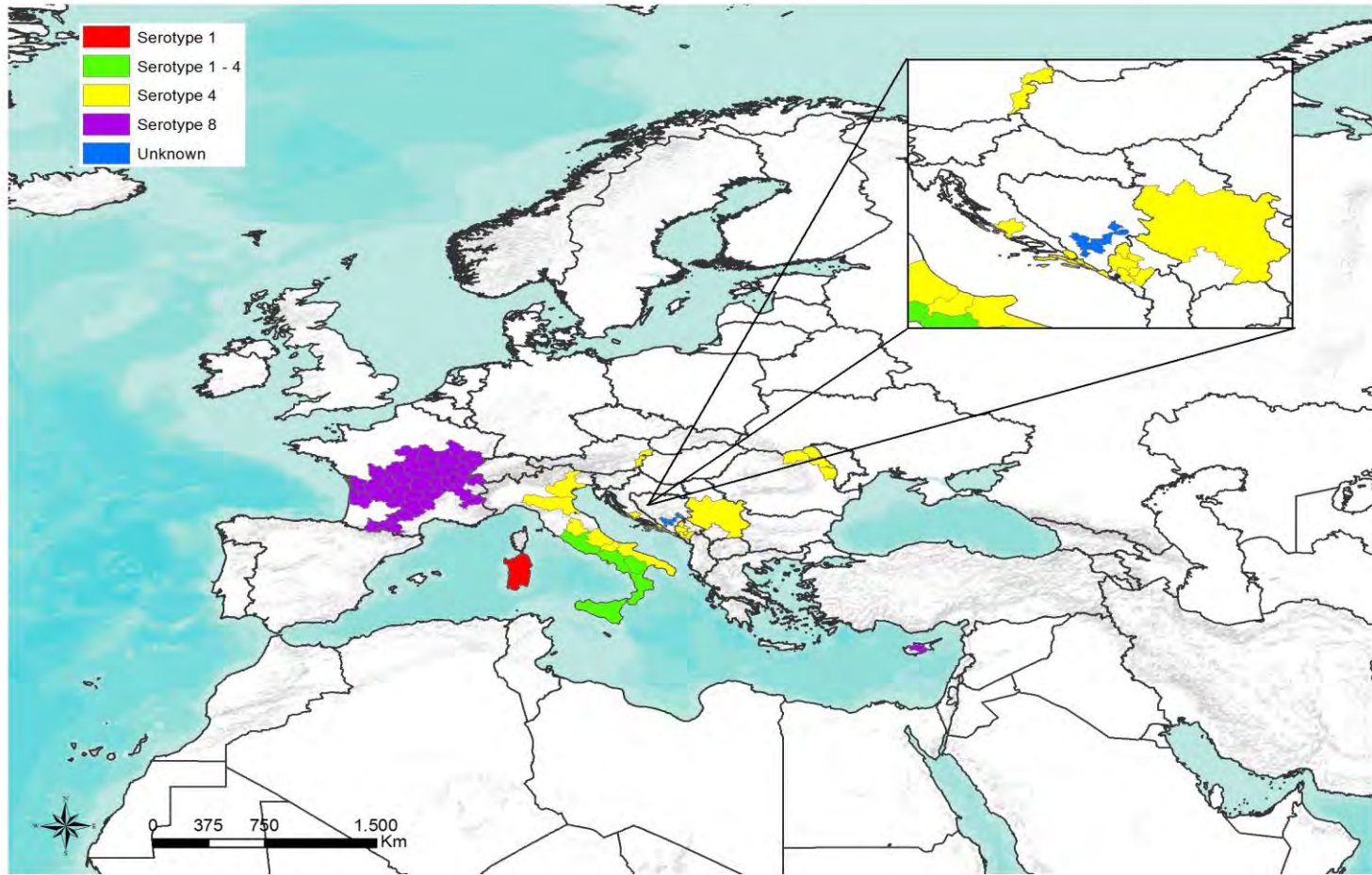


Bluetongue

05/10/2016





BT- Epidemiological Situation in Italy in 2015

BTV 1 and BTV 4

BTV 1



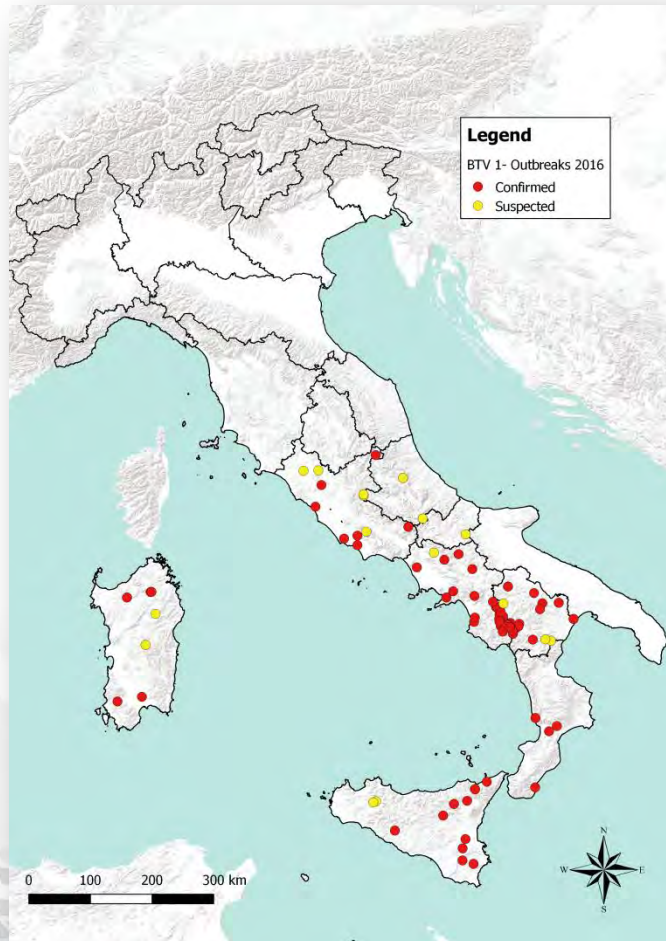
BTV 4



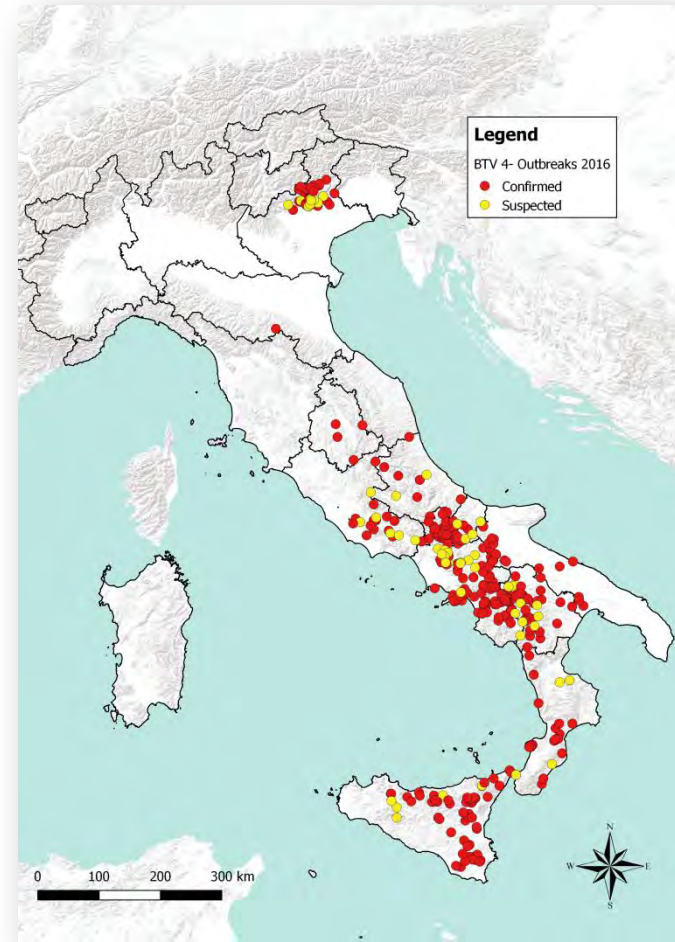
BT- Epidemiological Situation in Italy in 2016

BTV 1 and BTV 4

BTV 1



BTV 4



BT- Epidemiological situation in Italy clinical outbreaks BTV 1 and BTV 4



2/01/2015-
7/01/2015

13/07/2015-
15/10/2015

2015

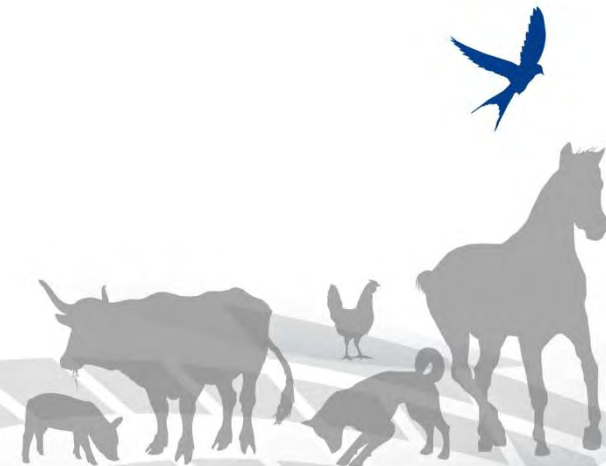


BT- Epidemiological situation in Italy clinical outbreaks



Source:
SIMAN

2016



BT- Epidemiological situation in Italy

Confirmed and suspected outbreaks— 1/01/2016-29/09/2016

2016

Region	Serotype	Confirmed	Suspected	Total
ABRUZZO	BTV 1		4	4
	BTV 4	7	3	10
BASILICATA	Serotyping is ongoing	10		10
	BTV 1	9	3	12
CALABRIA	BTV 4	45	10	55
	Serotyping is ongoing	8		8
CAMPANIA	BTV 1	4	1	5
	BTV 4	20	4	24
EMILIA ROMAGNA	Serotyping is ongoing	13	19	32
	BTV 1	36	1	37
LAZIO	BTV 4	77	14	91
	Serotyping is ongoing		2	2
MOLISE	BTV 4	1		1
	Serotyping is ongoing		2	2
PUGLIA	BTV 1	7	3	10
	BTV 4	14	5	19
SARDINIA	Serotyping is ongoing		4	4
	BTV 1		1	1
SICILY	BTV 4	50	5	55
	Serotyping is ongoing	2		2
TUSCANY	BTV 4	22		22
	Serotyping is ongoing		8	8
UMBRIA	BTV 1	5	2	7
	Serotyping is ongoing	1	2	3
VENETO	BTV 1	10	3	13
	BTV 4	56	6	62
TUSCANY	Serotyping is ongoing		1	1
UMBRIA	BTV 4	4		4
VENETO	BTV 4	60	13	73
Total		461	116	577

2016

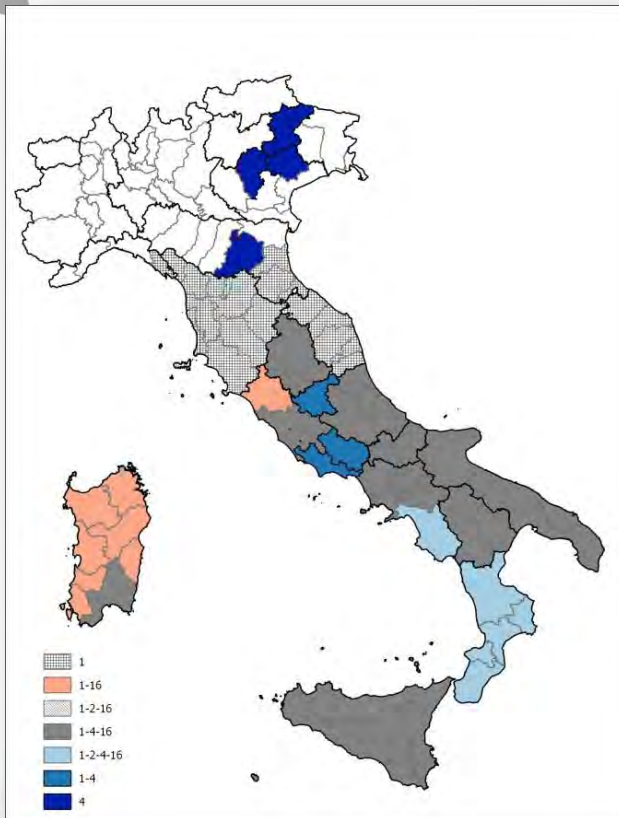
BT- Epidemiological situation in Italy confirmed outbreaks— 1/01/2016-29/09/2016



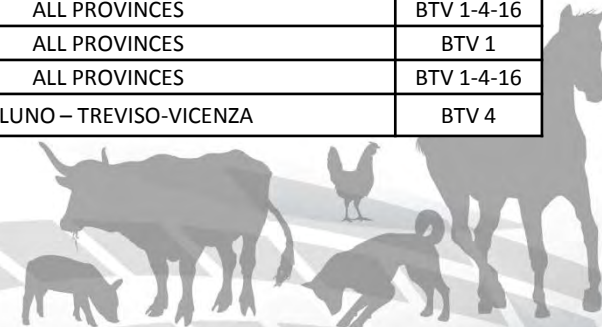
Region	Serotype	Confirmed outbreaks	CATTLE/BUFFALOES				SHEEP/GOATS			
			Susceptible	Cases	Clinically affected	Deaths	Susceptible	Cases	Clinically affected	Deaths
ABRUZZO	BTV 4	7	116	6	0	0	711	7	7	0
BASILICATA	Serotyping is ongoing	10	190	7	0	0	418	73	71	12
	BTV 1	9	1573	15	0	0	260	3	0	0
CALABRIA	BTV 4	45	1099	45	0	0	5114	280	176	118
	Serotyping is ongoing	8					1304	53	34	26
	BTV 1	4	83	3	0	0	60	1	0	0
CAMPANIA	BTV 4	20	329	18	0	0	916	98	31	7
	Serotyping is ongoing	13					2679	98	91	14
	BTV 1	36	1168	30	2	0	63	44	0	0
EMILIA ROMAGNA	BTV 4	77	1563	112	14	0	7246	537	496	152
	BTV 4	1	75	3	0	0				
LAZIO	BTV 1	7	1230	9	1	0	243	2	0	0
	BTV 4	14	344	9	0	0	2258	30	25	9
MOLISE	BTV 4	50	600	20	0	0	5446	640	619	322
PUGLIA	Serotyping is ongoing	2					43	3	2	0
	BTV 4	22	757	52	0	0	36	1	1	0
SARDINIA	BTV 1	5	5	1	1	0	2104	8	0	0
SICILY	Serotyping is ongoing	1	21	1	0	0				
	BTV 1	10	589	23	0	0				
	BTV 4	56	3308	233	7	0	1966	76	70	1
UMBRIA	BTV 4	4	157	5	0	0				
VENETO	BTV 4	60	653	78	4	0	3949	56	56	5
Total		461	13860	670	29	0	34816	2010	1679	666



Provinces under Restriction



REGION	PROVINCE	SEROTYPE
ABRUZZO	ALL PROVINCES	BTV 1-4-16
BASILICATA	ALL PROVINCES	BTV 1-4-16
CALABRIA	ALL PROVINCES	BTV 1-2-4-16
CAMPANIA	SALERNO	BTV 1-2-4-16
CAMPANIA	AVELLINO - CASERTA - NAPOLI - BENEVENTO	BTV 1-4-16
EMILIA ROMAGNA	RAVENNA - FORLI' CESENA - RIMINI	BTV 1
EMILIA ROMAGNA	BOLOGNA	BTV 4
LAZIO	VITERBO	BTV 1-16
LAZIO	ROMA	BTV 1-4-16
LAZIO	LATINA - FROSINONE - RIETI	BTV 1-4
LIGURIA	LA SPEZIA	BTV 1
MARCHE	ALL PROVINCES	BTV 1
MOLISE	ALL PROVINCES	BTV 1-4-16
PUGLIA	ALL PROVINCES	BTV 1-4-16
SARDEGNA	CARBONIA IGLESIAS - MEDIO CAMPIDANO - NUORO - OGLIASTRA - OLBIA TEMPIO - ORISTANO - SASSARI	BTV 1-16
SARDEGNA	CAGLIARI	BTV 1-4-16
SICILIA	ALL PROVINCES	BTV 1-4-16
TOSCANA	ALL PROVINCES	BTV 1
UMBRIA	ALL PROVINCES	BTV 1-4-16
VENETO	BELLUNO - TREVISO - VICENZA	BTV 4



Source:
SANAN-SIBT

Vaccination

1/01/2016-28/09/2016

 CESME
Centro di Referenza Nazionale

REGION	SEROTYPE	CATTLE/BUFFALOES			SHEEP/GOATS		
		With 1 inoculation	With 2 inoculation	Annual recall	With 1 inoculation	With 2 inoculation	Annual recall
ABRUZZO	BTV 1	195	183		232	207	3
	BTV 4				1329		
	BTV 1-4	68	63		6067		
BASILICATA	BTV 1	1316	1244		742	367	
	BTV 4	91	156		195		
	BTV 1-4	2302	1718	33	644	316	
	BTV 2-4	58					
CALABRIA	BTV 1	1070	174	67	73228	62533	
	BTV 4	996	275		70585	1846	
	BTV 1-8	6	6				
	BTV 1-4	13	13		293		
	BTV 2-4		16		51		
CAMPANIA	BTV 1	140	68		236	212	
	BTV 4	142	136				
	BTV 1-4	57	49				
EMILIA-ROMAGNA	BTV 8	10				6	26
	BTV 1	3638	3752	3455	1353	757	6354
	BTV 9						69
	BTV 4	2	5				
LAZIO	BTV 1	5591	4498	2267	9015	5721	16683
	BTV 4	4103	2873	1	3152	6	
	BTV 1-8	380	261	131	60		830
LIGURIA	BTV 1	143	239	35	175	303	85
LOMBARDY	BTV 8	7					
MARCHE	BTV 8	2	4				3
	BTV 1	9781	8640	22895	13024	7778	56829
	BTV 1-8				21		115
Total		30111	24373	28887	180402	80052	80997

Source:
SANAN-SIBT

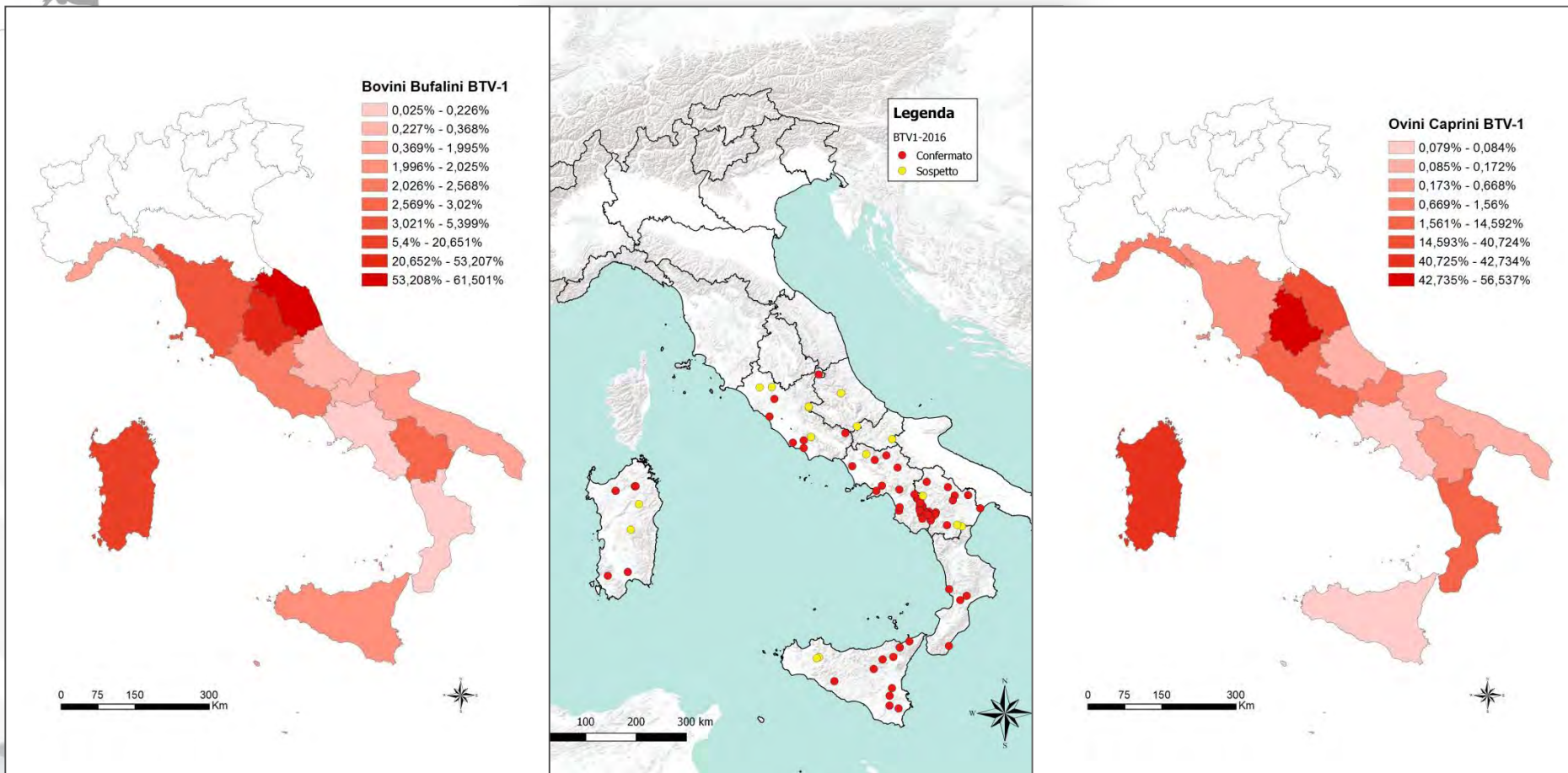
Vaccination

1/01/2016-28/09/2016

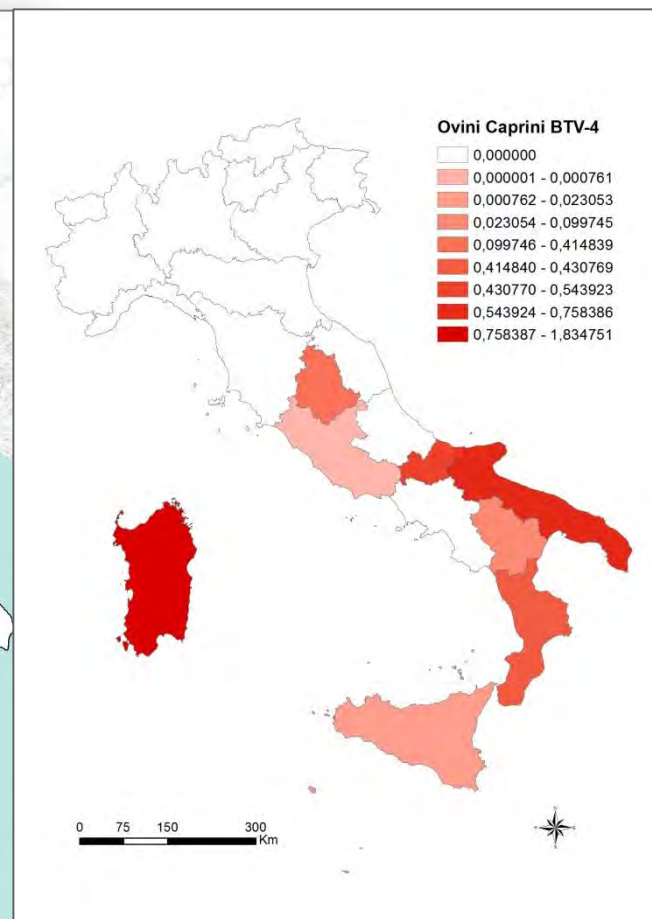
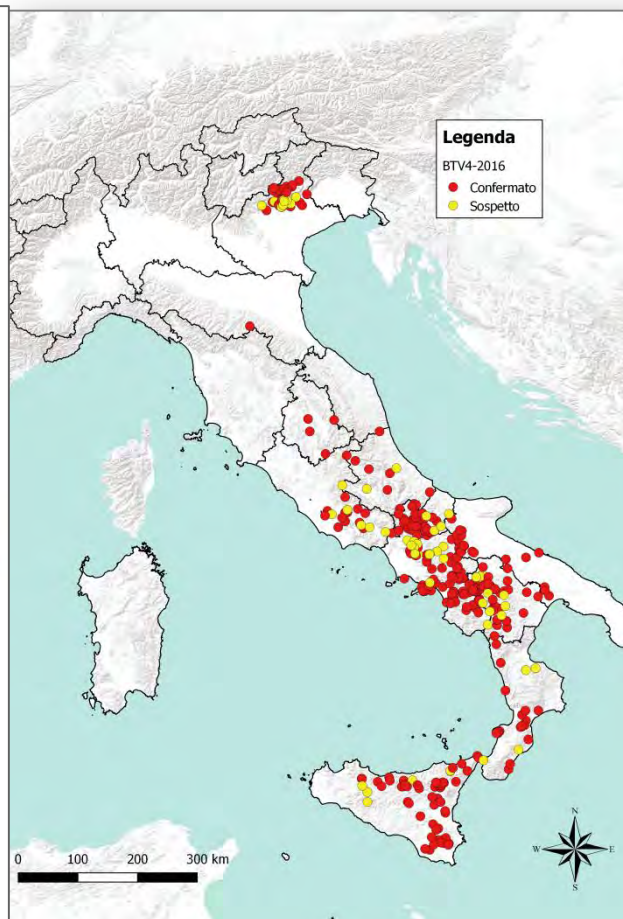
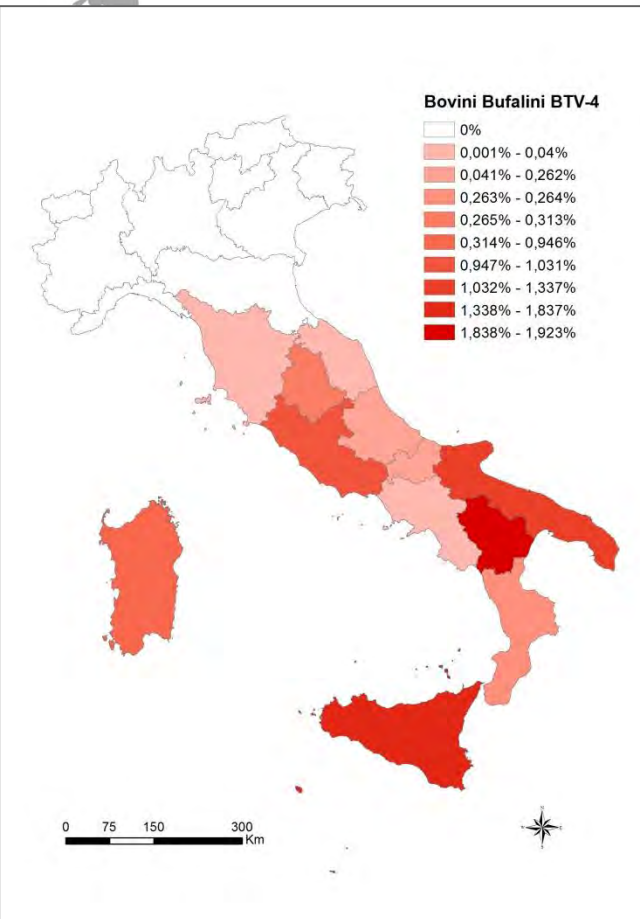
REGION	SEROTYPE	CATTLE/BUFFALOES			SHEEP/GOATS		
		With 1 inoculation	With 2 inoculation	Annual recall	With 1 inoculation	With 2 inoculation	Annual recall
MOLISE	BTV 1	146	23		7	138	
	BTV 4	23	23				
	BTV 1-8				99		
	BTV 1-4	138	92		987	465	
	BTV 2-4	117					
PIEMONTE	BTV 8	2190	2082				
PUGLIA	BTV 1	1156	1389	404	671	581	
	BTV 4	1079	716	550	1078	1473	
	BTV 1-4	152	89	238	520		
	BTV 2-4	970	803	22	1169	1093	
SARDINIA	BTV 8	16	39	61			
	BTV 1	30966	18360	35334	491913	608475	872986
	BTV 4	68	104	159	78	62	
	BTV 1-8	20	2		1417	480	4130
	BTV 1-4		12				
SICILY	BTV 2-4	2199	302	1883	81666	21076	42666
	BTV 1	5070	4383	8	397	626	150
	BTV 4	3905	3677	7	372	150	
	BTV 1-4	2403	2599	2	474	87	
TUSCANY	BTV 2-4	130	58		199		
	BTV 8	52					
	BTV 1	3590	3952	688	2271	2461	542
UMBRIA	BTV 1-8		91				
	BTV 1-4		1				
	BTV 8	15	15	27			6
	BTV 1	8748	7440	21476	12477	8991	59347
	BTV 9	40		66			
Total	BTV 4	65	38	132	70	263	236
	BTV 1-8				130	80	536
	BTV 1-4	153			1	1	6
Total		63411	46290	61057	595996	646502	980605



BTV-1 Vaccination



BTV-4 Vaccination



Bluetongue: 1266/2007 surveillance

There are two main objectives of the surveillance of BT:

1 To demonstrate the absence of viral circulation of one or more serotypes. If the absence in a territory (province) is demonstrated for at least two vector seasons, the Member Country may require that this territory (province) is declared free.




Bluetongue: 1266/2007 surveillance

2 Detect and identify possible incursions of new serotypes/strains in the territory.

Because it is not possible to exclude the introduction of other viral serotypes/strains, it is necessary that such surveillance is carried out in all the territories under restriction.



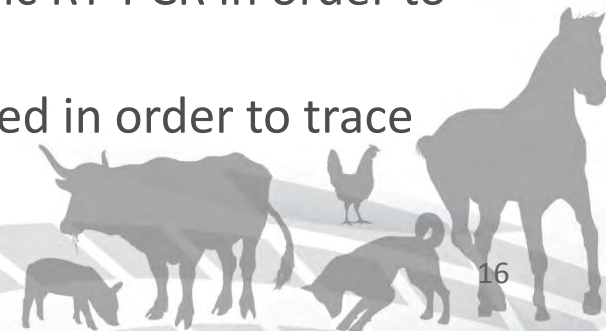


The programs of the bluetongue monitoring consist of at least **passive clinical surveillance** and **active surveillance** based on laboratory tests.

The **active surveillance** is based on serological control of susceptible animals, preferably cattle. These sentinel animals are sampled at least once a month during the period of vector activity, if it is known. In the absence of such information, the animals are tested at least once a month throughout the year.

Positive samples are tested by VNT/serotype specific RT-PCR in order to ascertain the serotype circulating.

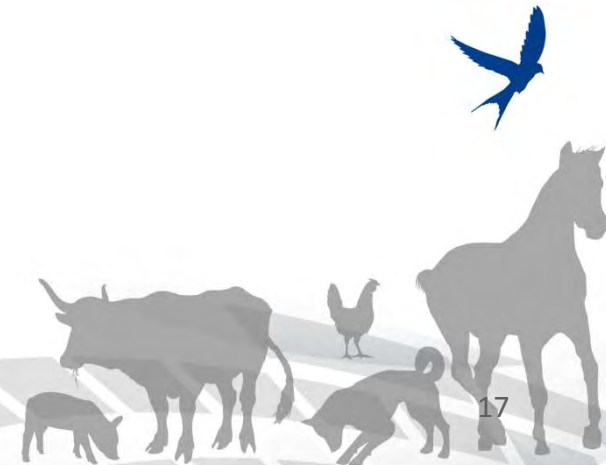
Strains responsible for new incursions are sequenced in order to trace back possible origin



Bluetongue: 1266/2007

→ *Entomological surveillance is needed to:*

- ◆ **Identify the main vector species**
- ◆ **Assess the seasonality of vectors**



Bluetongue: 1266/2007 serological surveillance



The **minimum geographical unit** of reference for monitoring the bluetongue can be represented by a grid of around 45×45 km (2,025 km²).





Decreasing the size of the **geographical unit** of reference for monitoring the bluetongue, increases the sensitivity of the system, and then the probability to early detect the virus in case of introduction.



Bluetongue: serological surveillance system in Italy

 CESME
Centro di Referenza Nazionale



Since 2002 up to 2014, a robust and organized network of **sentinel animals** has been established in Italy to monitor BT virus (BTV) circulation. The Italian territory has been divided in **20 x 20 km square grids**. In each square, around **58 animals** are selected and used as sentinel animals.

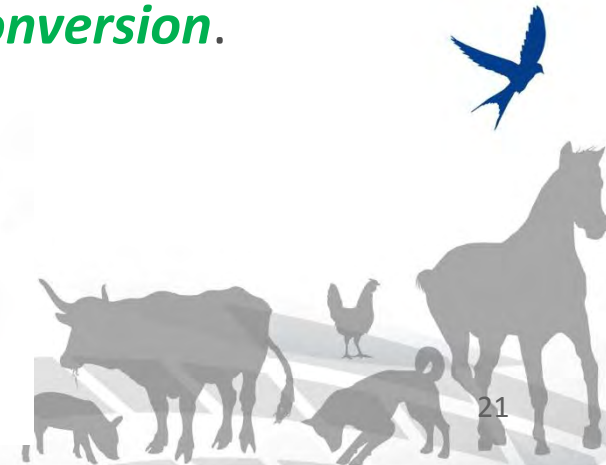
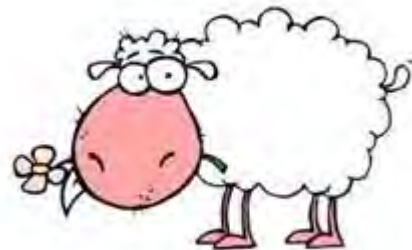
The surveillance system includes more than **30,000 animals**.



Bluetongue: serological surveillance system in Italy

In all these years the sentinel system has been a **very efficient and helpful tool**, often crucial for detecting BTV circulation in Italy.

In 2014, for instance, around **33%** of BT outbreaks were revealed due to the sentinel animal **seroconversion**.

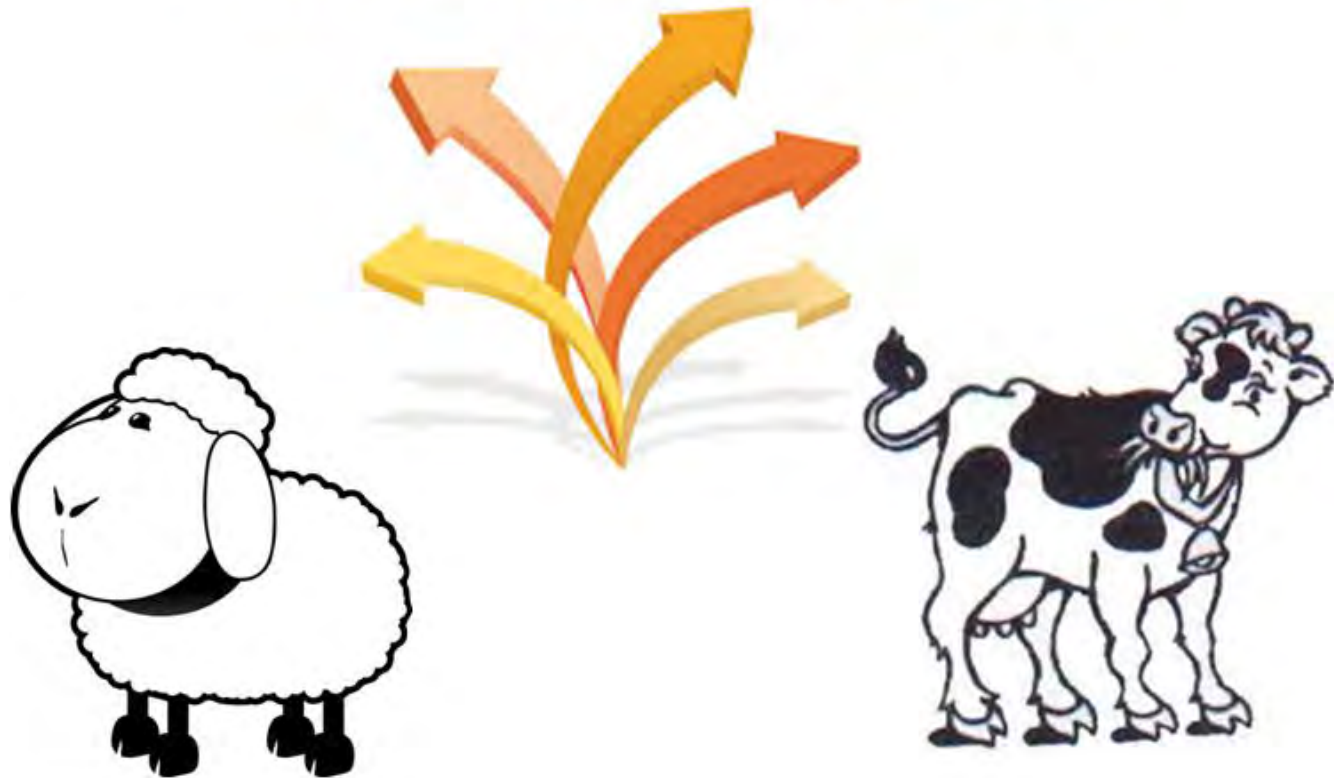


Bluetongue: serological surveillance system in Italy

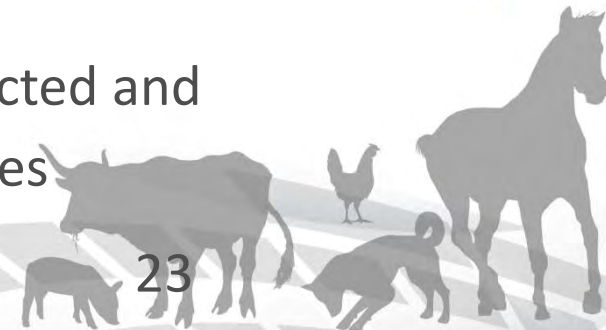


The national serological programme applied in the restricted areas has been **revised in 2015**, due to the difficulties of finding seronegative animals in these areas after the **massive BTV-1 circulation during 2014**. The 20x20 km squares grid previously in place also in these territories was enlarged to **45x45** km squares, in compliance with the Annex I, point 1 of the Commission Regulation (EC) No 1266/2007.

Movement restrictions



to prevent the introduction of infected and
viraemic animals in free zones



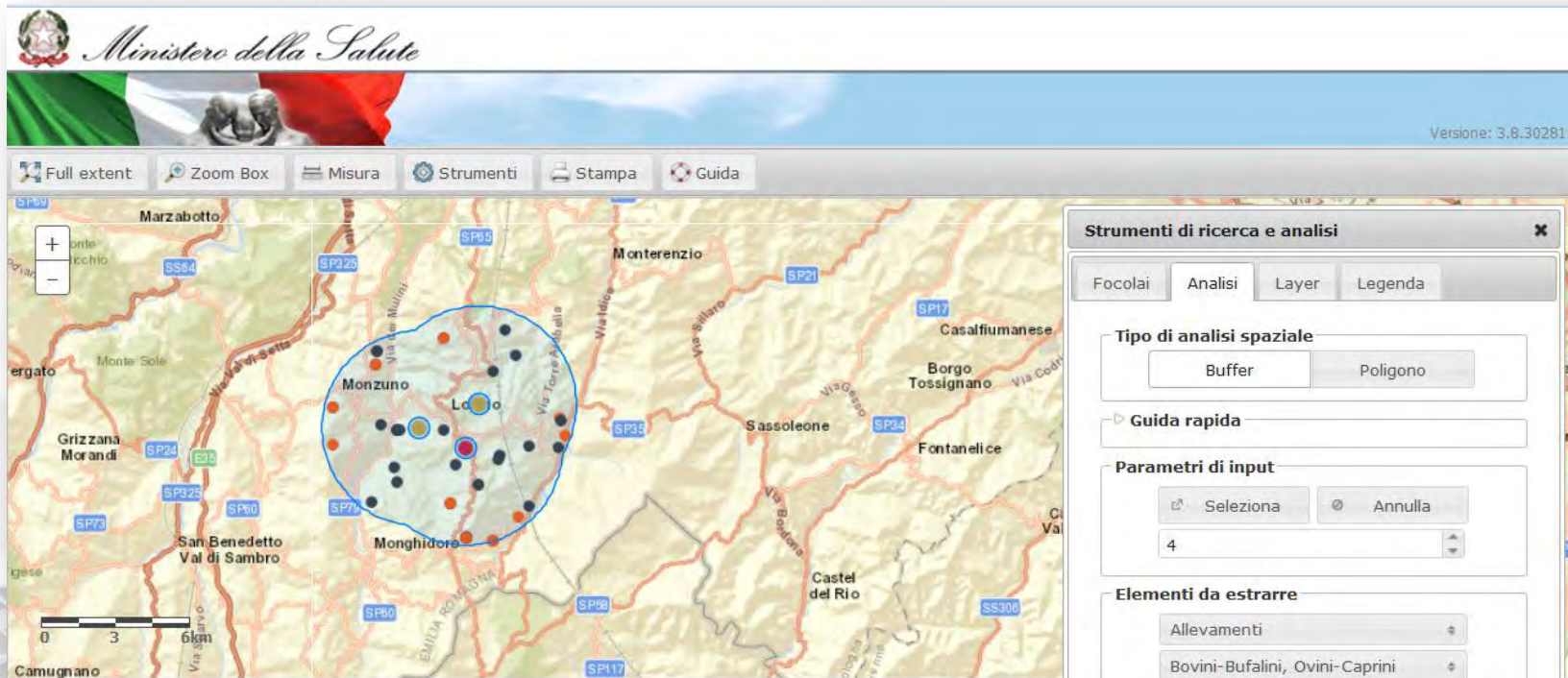
Movement restriction in Italy

The current system of sentinel animals, examined on a monthly basis, not only fully meet the requirements of European Legislation, but makes available an **updated picture of the circulation of the virus in the country**, enabling the **"zoning"** strategy which is more detailed and gives greater flexibility in moving animals.

The Italian zoning strategy

Regarding the Italian zoning strategy: we define as **area with virus circulation** the territory around a suspect or confirmed case of BT.

All animals inside a farm with a confirmed or suspected case or in the farms present in 4 km radius **can't be moved**.



Ministero della Salute

Versione: 3.8.30281

Full extent Zoom Box Misura Strumenti Stampa Guida

Strumenti di ricerca e analisi

Focolai Analisi Layer Legenda

Tipo di analisi spaziale

Buffer Poligono

Guida rapida

Parametri di input

Selezione Annulla

4

Elementi da estrarre

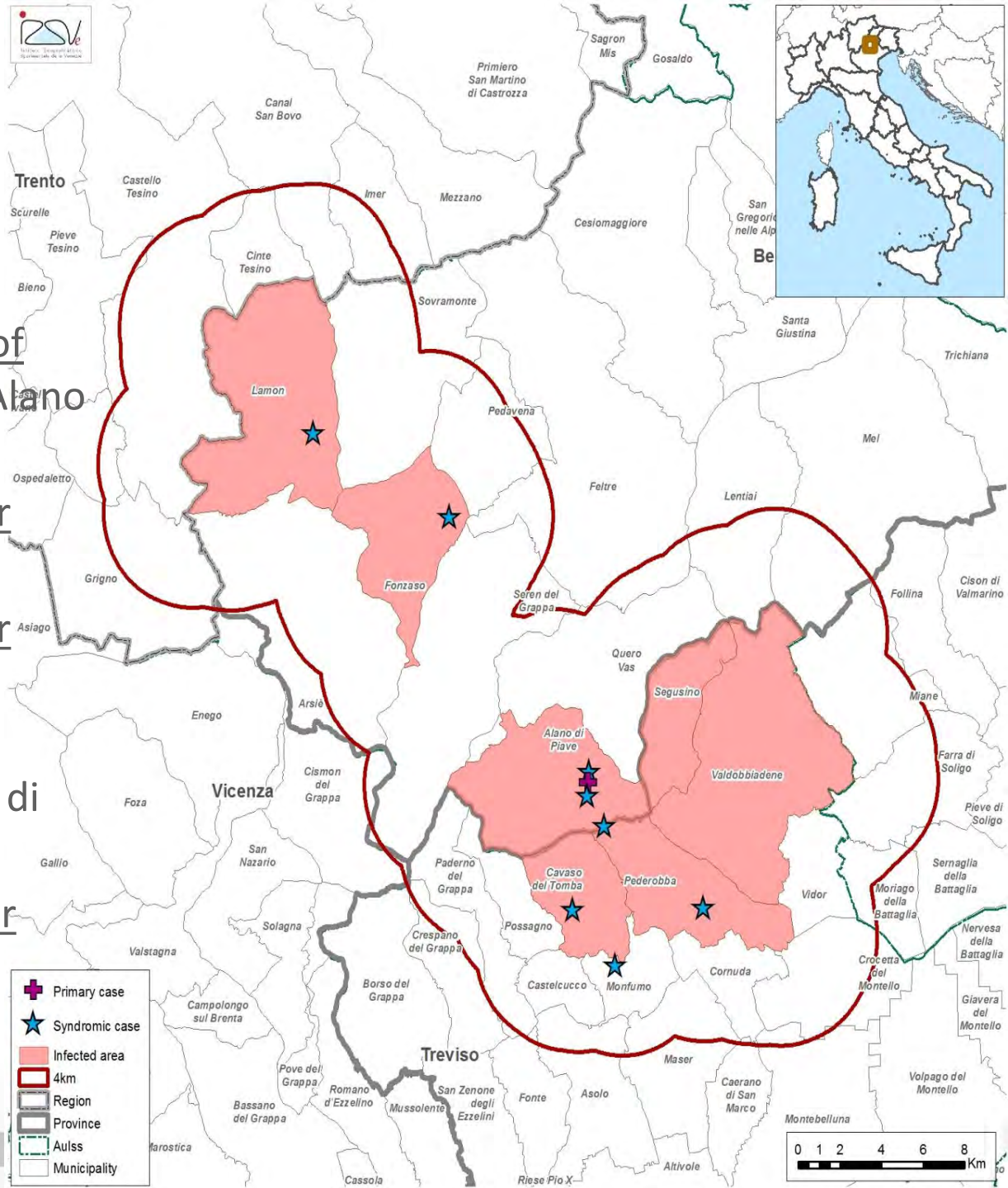
Allevamenti

Bovini-Bufalini, Ovini-Caprini

Bluetongue in Veneto



- First case: 26th of August
- Second and third case 1st of September Pederobba & Alano di Piave
- 4th case – 5th of September Monfumo
- 5th case – 6th of September Cavaso del Tomba
- 6th, 7th & 8th case - 7th of September Fonsazo Alano di Piave
- 9th Case – 8th of September Seren del Grappa



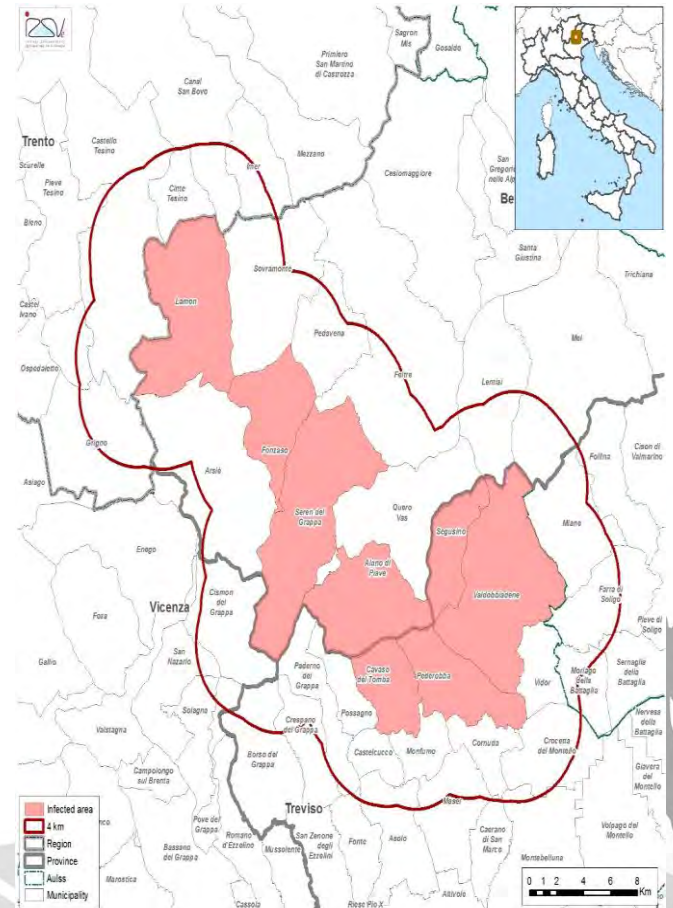
- 30 August 2016 – Regional Laboratory (IZSVe) communicates positive serological tests for Bluetongue antibodies
- 31 August 2016 – National Reference Laboratory for Bluetongue (IZSAM) confirms the positivity for Bluetongue by **PCR → BTV serotype 4**
- 1 September 2016 – A local crisis unit was convened
- 2 September 2016 - **Extraordinary monitoring plan** for Bluetongue in Veneto Region
- 5 September 2016 – Provision of the Ministry of Health: Inclusion of the provinces of Belluno and Treviso in the Annex of the areas under specific control measures regarding Bluetongue
- 5 September 2016 – Approval by the MoH the **Extraordinary Monitoring plan** for Bluetongue in Veneto Region



Description of the monitoring plan

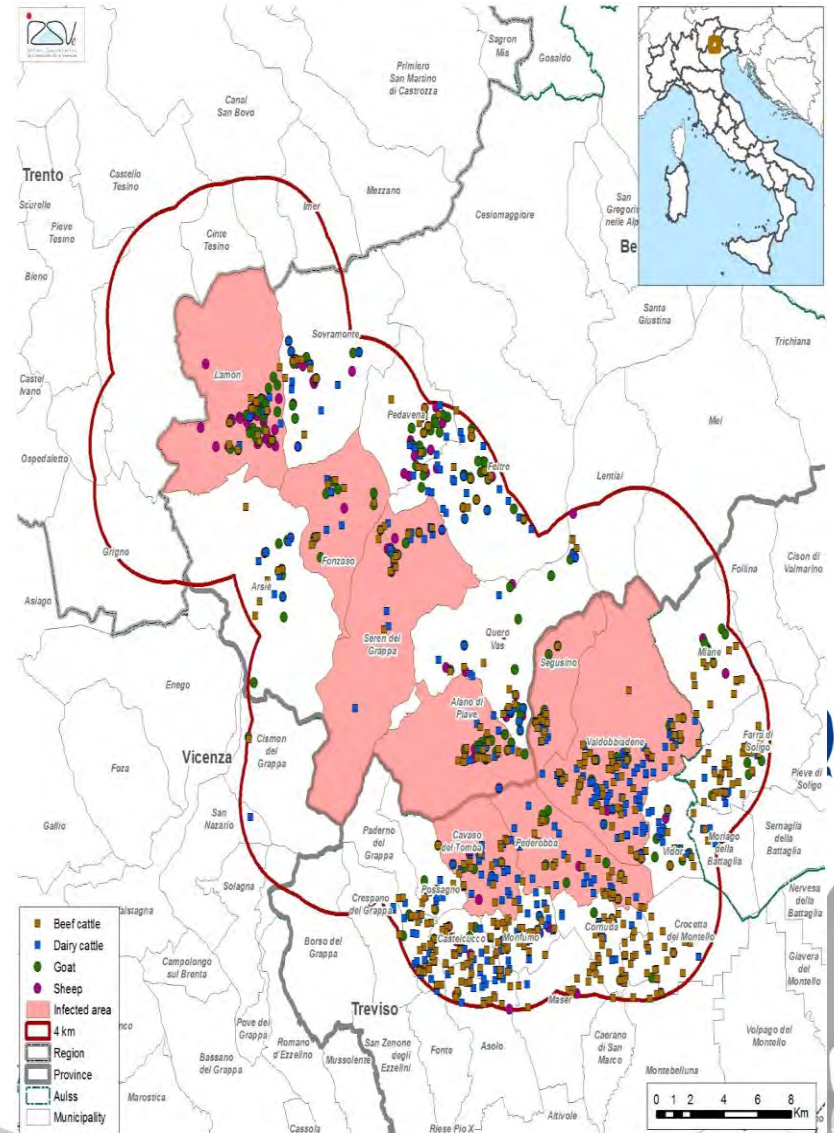
• Definition of two different areas, according to the present situation:

1. Infected area: territories of the 8 municipalities in which the infected flock moved during the risk period (4 weeks before the suspicion) + 4 Km radius



Monitoring in the Infected Area

Sheep and goat farms –
Weekly clinical inspections



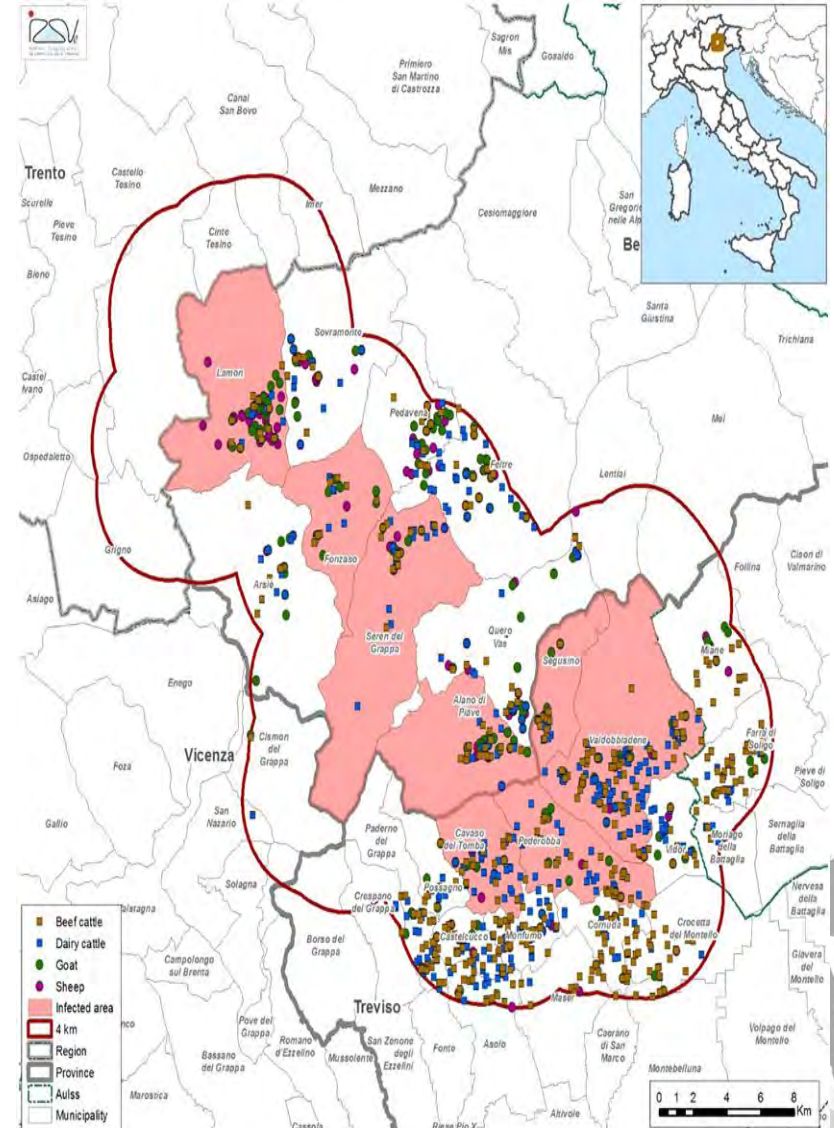
Monitoring in the Infected Area

Dairy cattle farms

-Serum and blood samples are taken in all farms located in the infected area

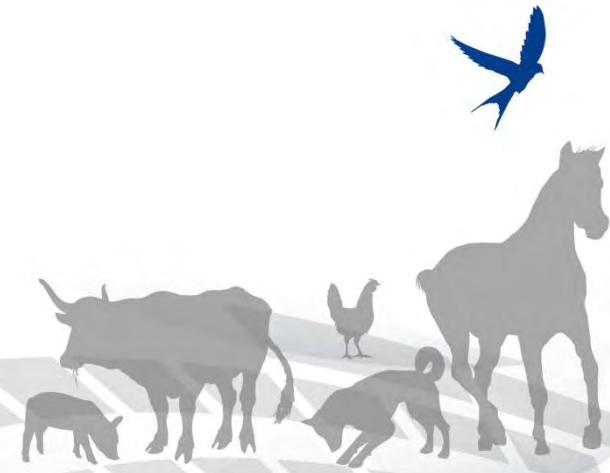
• Beef cattle farms

-Serum and blood samples are taken in farms that received animals from the restriction zones of BTV4

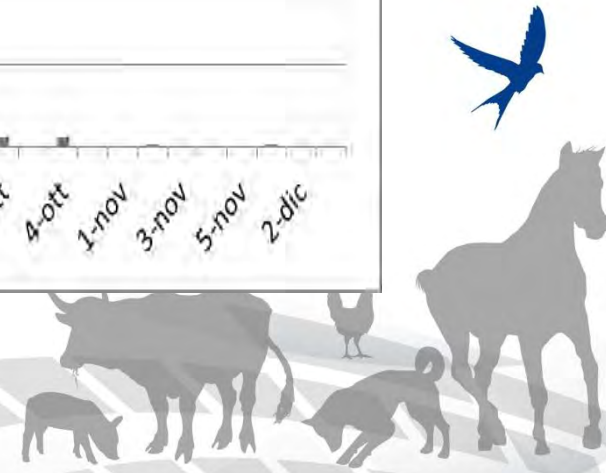
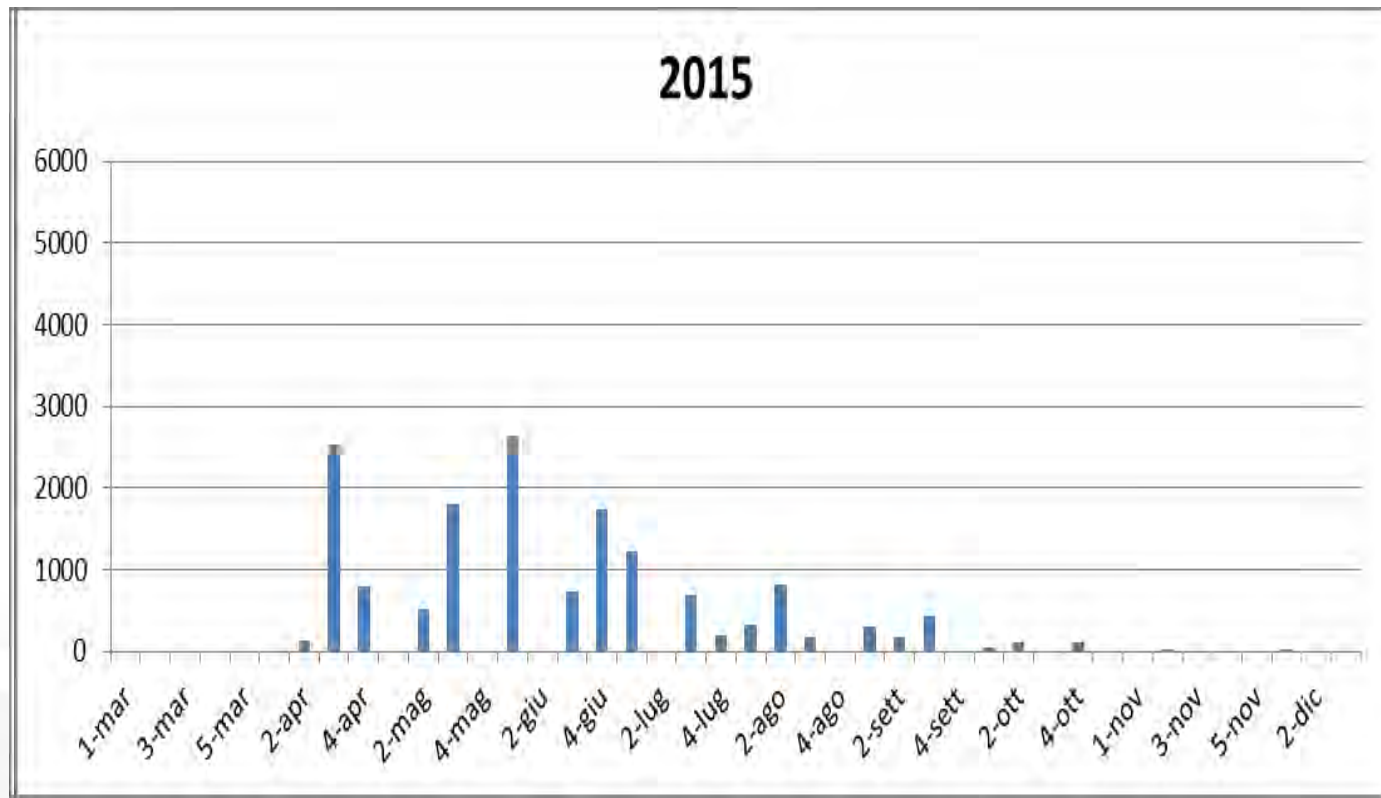


Entomological surveillance

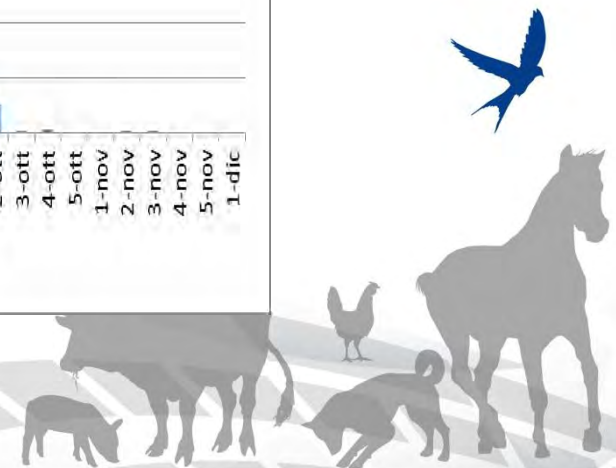
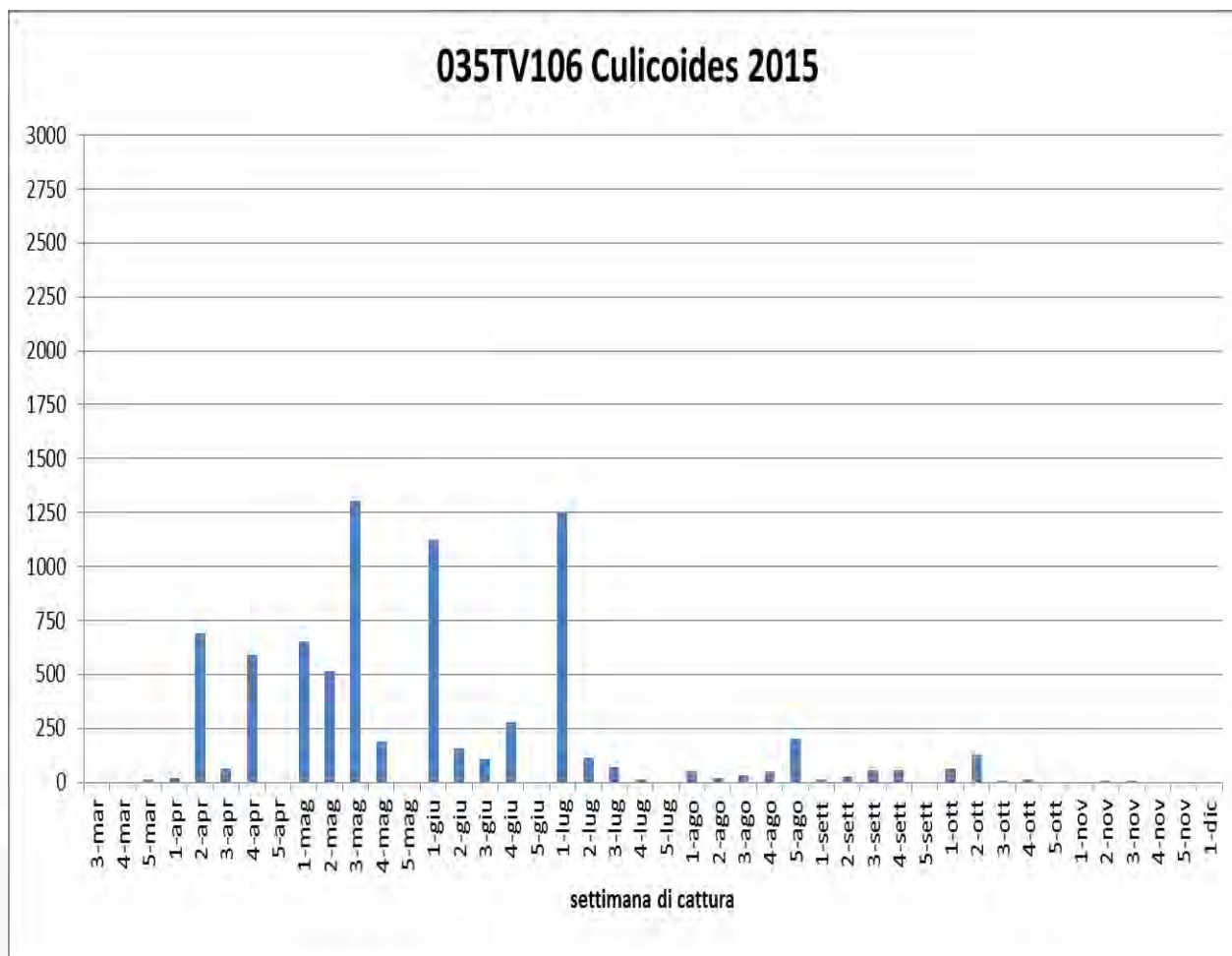
- Black light traps
 - Close to positive farms
 - In the risky areas



Culicoides abundance in Belluno province 2015



Culicoides abundance in Treviso province 2015



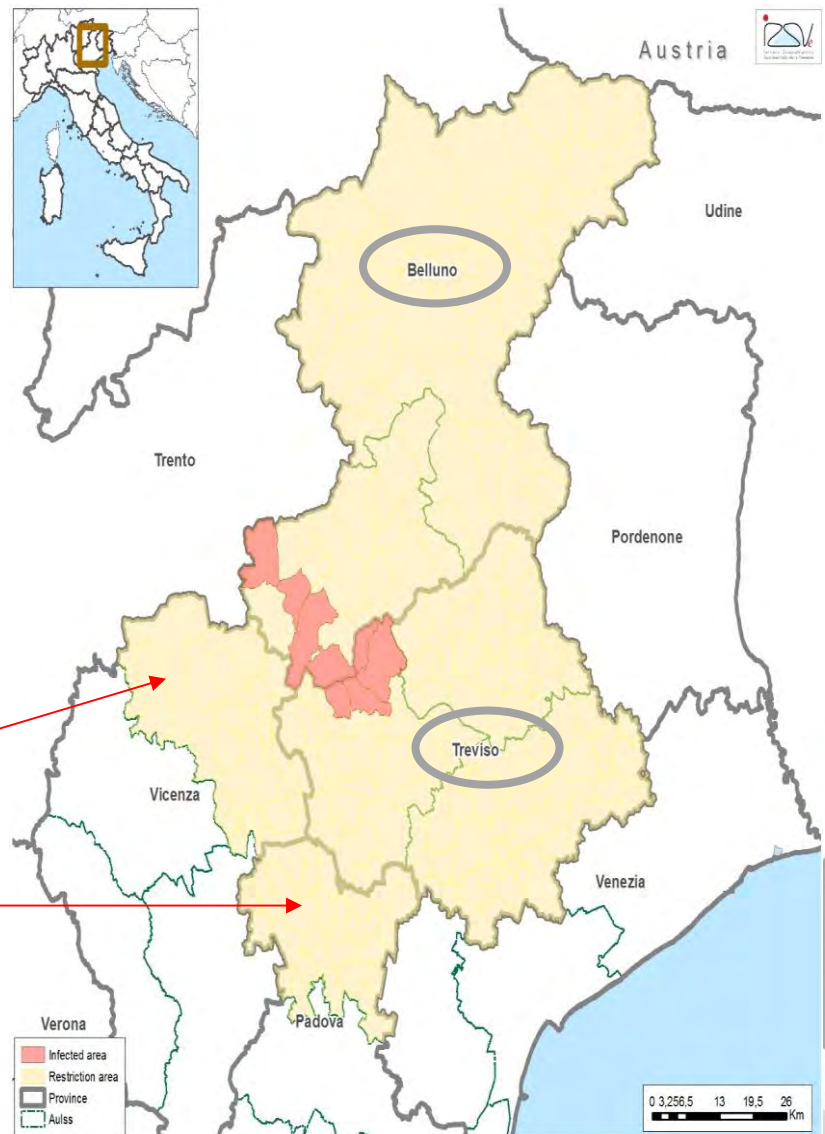
Description of the monitoring plan

2. Area at risk of further spread (to define the virus circulation area and to assess the spread of the disease):

the rest of the territories of the provinces of Belluno and Treviso + the territories under the competence of the neighboring local veterinary services

(AULSS3 – Asiago (Vicenza Province)

AULSS15 (Padova Province)





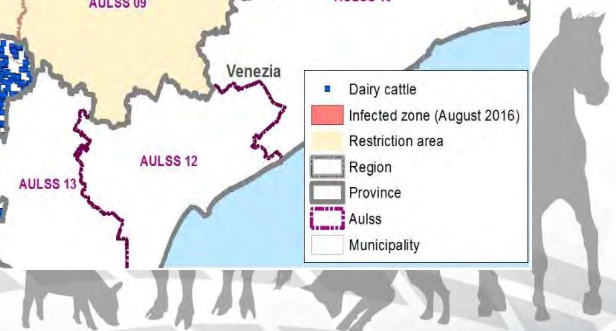
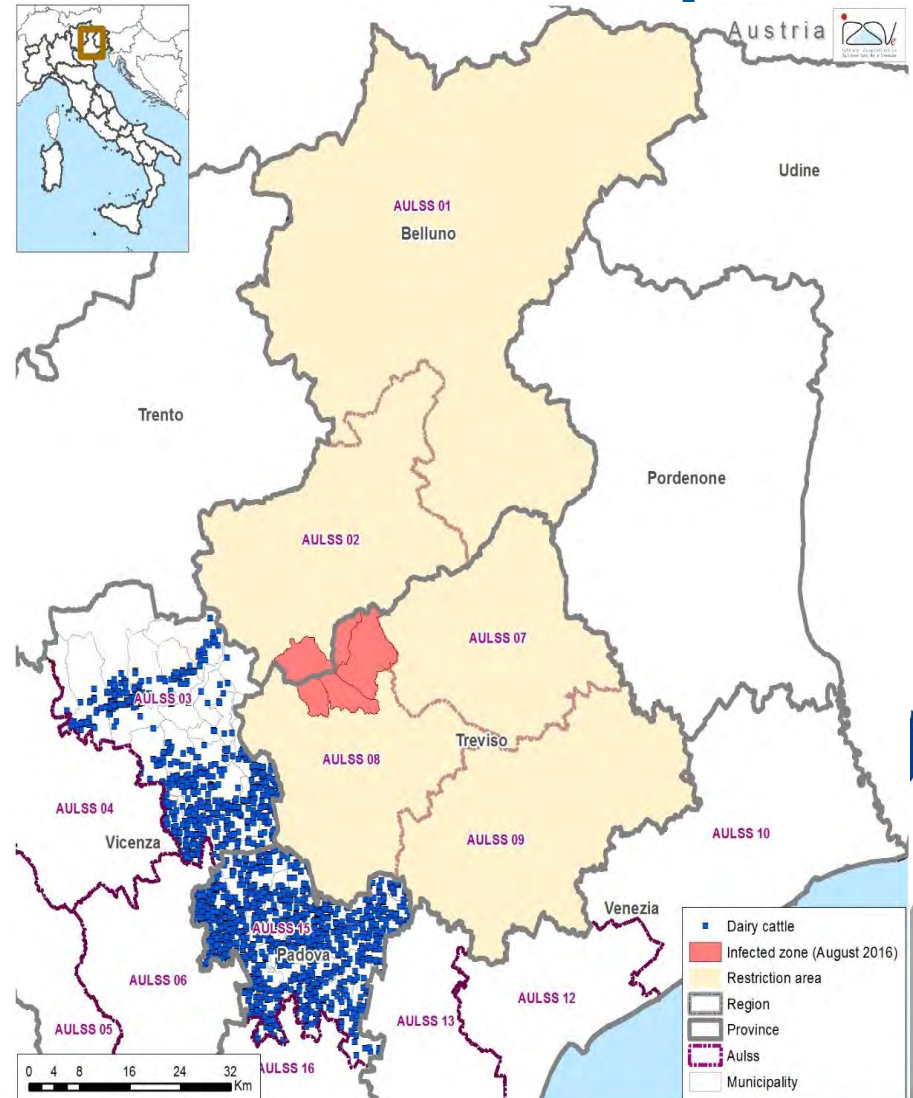
Monitoring in the Area at risk of further spread

- Dairy cattle farms

- Sampling of bulk milk every 15 days for three times in a row

- Enteric surveillance

- Traps in the area most at risk



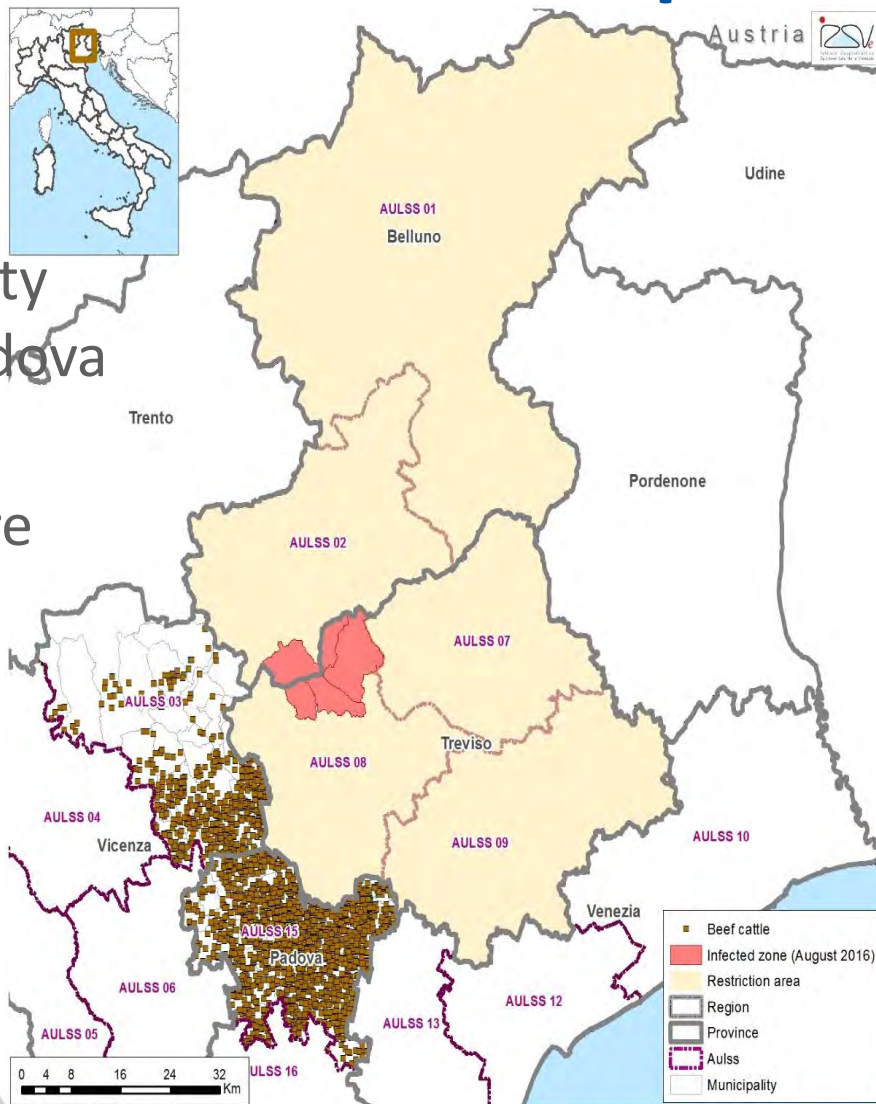


Monitoring in the Area at risk of further spread



Beef Cattle farms

- In territories with high density of beef farms (AULSS 15- Padova province)
- Serum and blood samples are taken in farms that received animals from the restriction zones of BTV4

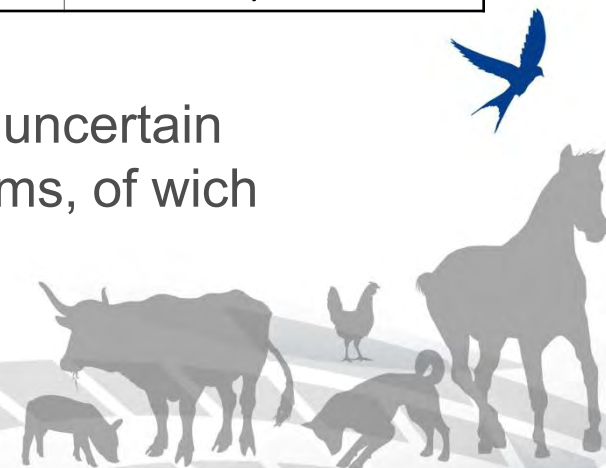


Monitoring in the area at risk

Dairy farms


PROVINCE	DAIRY FARMS – BULK MILK		
	TOTAL DAIRY FARMS	FARMS TESTED	%
BL	213	86	40,38%
PD	484	240	49,59%
TV	441	354	80,27%
VI	246	124	50,41%
TOTAL	1384	804	58,09%

- 28 farms with positive ELISA on bulk milk + 8 uncertain
- Blood samples already taken in 5 of these farms, of wich
- 2 PCR positive results.



Monitoring in the area at risk

Beef cattle farms




PROVINCE	BEEF CATTLE		
	FARMS THAT RECEIVED ANIMALS FROM BTV4 RESTRICTED ZONES	FARMS TESTED	%
PADOVA	72	33	45,83%
TOTAL	72	33	45,83%

- 4 FARMS WITH SEROLOGICAL POSITIVE RESULTS, BUT ALL PCR NEGATIVE
- Most likely due to maternal antibodies

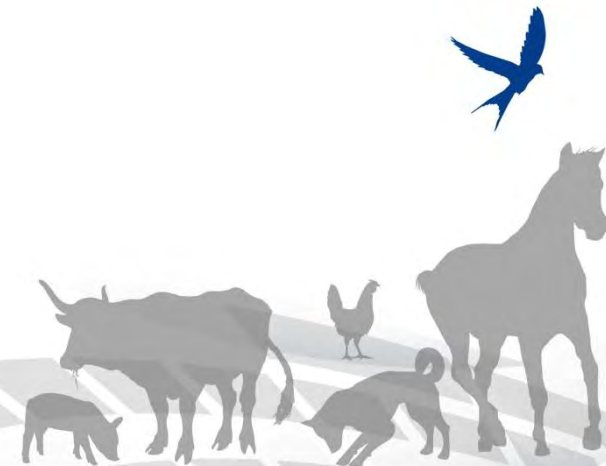


Number of outbreaks 30/09/2016



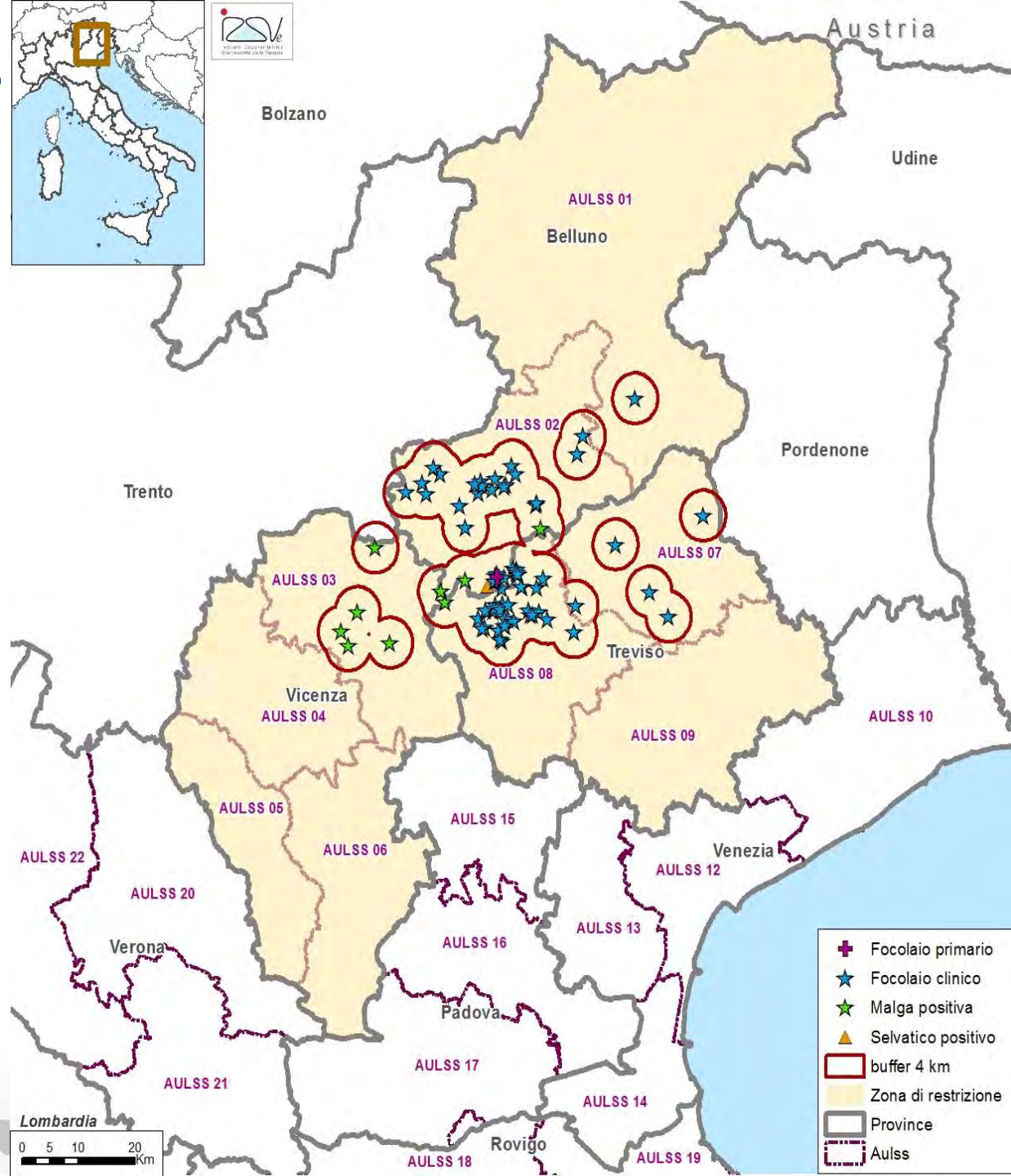
PROVINCE	BOVINE	GOAT	WILD ANIMALS	SHEEP	TOTAL
BELLUNO	3	2	1*	27	33
TREVISO	31			9	40
VICENZA	6			1	7
Total	40	2	1	37	80

* Mouflon





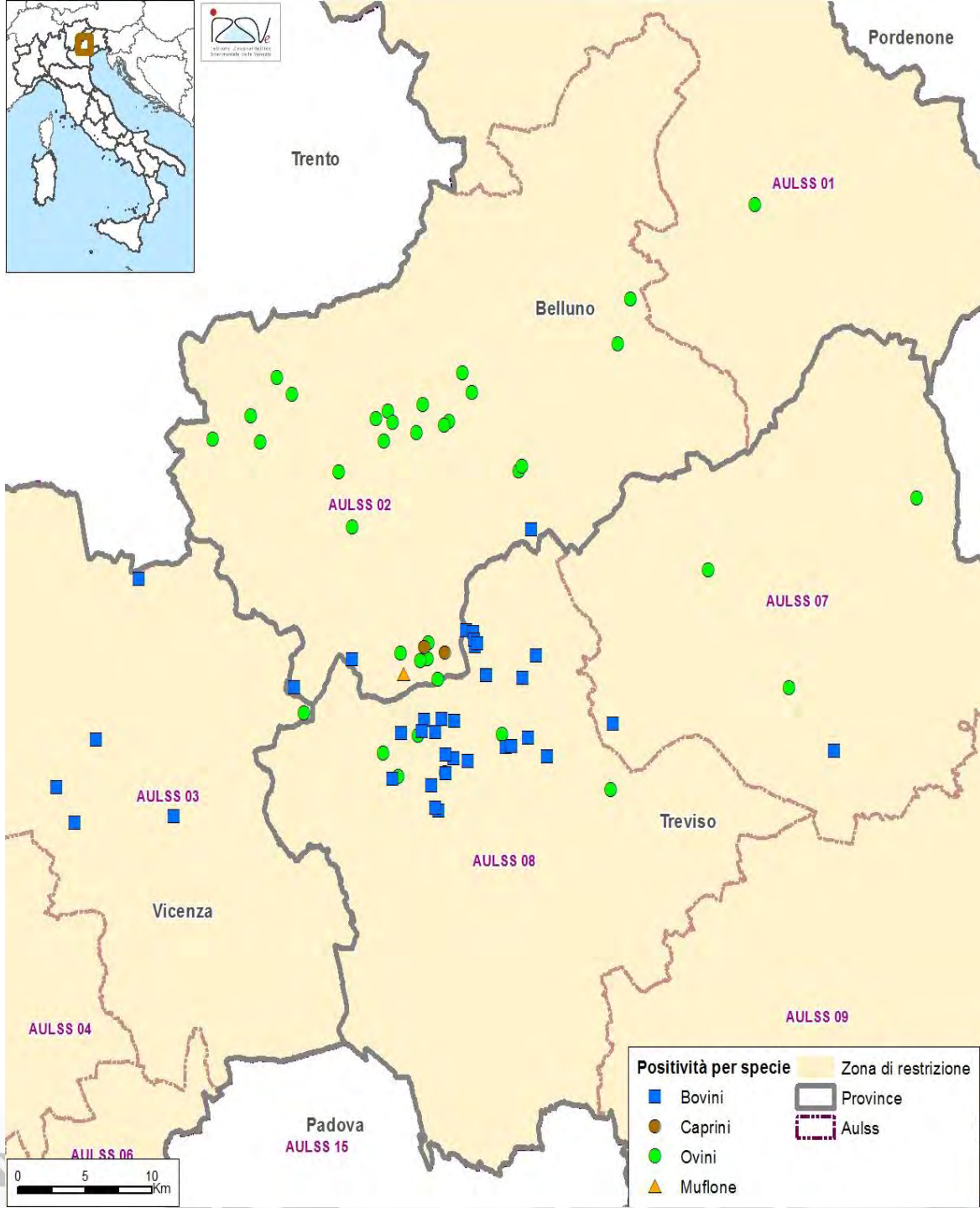
Map of outbreaks 30/9/2016



The restricted area has been extended including, the whole Province of Vicenza since Sept. 19th

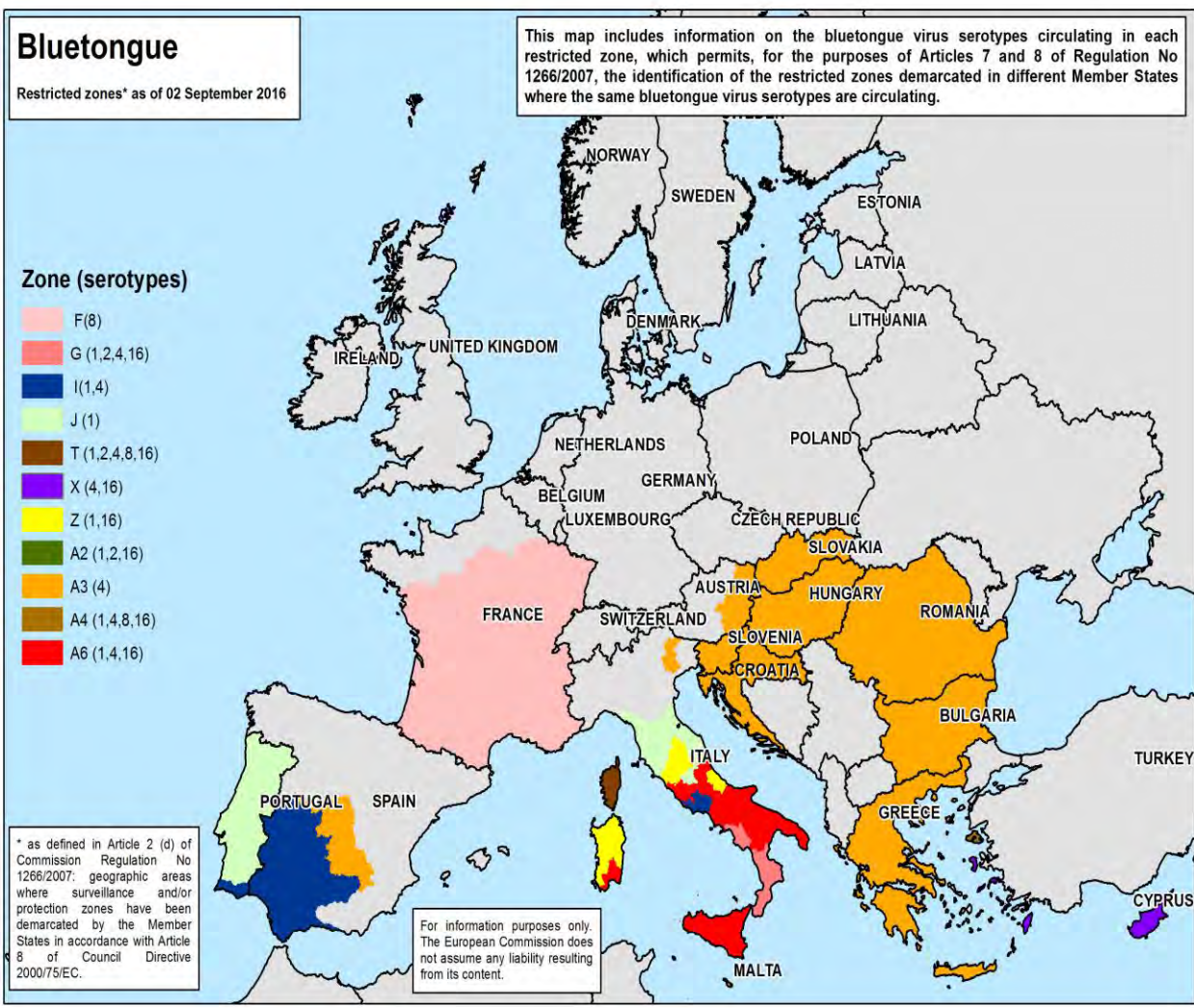


Map of outbreaks per species





Possible way of introduction of BTV4 in Veneto region - 1





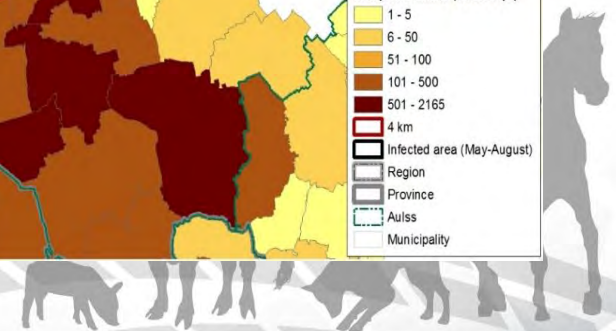
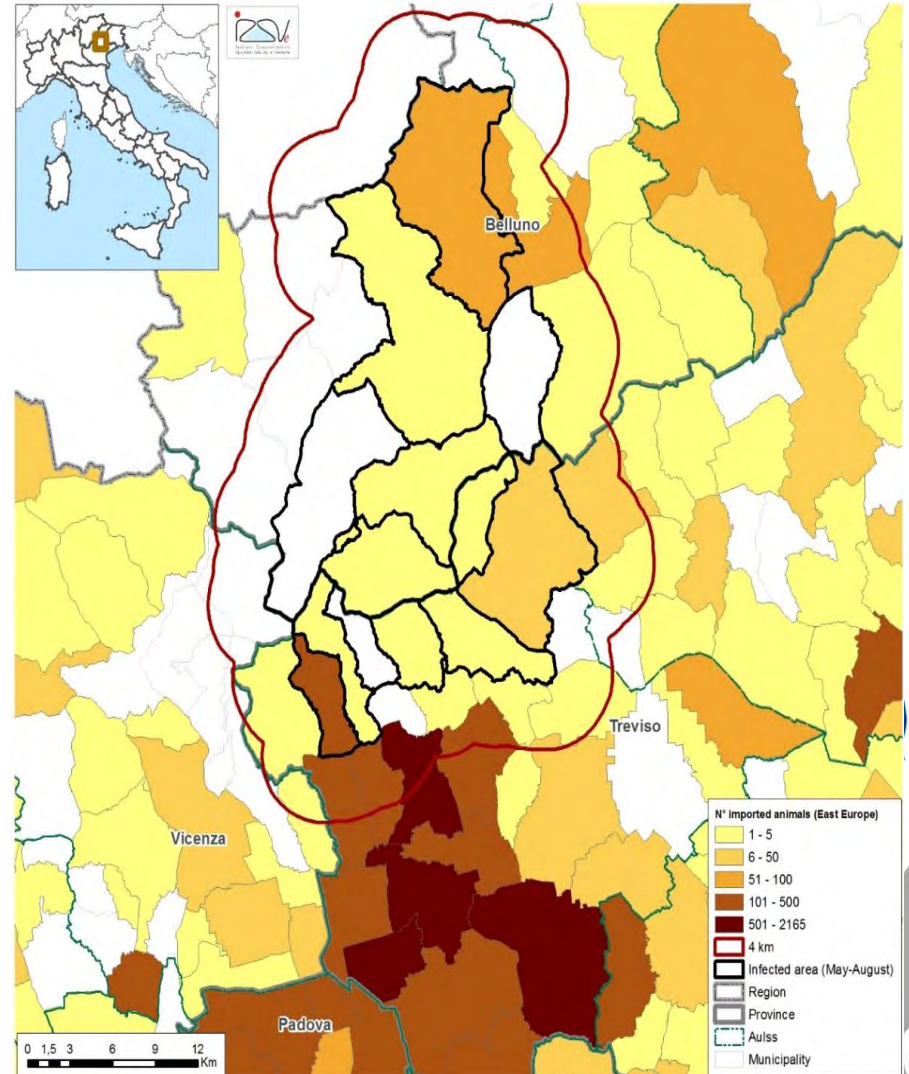
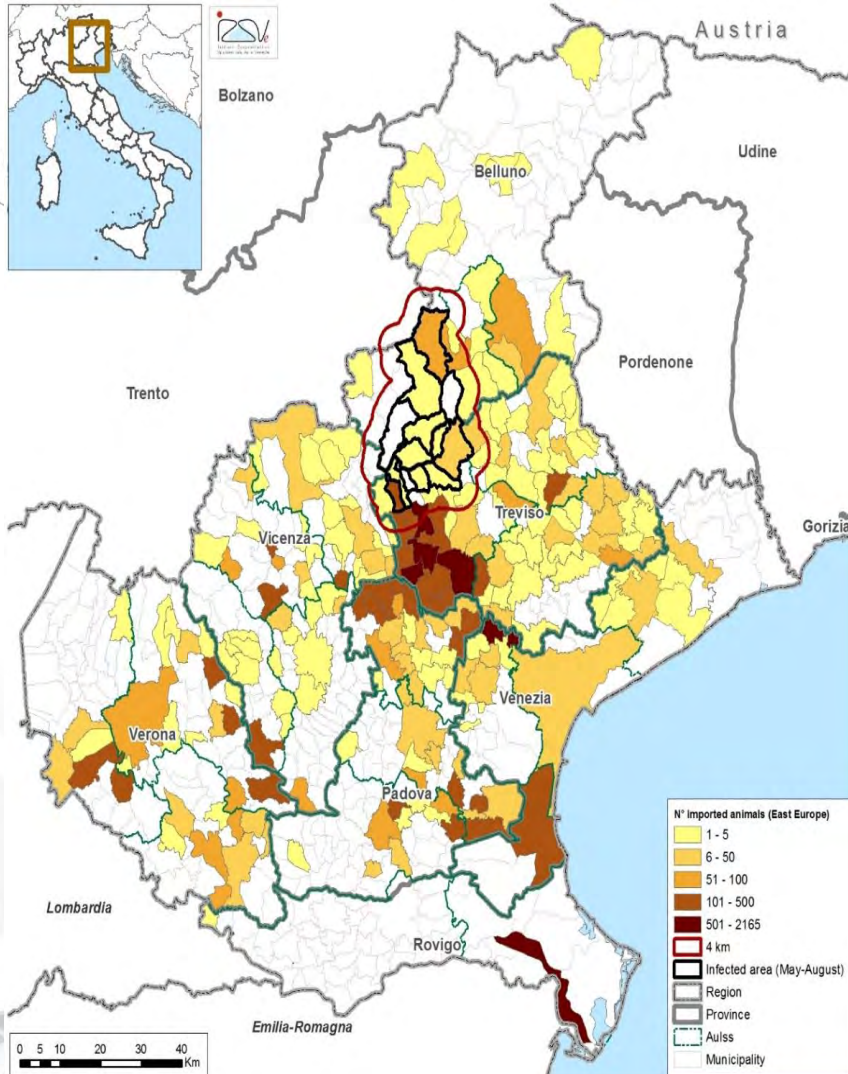
Possible way of introduction of BTV4 in Veneto region - 1

- The number of bovines imported by the Veneto region is very high and many of the exporting regions are affected by the BTV4
- The identified BTV4 outbreaks are located in proximity of the area with the **highest density of bovines imported from the restriction areas (BTV4)**

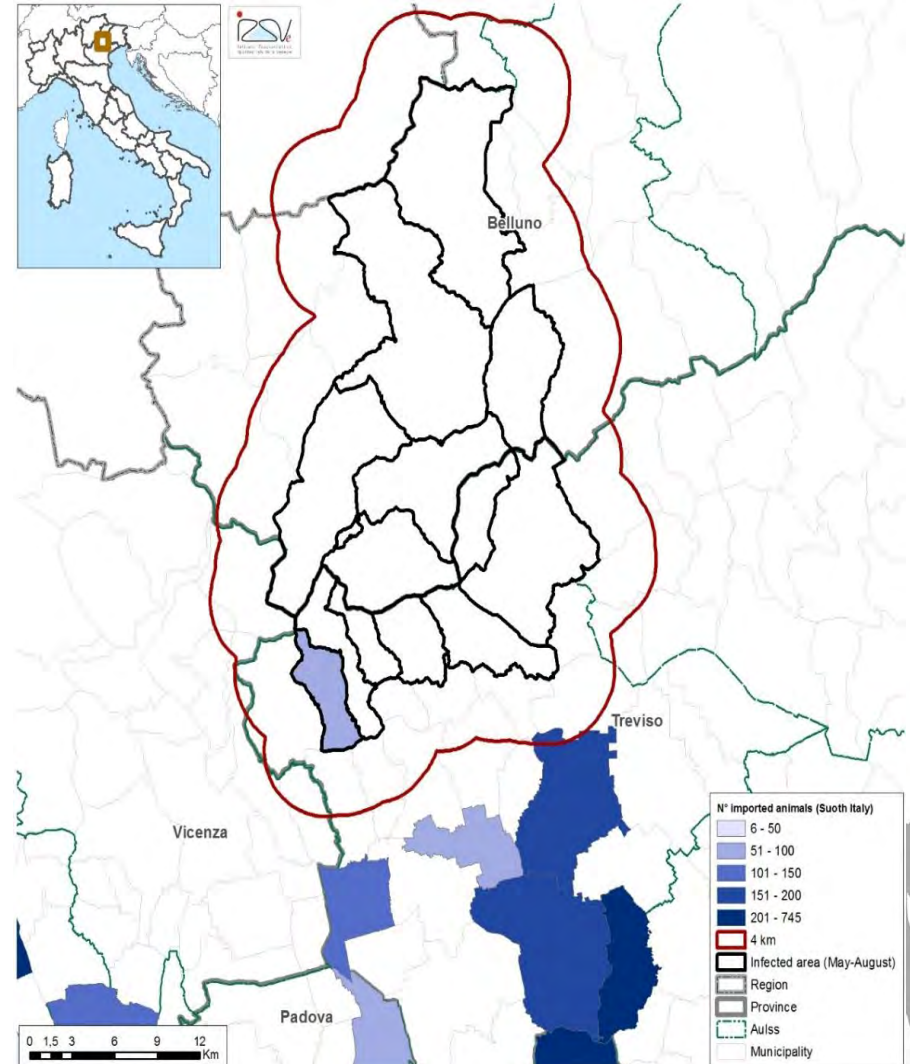
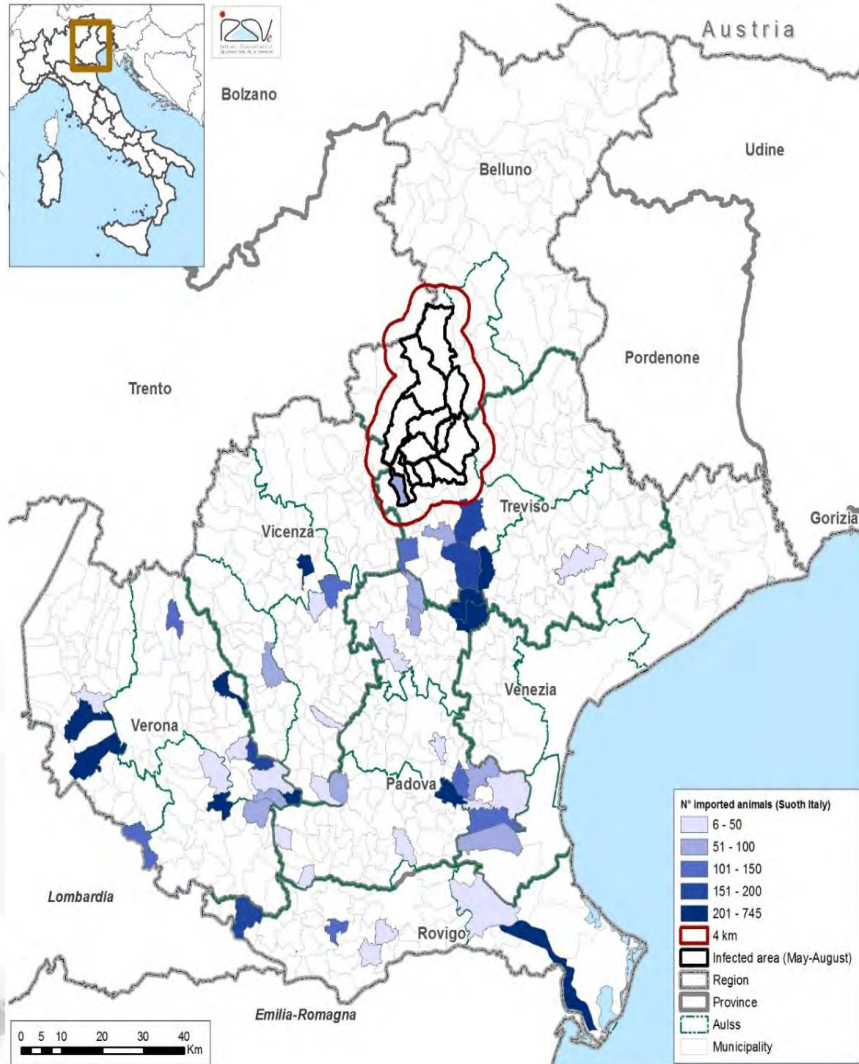




Introduction of animals from restricted areas of Eastern Europe since May 2016



Introduction of animals from restricted areas of centre-southern Italy since May 2016

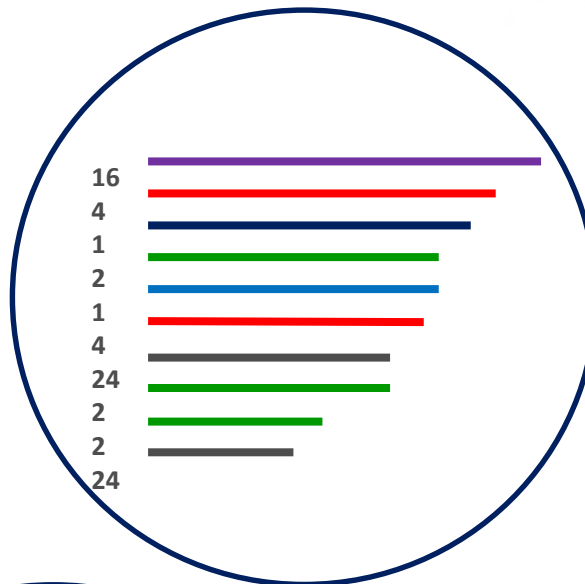




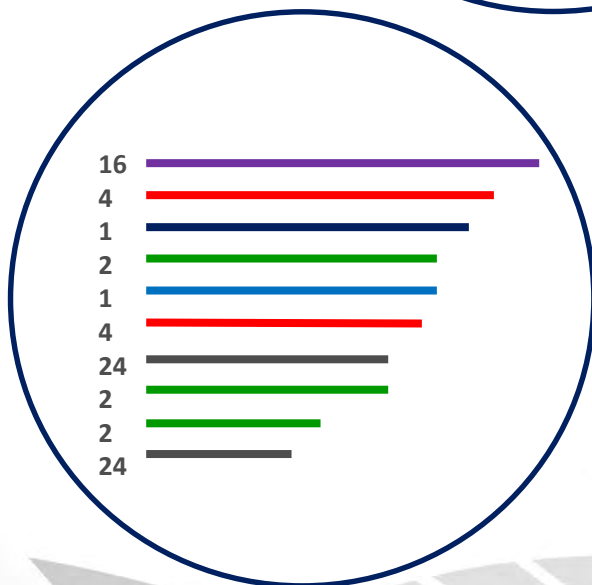
BTV-1, BTV-2, BTV-4, BTV-16 and BTV-24



BTV-4 APU2014




BTV-4 CRO2014

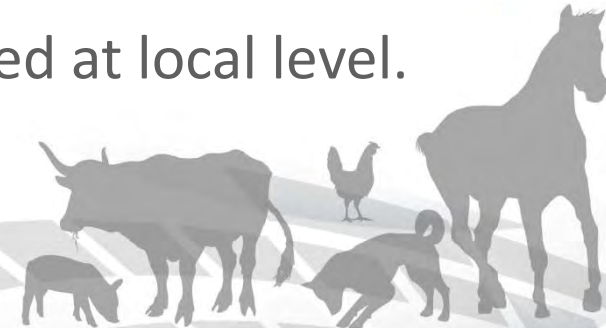


Possible way of introduction of BTV4 in Veneto region - 2

- Geographical proximity to a recent outbreak of BTV4 in Slovenia



- 
- The surveillance system is based on a strong combination of clinical, serological and entomological surveillance.
 - The controls are carried out according to the approved annual BT monitoring plan.
 - The extension of the restricted zones and the design of the extraordinary monitoring plan are based on a comprehensive risk analysis.
 - Virus genotyping is ongoing to clarify the way of introduction of BTV4
 - Vaccination: different options are considered at local level.





Thanks to the Veneto Region and the Istituto Zooprofilattico
Sperimentale delle Venezie

Thank you 

