



# African swine fever

(scientific and technical assistance, Art. 31)

Nik Križ

PAFF meeting, 6 April 2017, Brussels

## TERMS OF REFERENCE

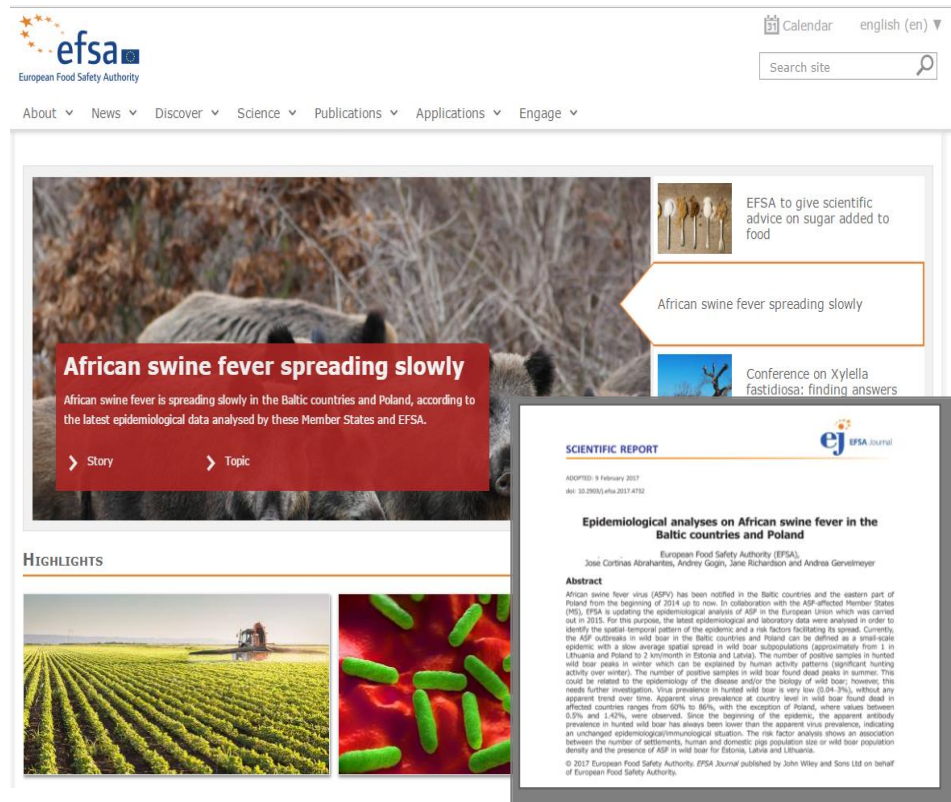
- Analyse the epidemiological data on ASF from Estonia, Latvia, Lithuania, Poland and any other Member States at the Eastern border of the EU that might be affected by ASF. Include an analysis of the temporal and spatial patterns of ASF in wild boar and domestic pigs. Include an analysis of the risk factors involved in the occurrence, spread and persistence of the ASF virus in the wild boar population and in the domestic/wildlife interface.
- Based on the findings from the point above, review the management options for wild boar identified in the EFSA scientific opinion of June 2015 and indicate whether the conclusions of the latest EFSA scientific opinion are still pertinent.



# 1ST SCIENTIFIC REPORT

- To update the epidemiological analysis of African swine fever in the EU, EFSA applied a **harmonised data model** agreed at a workshop in November 2015. This analysis can be used by Member States and the European Commission to fine-tune their control measures
- And for declaring of freedom from the disease

<http://www.efsa.europa.eu/en/efsajournal/pub/4732>



The screenshot shows the EFSA website interface. At the top, there is the EFSA logo and navigation menus for 'About', 'News', 'Discover', 'Science', 'Publications', 'Applications', and 'Engage'. A search bar is also present. The main content area features a large image of a pig with a red overlay containing the headline 'African swine fever spreading slowly'. Below the headline, there is a sub-headline: 'African swine fever is spreading slowly in the Baltic countries and Poland, according to the latest epidemiological data analysed by these Member States and EFSA.' There are two buttons labeled 'Story' and 'Topic'. To the right of the main image, there are two smaller article teasers: 'EFSA to give scientific advice on sugar added to food' and 'Conference on Xylella fastidiosa: finding answers'. Below the main article, there is a 'HIGHLIGHTS' section with two images: a field with a tractor and a close-up of green bacteria. On the right side, there is a 'SCIENTIFIC REPORT' box with the following text:

**SCIENTIFIC REPORT**  
 ADOPTED: 9 February 2017  
 doi: 10.2900/14161.2017.4732

**Epidemiological analyses on African swine fever in the Baltic countries and Poland**  
 Jose Corina Abrahantes, Andrey Gogin, Jane Richardson and Andrea Gevorkmeyer

**Abstract**  
 African swine fever virus (ASFV) has been notified in the Baltic countries and the eastern part of Poland from the beginning of 2014 up to now. In collaboration with the ASF-affected Member States (MS), EFSA is updating the epidemiological analysis of ASF in the European Union which was carried out in 2015. For this purpose, the latest epidemiological and laboratory data were analysed in order to identify the spatial temporal pattern of the epidemic and a risk factors facilitating its spread. Currently, the ASF outbreaks in wild boar in the Baltic countries and Poland can be defined as a small-scale epidemic with a slow average spatial spread in wild boar subpopulations (approximately from 1 in Lithuania and Poland to 2 km/month in Estonia and Latvia). The number of positive samples in hunted wild boar peaks in winter which can be explained by human activity patterns (significant hunting activity over winter). The number of positive samples in wild boar found dead peaks in summer. This could be related to the epidemiology of the disease and/or the biology of wild boar; however, this needs further investigation. Virus prevalence in hunted wild boar is very low (0.06-3%), without any apparent trend over time. Apparent virus prevalence at country level in wild boar found dead in affected countries ranges from 0.0% to 86%, with the exception of Poland, where values between 0.2% and 1.42% were observed. Since the beginning of the epidemic, the apparent antibody prevalence in hunted wild boar has always been lower than the apparent virus prevalence, indicating an unchanged epidemiological/microbiological situation. The risk factor analysis shows an association between the number of settlements, human and domestic pig population size or wild boar population density and the presence of ASF in wild boar for Estonia, Latvia and Lithuania.

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# DATA COLLECTION: DATA MODEL

**XSD mapped to support automated XML export and data transfers**  
**Drop down list for controlled terminologies**

AR	AS	AT	AU	AV	AW
1	anMatCode	Select anMatCode	anMatText	labId	labCountry
2	A0CEV	Faeces	EE	Estonia	
3	A0CET	Urine	SP	Spain	RF-00002657-MCG African swine fever virus
4	A0CEX	Plasma	LT	Lithuania	RF-00002657-MCG African swine fever virus
5	A0CEY	Blood serum	DE	Germany	RF-00002657-MCG African swine fever virus
6	A01XD	Animal liver	SP	Spain	RF-00002657-MCG African swine fever virus
7	A01YG	Animal kidney	LV	Latvia	RF-00002657-MCG African swine fever virus
8	A0CJN	Lymphnodes	SP	Spain	RF-00002657-MCG African swine fever virus
9	A06AK	Skin	LT	Lithuania	RF-00002657-MCG African swine fever virus
10	#N/A	Pig muscle tissue	EE	Estonia	RF-00002657-MCG African swine fever virus
11	A0F5E	Gelatine	#N/A	#N/A	#N/A
12	A04MQ	Mixed organs	#N/A	#N/A	#N/A
13	A0CEV	Animal marrowbone	#N/A	#N/A	#N/A
14	#N/A	Lymphnodes	#N/A	#N/A	#N/A
15	#N/A	Spleen	#N/A	#N/A	#N/A
16	#N/A	Skin	#N/A	#N/A	#N/A
17	#N/A	Pig muscle	#N/A	#N/A	#N/A
18	#N/A	Whole animal	#N/A	#N/A	#N/A
19	#N/A	Salivary glands	#N/A	#N/A	#N/A
20	#N/A	Gelatine	#N/A	#N/A	#N/A

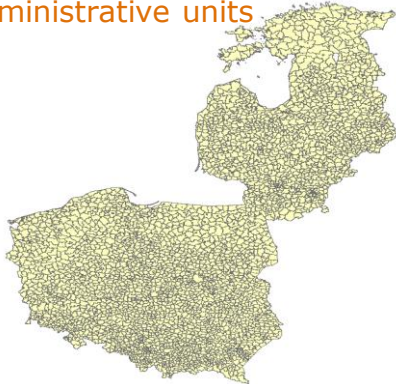
  

AJ3	AG	AH	AI	AJ
1	Select sampMatCode	sampMatText	Decomposition	Select Decomposition
2	Wild boar	hunted	1	Fresh
3	wild boar-domestic pig hybrids	found dead	2	Decomposed
4	Breeding pigs	clinical suspicion	3	Fresh
5	Fattening pigs	alive	2	Decomposed
6	Breeding piglets	premovement testing	#H/Δ	Bones
7	Fattening piglets	depopulation	#H/Δ	
8	Mixed pig herds		#H/Δ	
9			#H/Δ	



# DATA AGGREGATION

## Administrative units

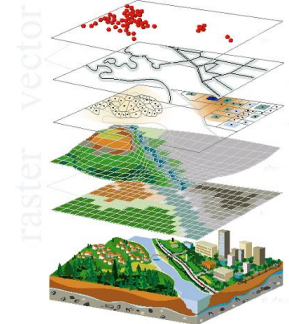


## Sample based data

efsa  
Data Collection Framework

The first law of statistics seems to be: "If it looks good, it's bad for you" (Doris Aronson)

ItemID	Version	Created on	Date	User	File
21009	3	VALID	23/11/2015	Katrin LOHMUS	1 (Baltic ASF Labmonitor template EE4.xml)
21006	3	REJECTED	23/11/2015	Katrin LOHMUS	1 (Baltic ASF Labmonitor template EE4.xml)
21005	1	VALID	23/11/2015	Marios GEORGIADIS	1 (test ASF.xml)
21004	1	REJECTED	23/11/2015	Marios GEORGIADIS	1 (test ASF.xml)
21003	1	VALID	23/11/2015	Marios GEORGIADIS	1 (test ASF.xml)
21002	1	REJECTED	23/11/2015	Marios GEORGIADIS	1 (test ASF.xml)
21001	1	REJECTED	23/11/2015	Marios GEORGIADIS	1 (test ASF.xml)
21000	1	REJECTED	20/11/2015	RIT JAARMA	1 (Copy of Baltic ASF Labmonitor_template_Final_ER; LASF LabMonitor PL0142015_Andrey.xml)
21009	7	REJECTED	20/11/2015	Andrey GOGIN	1 (LASF LabMonitor LV2042015_Andrey.xml)
21007	4	VALID	20/11/2015	Andrey GOGIN	1 (LASF LabMonitor EE_2014_Andrey.xml)
21006	3	VALID	20/11/2015	Andrey GOGIN	1 (LASF LabMonitor EE_2014_Andrey.xml)



## Populations

- Domestic pigs population
- Wild boar population size
- Human population

Table

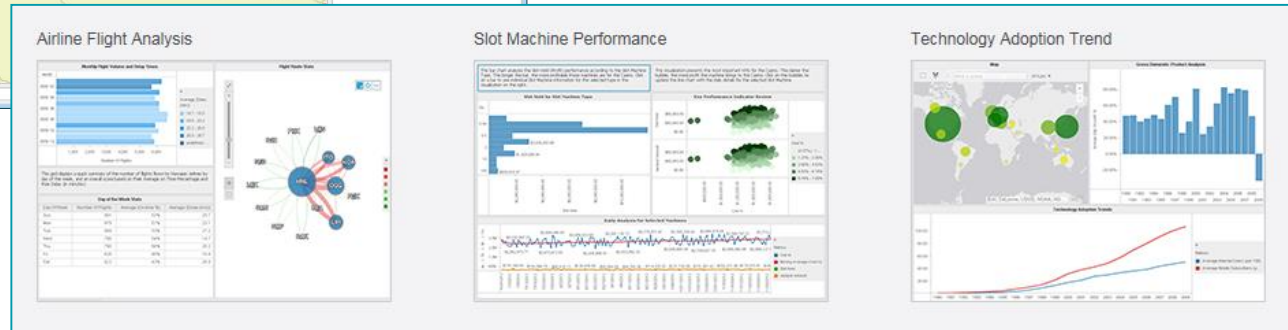
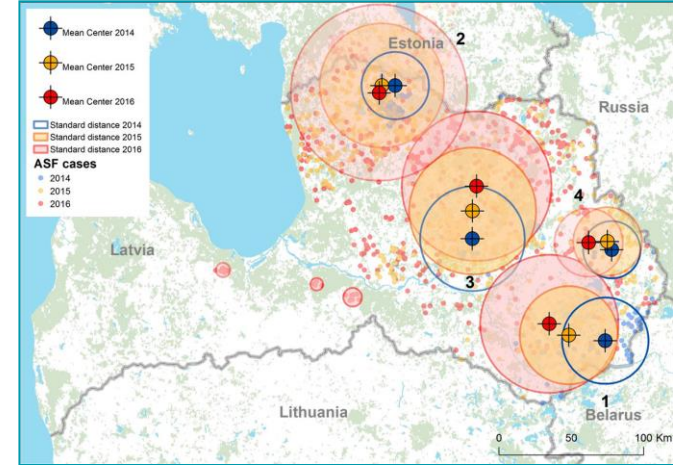
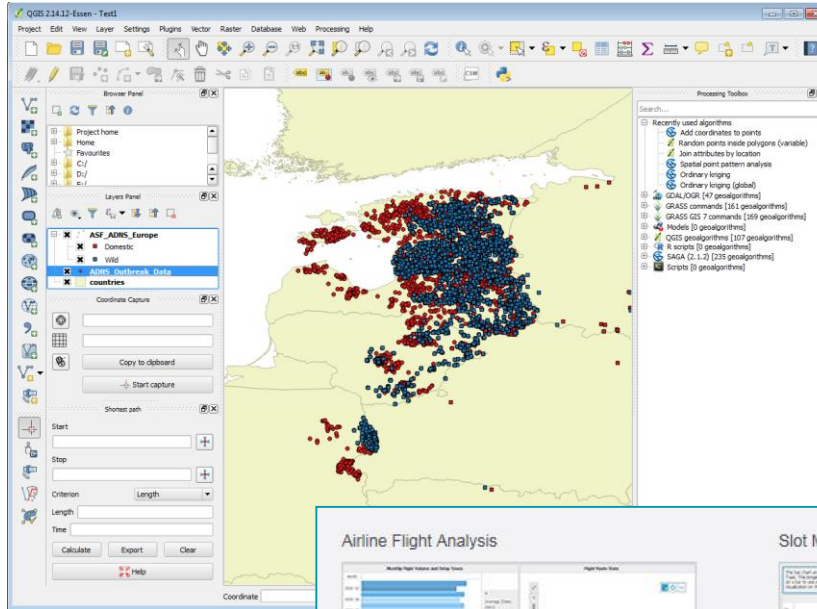
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1	Polygon	EE	EE008	Mõisaküla linn	EE00800840490	EE0080084	0490
2	Polygon	EE	EE001	Paldiski linn	EE00100370580	EE0010037	0580
3	Polygon	EE	EE001	Vasalemma vald	EE00100370968	EE0010037	0968
4	Polygon	EE	EE004	Kihnu vald	EE00400670303	EE0040067	0303
5	Polygon	EE	EE004	Kihelkonnade vald	EE00400740301	EE0040074	0301
6	Polygon	EE	EE004	Ruhnu vald	EE00400740689	EE0040074	0689
7	Polygon	EE	EE004	Muhu vald	EE00400740478	EE0040074	0478
8	Polygon	EE	EE004	Kuressaare linn	EE00400740349	EE0040074	0349
9	Polygon	EE	EE004	Oriassare vald	EE00400740550	EE0040074	0550
10	Polygon	EE	EE004	Põde vald	EE00400740634	EE0040074	0634
11	Polygon	EE	EE004	Laimjala vald	EE00400740386	EE0040074	0386
12	Polygon	EE	EE004	Saime vald	EE00400740721	EE0040074	0721
13	Polygon	EE	EE004	Torgu vald	EE00400740807	EE0040074	0807
14	Polygon	EE	EE001	Harku vald	EE00100370198	EE0010037	0198
15	Polygon	EE	EE001	Keila linn	EE00100370296	EE0010037	0296
16	Polygon	EE	EE001	Keila vald	EE00100370295	EE0010037	0295
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18	Polygon	EE	EE004	Võrme vald	EE00400570907	EE0040057	0907
19	Polygon	EE	EE004	Käina vald	EE00400390368	EE0040039	0368
20	Polygon	EE	EE001	Maardu linn	EE00100370448	EE0010037	0448
21	Polygon	EE	EE001	Väime vald	EE00100370890	EE0010037	0890
22	Polygon	EE	EE001	Kernu vald	EE00100370297	EE0010037	0297
23	Polygon	EE	EE001	Killi vald	EE00100370304	EE0010037	0304
24	Polygon	EE	EE001	Võru linn	EE00100370609	EE0010037	0609
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## Environmental data



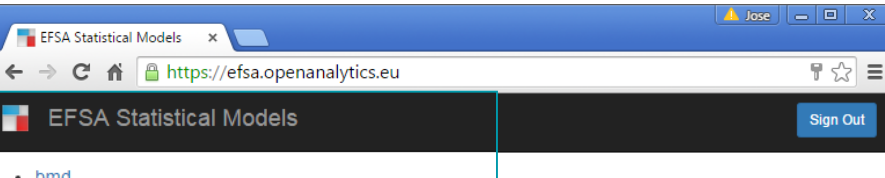
## Risk factors analysis

# DATA ANALYSIS: DESCRIPTIVE

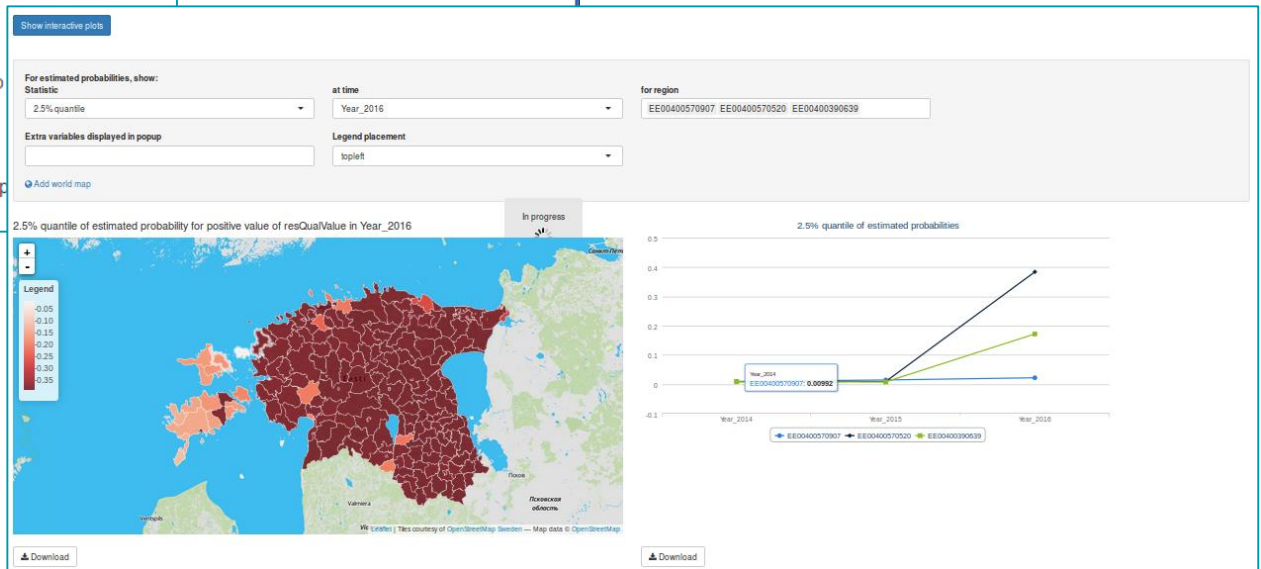


# DATA ANALYSIS: STATISTICAL

## R4EU-EFSA WEB Tool



- **bmd**  
benchmark dose modeling
- **MonteCarlo**  
risk assessment using Monte Carlo
- **ribess**  
risk based surveillance systems
- **spatial**  
exploratory analysis for spatio-temp

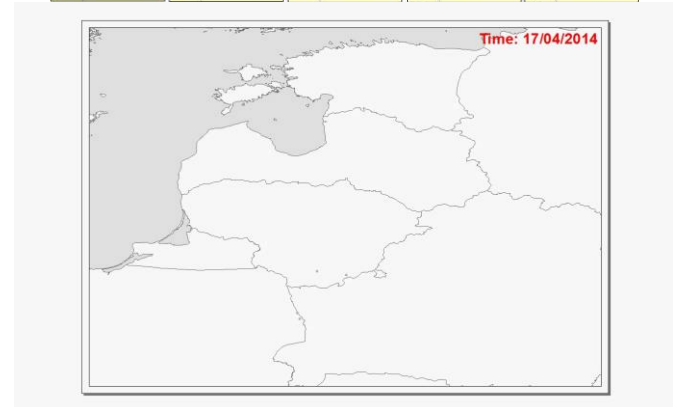
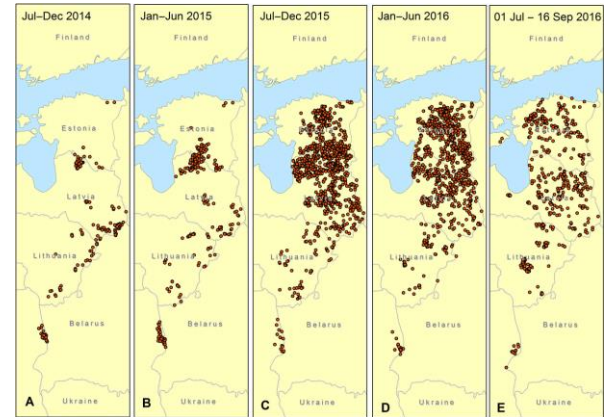




# 1ST SCIENTIFIC REPORT

## Conclusions:

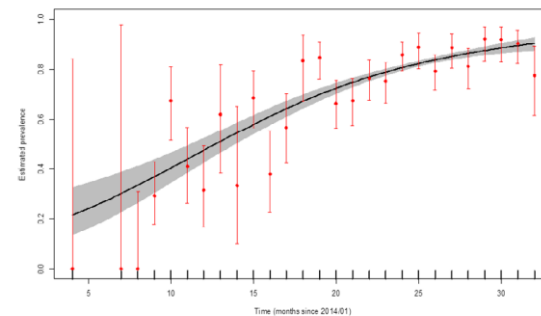
- Currently the ASF cases in wild boar in Estonia, Latvia, Lithuania and Poland show the spatio-temporal pattern of a **small-scale epidemic**;
- The **average spatial spread of the disease in wild boar subpopulations in Latvia and Estonia** is approximately **2 km/month**, while in **Lithuania and Poland** the average spatial spread of the disease is approximately **1 km/month**, which indicates a **slow spread** in the region;
- **Virus prevalence in hunted wild boar** is very low (0.04 and 3%), **without any apparent increasing trend** over time;
- **No clear time trend in ASFV-antibody prevalence** has been observed in hunted wild boar;
- Since the beginning of the epidemic, the apparent antibody prevalence in hunted wild boar has always been lower than the apparent virus prevalence in hunted wild boar, indicating an **unchanged epidemiological/immunological situation**.



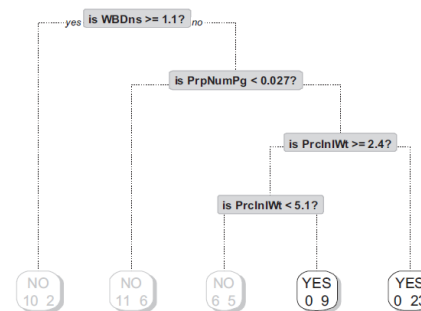
# 1ST SCIENTIFIC REPORT

## Conclusions:

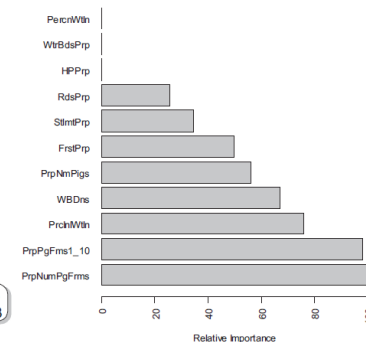
- The risk factor analysis shows an **association between the number of settlements and pig farms, forest coverage, number of roads and the notification of ASF in wild boar in 2016**;
- According to the risk factor analysis the number of **human settlements is associated with ASF notification** in wild boar in Estonia, Latvia and Lithuania in 2015 and 2016;
- Given existing trends in apparent virus prevalence and seroprevalence, there is a **need to maintain high biosecurity standards on pig farms and adjust control measures in the backyard sector and at hunting grounds level.**



ASF Presence in the Region



Variable Importance



## 2<sup>ND</sup> SCIENTIFIC REPORT (OCTOBER 2017)

### Objectives

- Update descriptive epidemiological analysis
- Update risk factors analysis involved in the occurrence, spread and persistence of the ASF virus in the wild boar population and in the domestic/wildlife interface
- Review the management options for wild boar identified in the EFSA scientific opinion of June 2015

# EFSA'S ACTIVITY ON ASF

2015

**WORKSHOP:**  
Harmonization of data collection in the Baltic countries and Poland

Parma, Italy  
23 November 2015

2016

**REQUEST:**

Scientific and technical assistance on ASF  
- Harmonization of data collection  
- Update epidemiological analysis  
- 2 Scientific Reports (Oct 2016 and Oct 2017)

2016

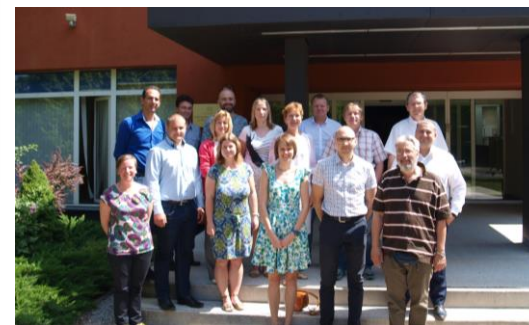
**WORKSHOP:**  
"Epidemiological and risk factors analysis of African swine fever"

Riga, Latvia  
29-30 June 2016

2017

**WORKSHOP:**  
"Epidemiological modelling"

Parma,  
June 2017



- <http://www.efsa.europa.eu/en/events/event/151123>

# THE « ASF TEAM » - ACKNOWLEDGEMENTS

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- Roberta Palumbo
- Gabriele Zancarano
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- Ewelina Czwieniczek
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- Imbi Nurmoja
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- Krzysztof Śmietanka
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- Rimvydas Falkauskas
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- Marius Masiulis
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