



EFSA's Risk assessments on African swine fever

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European Food Safety Authority

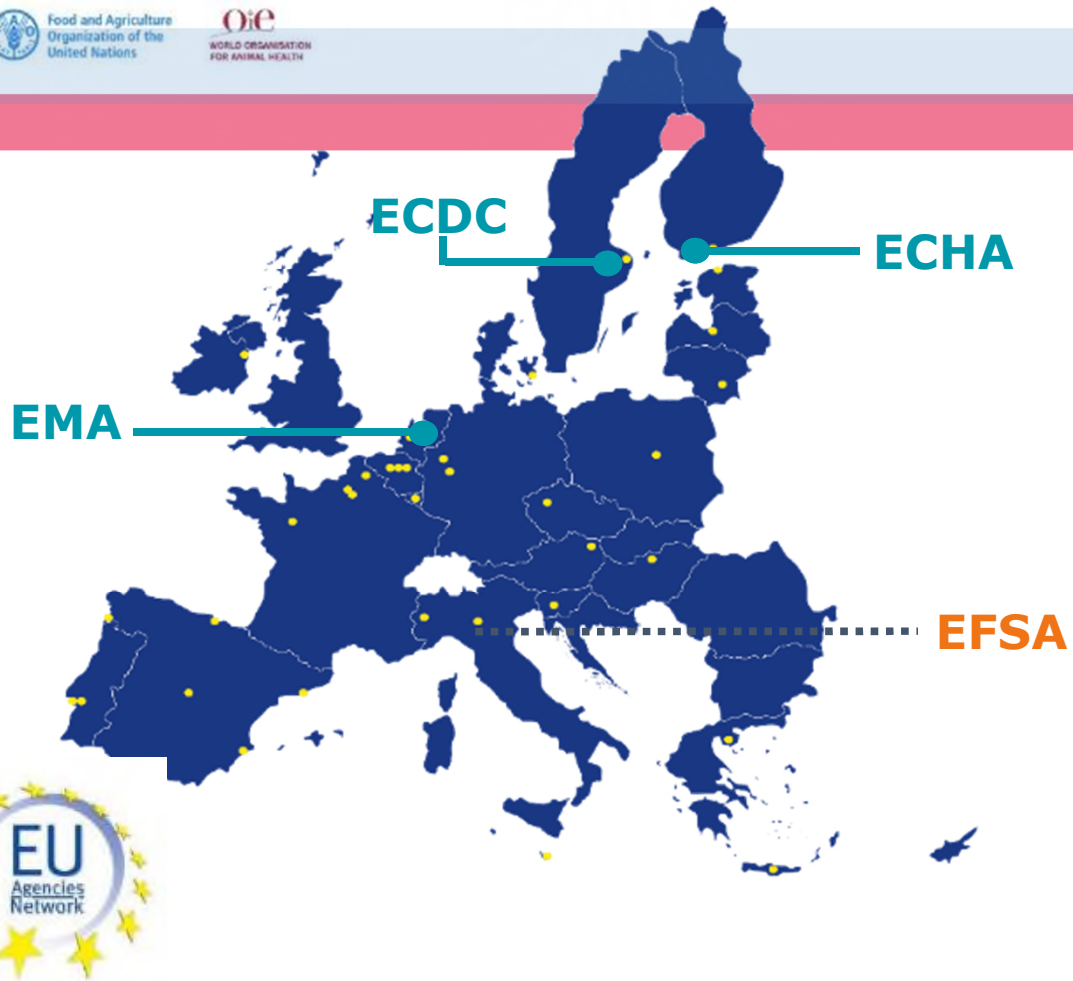
EFSA is...



The reference body for risk assessment of food and feed in the European Union. Its work covers the entire food chain – from field to fork



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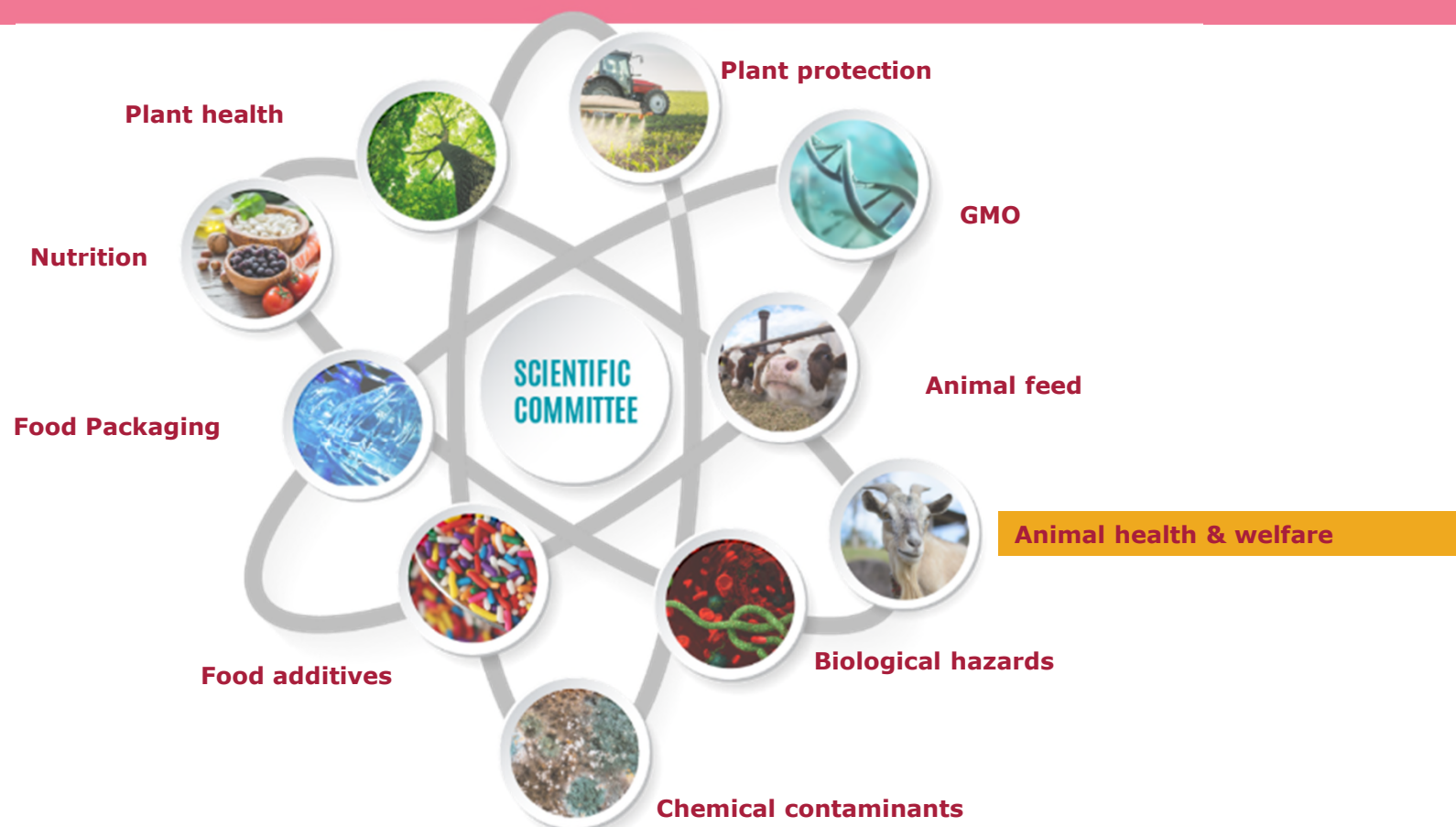
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scientists
evaluate,
assess, advise**



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EFSA JOURNAL

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African Swine Fever

Virtual Issues | First published: 9 September 2020 | Last updated: 9 September 2020



By Delyana Stefanova Ribova / Shutterstock.com

African swine fever (ASF) is a disease that affects domestic and wild pigs. Although it is harmless to humans, it can be deadly for pigs and has serious socio-economic consequences for affected countries. In recent years it has spread across Europe. Information on the EFSA campaign to raise awareness and help halt the spread of African swine fever in south-east Europe can be found here.

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Analysis of the epidemiological situation of African swine fever in the European Union

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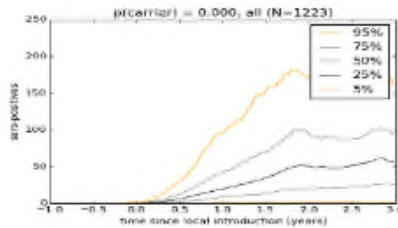


More than 30 outputs on ASF:

- Risk of ASFV introduction
- ASF control in wild boar population
- ASF epidemiology in EU
- ASFV transmission through different matrices and vectors
- Risk factors for ASF occurrence in wild boar and domestic pig farms

EFSA's ASF outputs are online at:

<https://efsa.onlinelibrary.wiley.com/doi/toc/10.2903/1831-4732.african-swine-fever>



Jan '21

Mar '21

Apr '21

May '21

June '21

- Exit Strategy

- Matrices

- Outdoor farming

Gap research:
ASF seasonality

Gap Research
ASFV
transmission
by wild boars

ASF'SWG

- Christian Gortázar, Spain (CHAIR)

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< January 2021

Terms of Reference

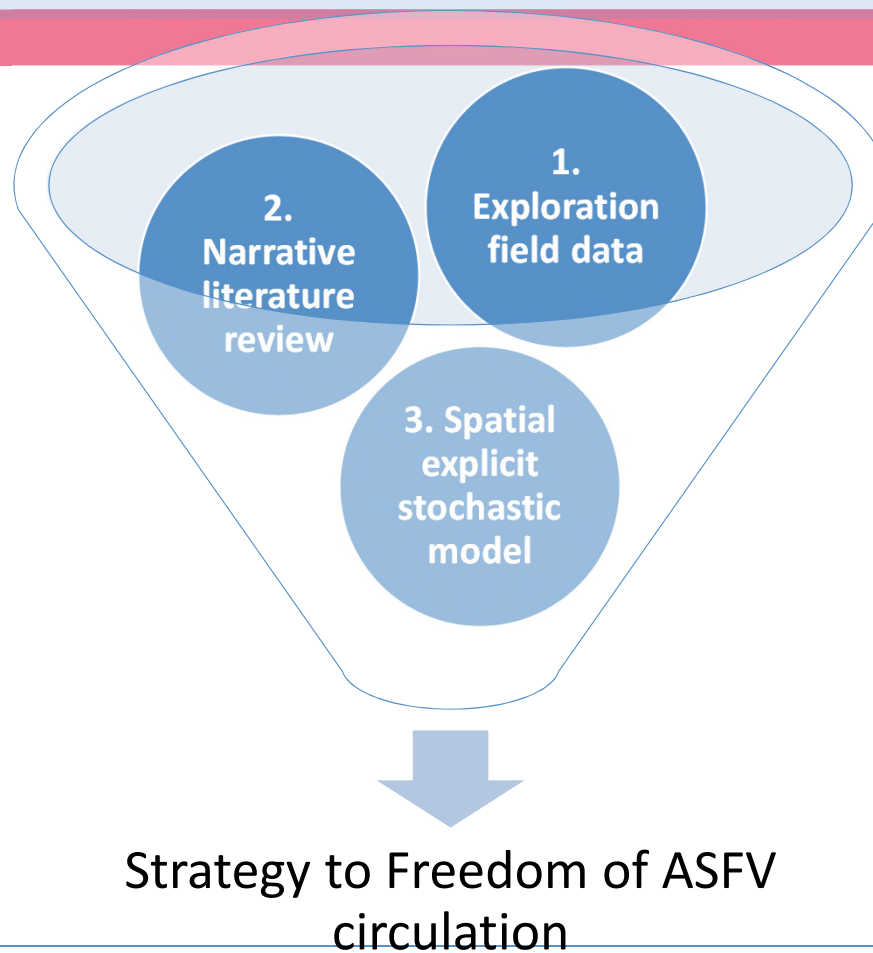
1. Specific to Estonia and Latvia, EFSA should clarify

- (i) the risk factors possibly contributing to ASF **persistence** in affected areas over a number of years in wild boar populations. <April 2021
- (ii) the **role of seropositive wild boar** in the context of ASF infection, and in particular in areas with no current evidence of virus circulation.

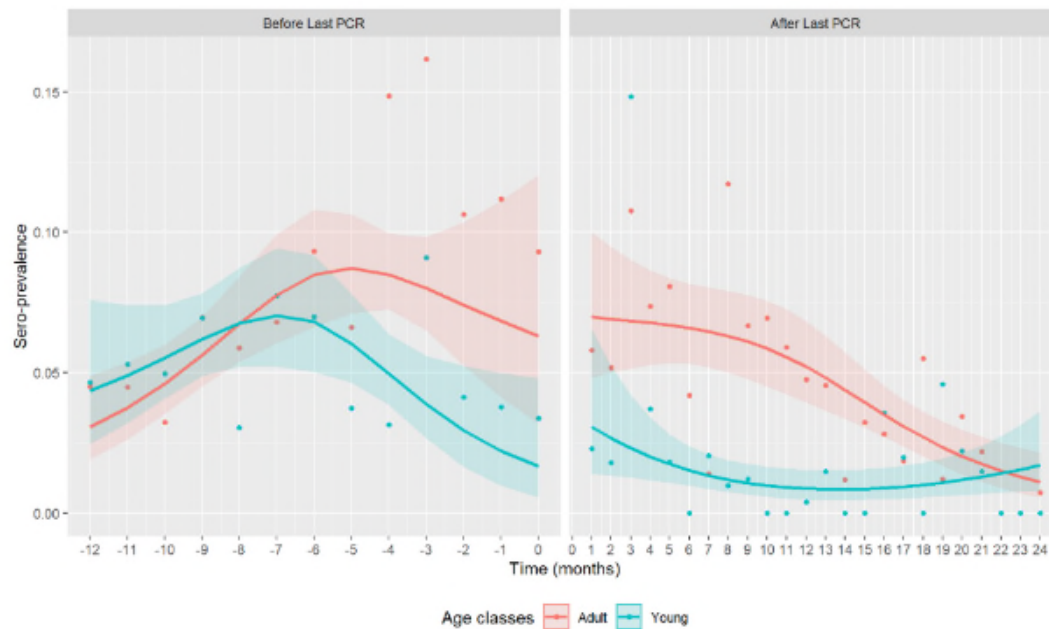
2. EFSA should define pathway(s) to ASF freedom in relevant areas in accordance with the Strategic approach to the management of African Swine Fever for the EU and recommend criteria for defining an area as free from ASF in wild boar.

- In this task, EFSA should take into account the results of wild boar testing (in particular, antibody detection and virus identification) and the results in relation to the identification of wild boar carcasses (with differing time since death)

Methodology:



Exploration field data



■ E.g.: Exploration field data: ESTONIA

- Gradual decline of seroprevalence since the last PCR positive sample
- Significantly smaller seroprevalence in young animals
- Seroprevalence in young animals approaching zero
- No oscillating patterns in seroprevalence indicating undetected virus circulation



Fading out epidemic?

But: PCR positive sample in Sep 2020: new introduction?

Spatial explicit stochastic model

Objectives:

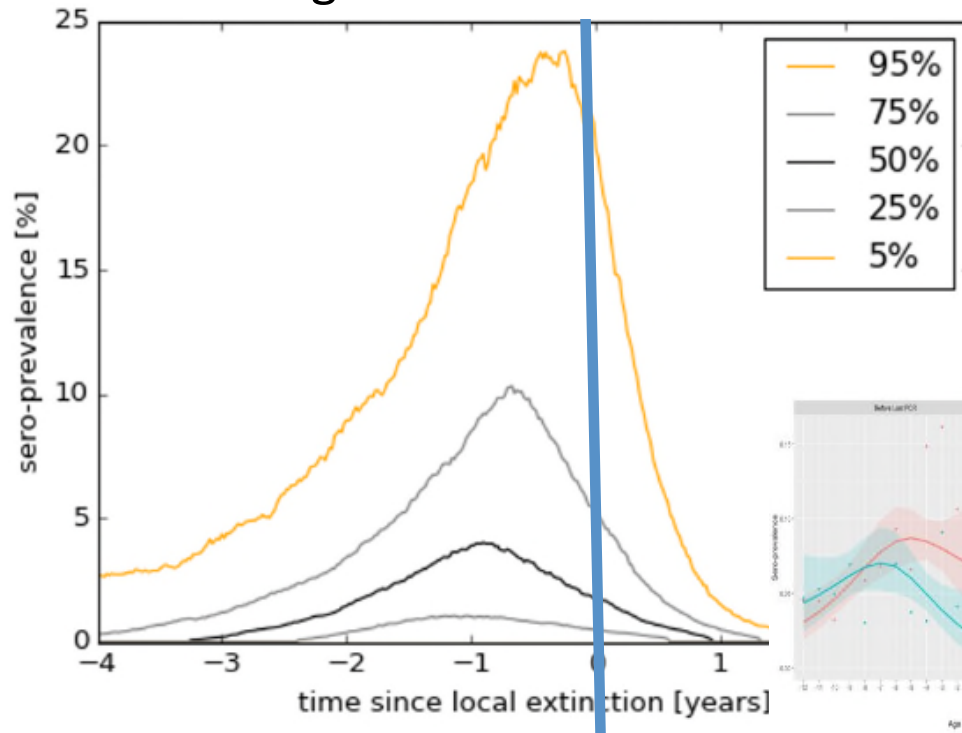
1) Identify different patterns of serological surveillance results given different scenarios associated with persistence of infection at low prevalence. These scenarios should consider the:

- Spatial clustering of infection
- Sampling procedures are not homogenous
- Different drivers of persistence (based on literature review outcomes: e.g. survival in the environment, the presence of carrier animals, a role for maternally derived immunity)
- On-going surveillance to detect ASFV circulation

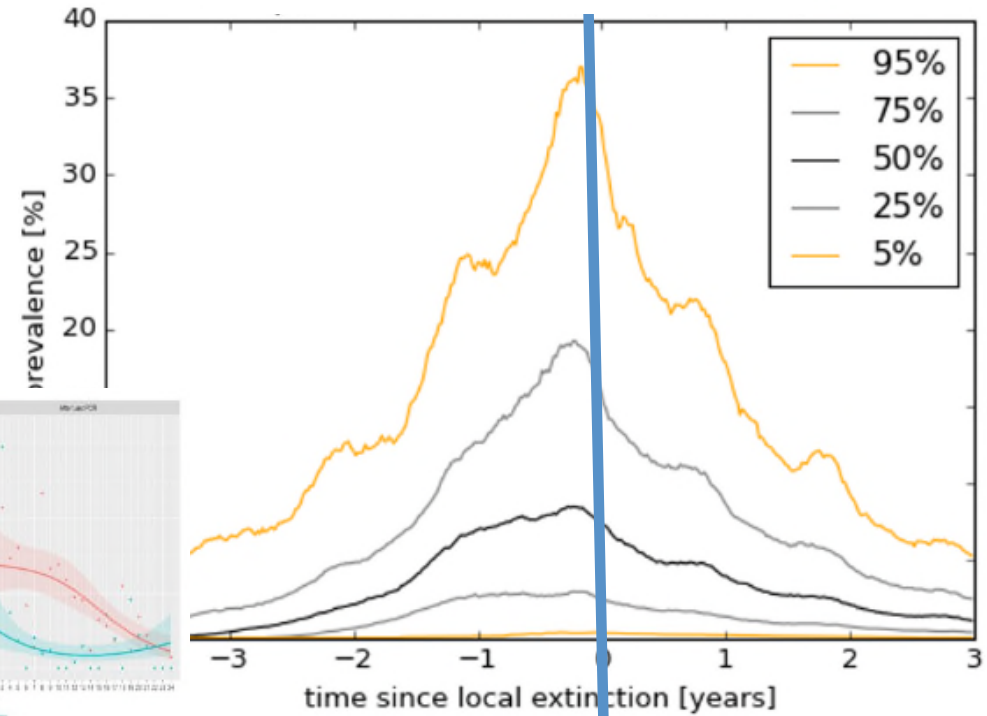
2) To predict patterns of surveillance results (virological, serological, combined) that could occur at the tail of the given a range of different epidemiological scenarios

Spatial explicit stochastic model

Young animals



Adult animals



**Outcome model:
Biological rationale
for surveillance
decisions**



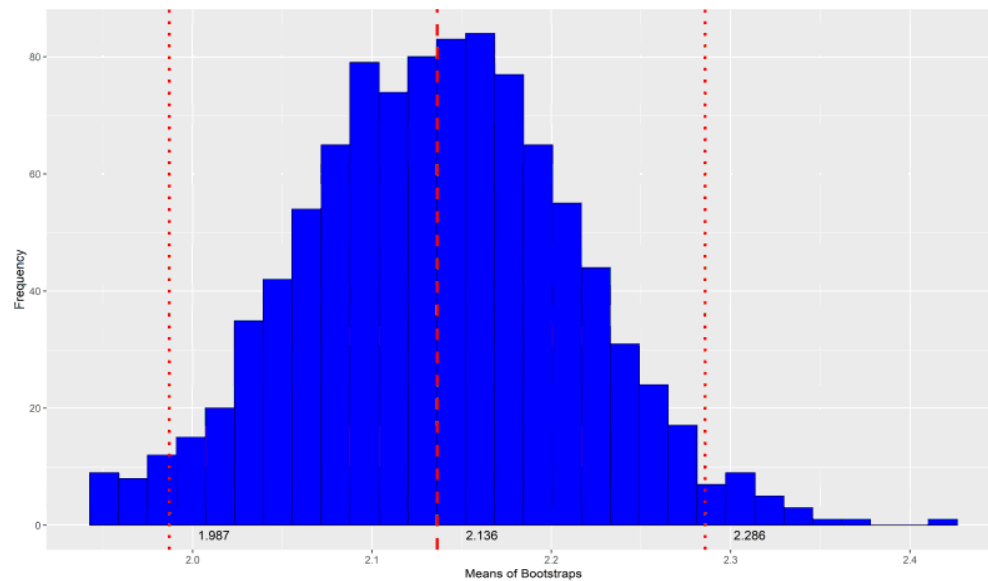
**To propose overall decision criteria
to underpin stages of an exit
strategy taking into account:**

**-Different assumptions regarding
persistence mechanisms and
observed epidemiological
scenarios**

**-If overall criteria are not possible,
propose partial/specialised criteria
according to distinct
epidemiological scenarios**

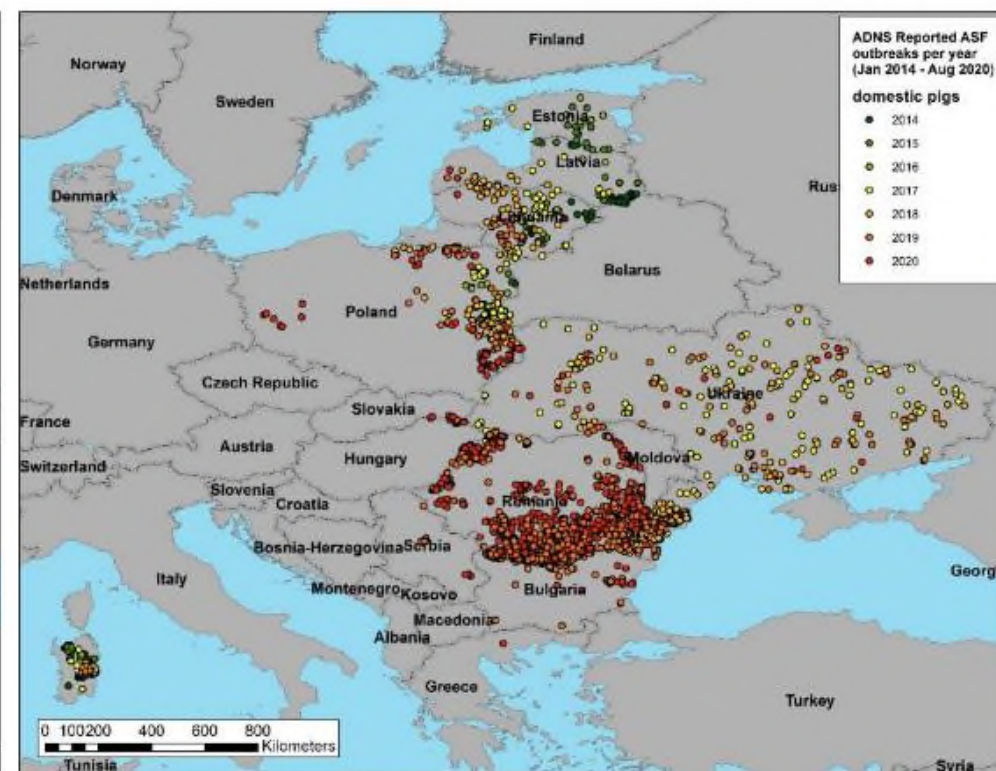
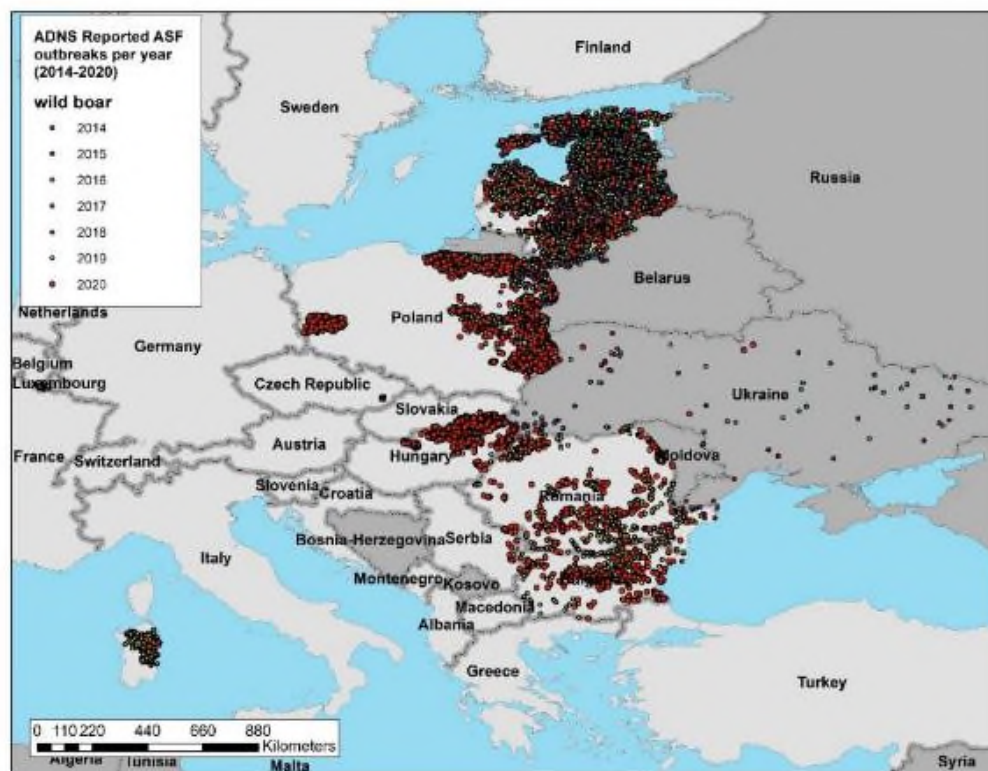
Epidemiological report (EPI-5/6)

< March 2021



Name	Country
Desmecht Daniel	Belgium
Gerbier Guillaume	France
Tom Petit	Luxembourg
GOGIN Andrey	Russia
GRIGALIUNIENE Vilija	Lithuania
HELYES Georgina	Hungary
KORYTAROVA Daniela	Slovakia
LOI Federica	Italy (Sardinia)
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SUPEANU Alexandru	Romania
Staubach Christoph	Germany
Komitas Georgios	Greece
WALLO Richard	Czechia
WOZNIAKOWSKI Grzegorz	Poland

Reporting period: 01 Sep. 2019 - 31 Aug 2020



Terms of Reference

1. Analyse the epidemiological data on ASF from MS and non-EU countries affected by ASFV Genotype II

- Temporal and spatial patterns
- Ranges and speed of transmission
- Sources of introduction in pig holdings

2. Risk factors involved in the occurrence, spread and persistence of the ASFV. In particular, risk factors involved in the occurrence of ASF in domestic pig farms in Romania should be identified

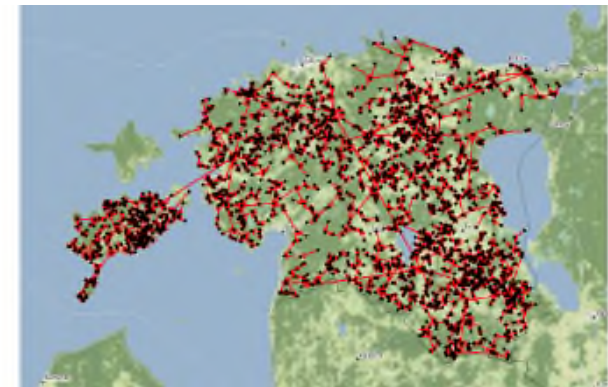
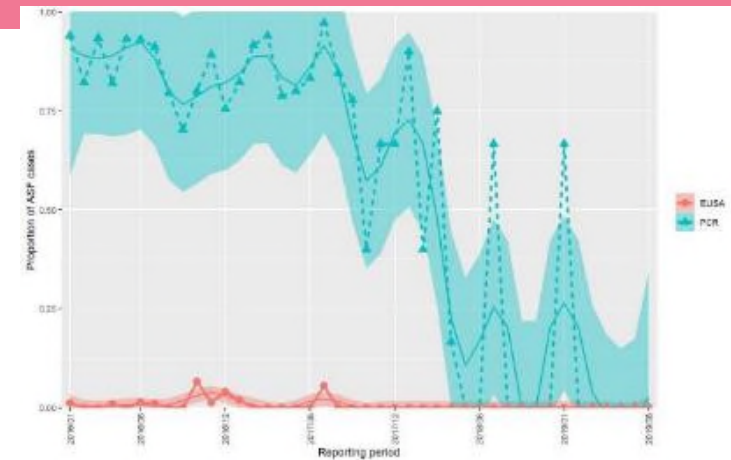
- wild boar population
- domestic/wildlife interface

3. Analyse the data and information on the geographical areas called white zones applied by free Member States (in particular France and Luxembourg at the border with Belgium) for preventing the spread of the disease in wild boar.

- Assess the effectiveness of the measures and review scientific literature addressing these measures.
- Review and assess the robustness and effectiveness of the boundaries used for the determination/demarcation of these areas.

Descriptive epidemiology:

- Narrative sections from affected MS and maps of outbreaks
- Proportions of PCR/ELISA positive samples (Loess smoothing)
- Consolidation findings of network analysis with spatial explicit model to relate local speed of propagation to local population and habitat characteristics
- Annual herd incidence rate
- Evolution yearly wild boar density
- Proxy for 'secondary cases' based on potential infection network



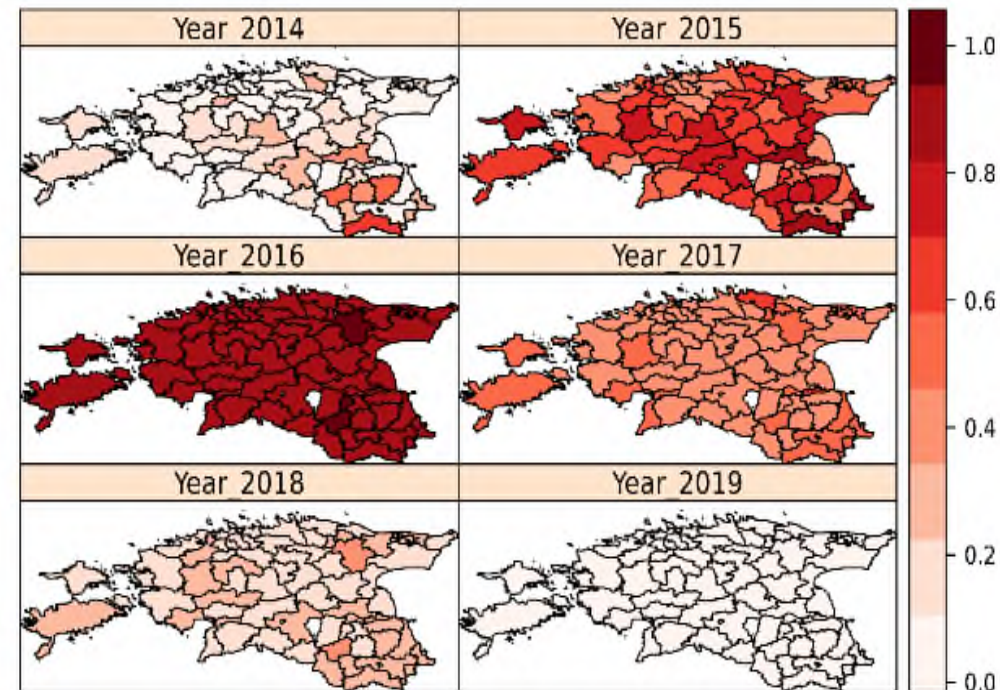
Risk factor analysis

■ WILD BOAR:

- Generalised additive model to identify risk factors for ASF occurrence in wild boar in Estonia, Latvia and Romania.

■ DOMESTIC PIGS:

- Same model, considering some of the covariates used in the Estonian analysis (wild boar density, pig density, distance to nearest outbreak or case...)



White zones

■ Proposed analysis

- **Step 1:** Detailed data collection of information about measures in white zone:

Location white zone	Physical description barrier	Hunting measures	Carcass detection (data, modality, intensity)
Shape file	Date of construction and description of fence	Description of duration, intensity of hunting modality Results of testing	Description of duration and intensity, carcass detection modality Results of testing

- **Step 2:** evaluation specific measures with spatial explicit stochastic model to compliment model exercise carried out in EFSA 2015 and EFSA 2019



< June 2021

Follow up on European Commission Mandate

■ Request for scientific and technical assistance:

- Identify the main research gaps to address the needs of risk managers involved in the prevention and control of ASF.
- Research priorities that should be addressed in a short time frame (< 1 year).

<https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2019.5811>



European Food Safety Authority

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EFSA JOURNAL

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Research gap analysis on African swine fever

European Food Safety Authority (EFSA), Julio Álvarez, Dominique Bicout, Anette Boklund, Anette Bøtner, Klaus Depner, Simon J More, Helen Roberts, Karl Stahl, Hans-Hermann Thulke ... [See all authors](#) ▾

First published: 27 August 2019 | <https://doi.org/10.2903/j.efsa.2019.5811>

✉ Correspondence: alpha@efsa.europa.eu

Requestor: European Commission
Question number: EFSA-Q-2019-00050
Acknowledgements: EFSA wishes to thank the Chief Veterinary Officers, Veterinary officers, officers of the Ministries of Agriculture, members of the Federation of Veterinarians of Europe, farmer's associations, forest official services, pig feed industry workers and hunting organisations that provided input into the online questionnaire that contributed to the content of this report.
 Approved: 31 July 2019

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Terms of reference



1. Design studies needed to evaluate:
 - (i) the **impact of reducing the wild boar population densities** in relation to transmission of African swine fever virus (ASFV);
 - (ii) the **natural behaviour of wild boar to improve wild boar population management.**

Terms of reference



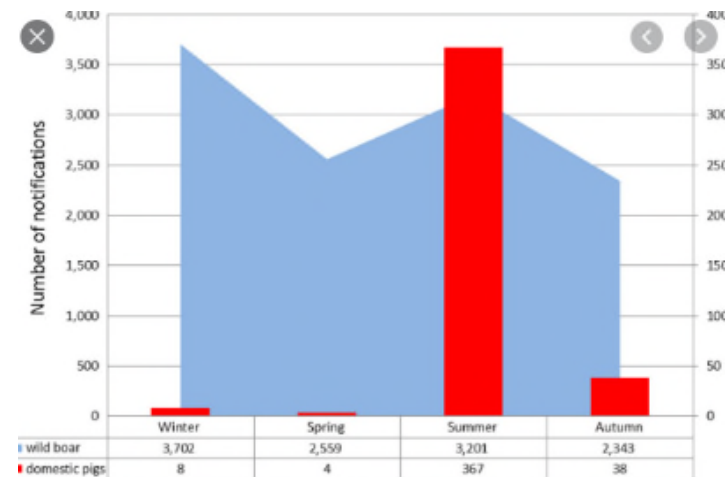
2. Studies needed to understand:

- (i) the **role of arthropod vectors** in ASF transmission (biological and mechanical);
- (ii) **ASF survival and transmission from contaminated environment** and
- (iii) residual infectivity of **buried wild boar carcasses**.

Terms of reference

3. The patterns of seasonality in wild boar and domestic pigs and identify main factors that determinate these patterns.

Provide recommendations in particular in relation to risk mitigation options to address these factors, where relevant.

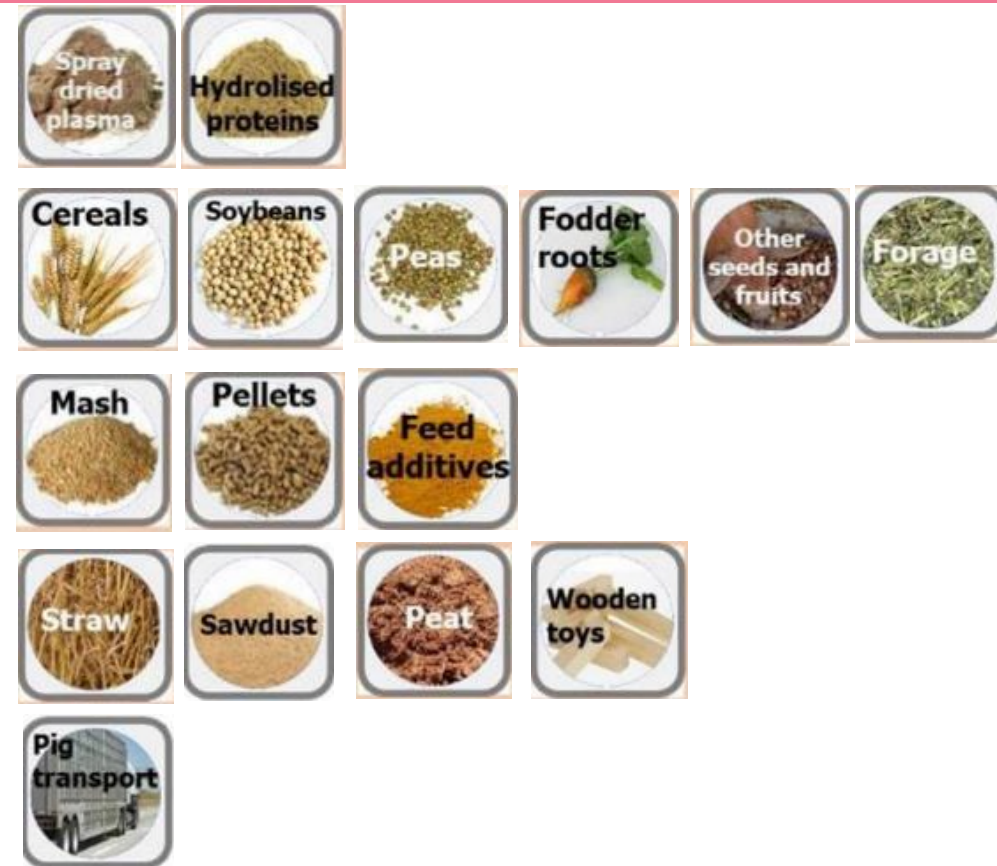


- **Step 1: Identification of research objectives by working group: example wild boar**
- **Step 2: Identification of research priorities by broader networks**
- **Step 3: Prioritization of research priorities**
- **Step 4: Development of calls for research proposals (short research protocols) for research priorities:**
 - **Arthropods** [EFSA-Q-2020-00431](#): 6 research proposals: [Vectornet](#)
 - **Wild boar** [EFSA-Q-2020-00430](#): 14 research proposals: [Enetwild](#)
 - **ASFV survival in environment** [EFSA-Q-2020-00429](#): 1 research proposal: ASF Working group
 - **Seasonality**: [EFSA-Q-2020-00428](#): 2 research proposals: Copenhagen University



**MATRICES: EFSA-Q-
2019-00618**

- assess and rank different matrices according to the risk they pose to transmit ASFV
 - matrices or products that can be traded or moved across borders between ASF-affected and non-ASF-infected areas and can legally be exposed to pigs in non-ASF-affected areas
1. animal by-products for use in feed derived from pigs
 2. non-pig-derived feed materials that could be contaminated with ASFV
 3. compound feed and feed additives
 4. bedding and enrichment material
 5. empty vehicles for live pig transport returning from ASF-affected areas



where, $m_{i,small}$ and $m_{i,large}$ are the total number of units entering all small and large farms, while r is the proportion of consignments of a specific product, j , from a specific region, i , going to small scale farms, approximated as ratio of the number of pigs in small scale farms by the number of all pigs in the non-affected areas of EU.

Contamination EKE

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Carsten Pohl

Arno van Gorp

Farm Exposure EKE

David Goodier

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Christine Leeb

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Felix Ardelean



Outdoor farming: EFSA- Q-2020-00425

European Commission (EC) Strategic approach provides for a general recommendation for a prohibition of outdoor keeping of pigs at least in the areas covered by Decision 2014/709/EU (=affected by ASF)

Some EU Member States proposed to derogate from ban and to set biosecurity criteria to allow for derogations

Scientific Opinion on

- the infection risks associated with keeping of pigs outdoors in ASF-affected areas,
- the characterization and categorization of keeping of pigs outdoors in the Member States
- efficient biosecurity measures that might allow to minimize African swine fever virus (ASFV) introduction into and ASFV spread from pigs kept outdoors



1) Animals are held in woodlands/forests without any fence



3) Animals are held in fields or on pastures without any fence



5) Animals are held in open buildings which are fenced



2) Animals are held in woodlands/forests which are fenced



4) Animals are held in fields or on pastures which are fenced



6) Animals are held in closed buildings with access to a fenced concrete outside run/yard



- Questionnaire survey to competent authorities of MS and Farmers'
- Information from the EU Animal Disease Notification System (ADNS) and SCoPAFF presentations of affected MS
- Expert Knowledge Elicitation: categorization of outdoor pig farms in EU MS according to their risk of ASFV introduction and spread
- Expert Knowledge Elicitation: proposing control and biosecurity measures



African swine fever is harmless to humans, but areas affected by ASF suffer significant financial losses due to restrictions on meat exports, and local forest activities can be affected as wild boar numbers fall because of the virus.

Hunters and farmers, discover the **DOs** and **DON'Ts** by downloading your infographic!



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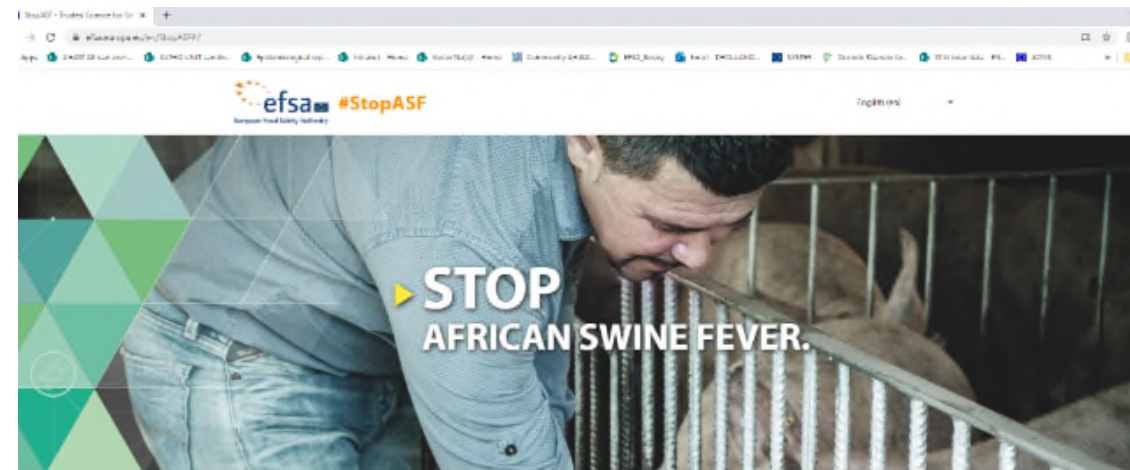


Stop AFRICAN SWINE FEVER

There are currently **no vaccines** for this virus, so **prevention is vital** to stop it spreading and protect national economies.

DOWNLOAD THE FACTSHEET

STOP ASF CAMPAIGN: <https://www.efsa.europa.eu/en/StopASF#/>



African swine fever (ASF) is a disease that affects domestic and wild pigs. Although it is harmless to humans, it can be deadly for pigs and has serious socio-economic consequences for affected countries. In recent years it has spread across Europe.

With no cure or vaccine currently available, it is important to prevent outbreaks by taking appropriate actions as a citizen, tourist, farmer or



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