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28/09/2022

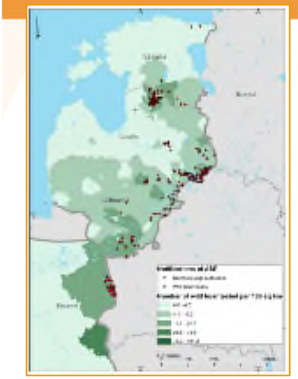
EFSA's recent risk assessments on African swine fever

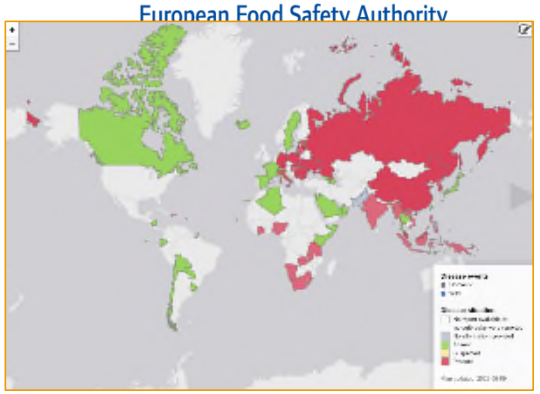
Sofie Dhollander

Informal CVO meeting-Prague

efsa
European Food Safety Authority

EFSA's work on ASF





2010-2014

- SO: Risk of introduction ASF into EU
- SO: Role of ticks
- SO: Update risk of introduction into EU

2015-2017

- EFSA, 2015: SO on African swine fever
- Evaluation WB management strategies
  - Evaluation WB density threshold,
  - WB reduction and separation methods
- SR: EPI 1 report
  - Descriptive epidemiology ASF

2018

- EFSA, 2018: SO: ASF in wild boar
  - Update WB density threshold
  - Update WB separation and reduction methods
  - Update WB management strategy
- SR: EPI 2 report
  - Descriptive epidemiology ASF

2019

- SO: Risk ASF in south-eastern Europe
- SR: EPI 3 report
  - Descriptive epidemiology ASF
  - Wild boar management following focal introduction

2020

- SR: EPI 4 report
  - Descriptive epidemiology ASF
  - Update review WB separation and reduction measures
  - Update WB management strategies after focal introduction;
  - Risk factor backyard farms Romania

2021

- SO: ASF AHL control measures
- **SO: ASF Exit Strategy:**
- SO: ASF Gap research (n=4)
- SR: EPI 5 report
  - Descriptive epidemiology
  - Risk factor analysis and
  - **White zones around focal introduction**
- **SO: ASF and outdoor farming**
- SO: Ability of matrices to transport ASFV

2022

SR: EPI 6 report

- Descriptive epidemiology
- SLR risk factor analysis
- **White zones next to low wild boar control area**

EFSA's Journal special issue on ASF:
https://efsa.onlinelibrary.wiley.com/doi/toc/10.2903/1831-4732.african-swine-fever

11 Scientific Opinions (SO), 9 Scientific Reports (SR), 25 External reports provided by Enetwild, UFZ and Vectornet

EFSA Journal

SCIENTIFIC OPINION

ADOPTED: 21 January 2021

doi: 10.2903/j.efsa.2021.6419

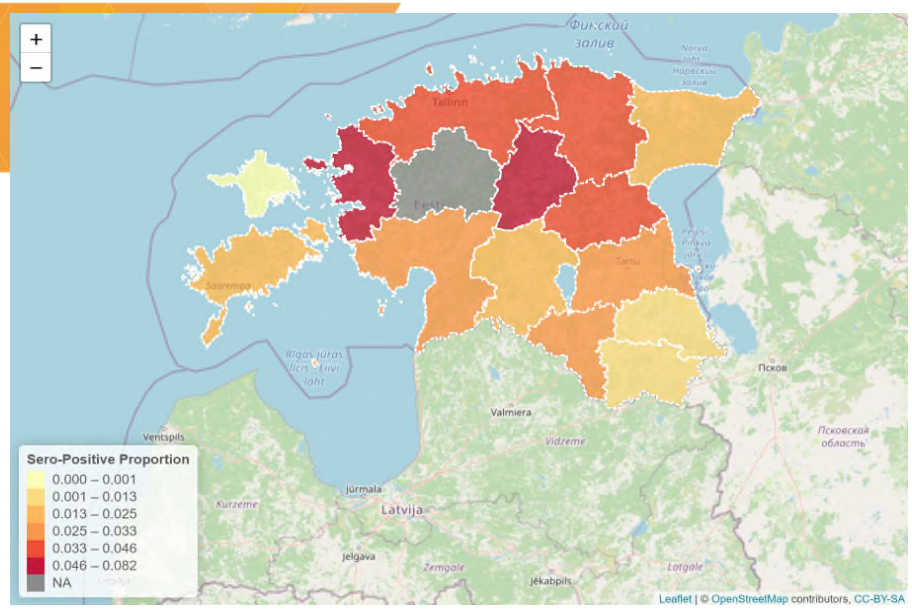
ASF Exit Strategy: Providing cumulative evidence of the absence of African swine fever virus circulation in wild boar populations using standard surveillance measures

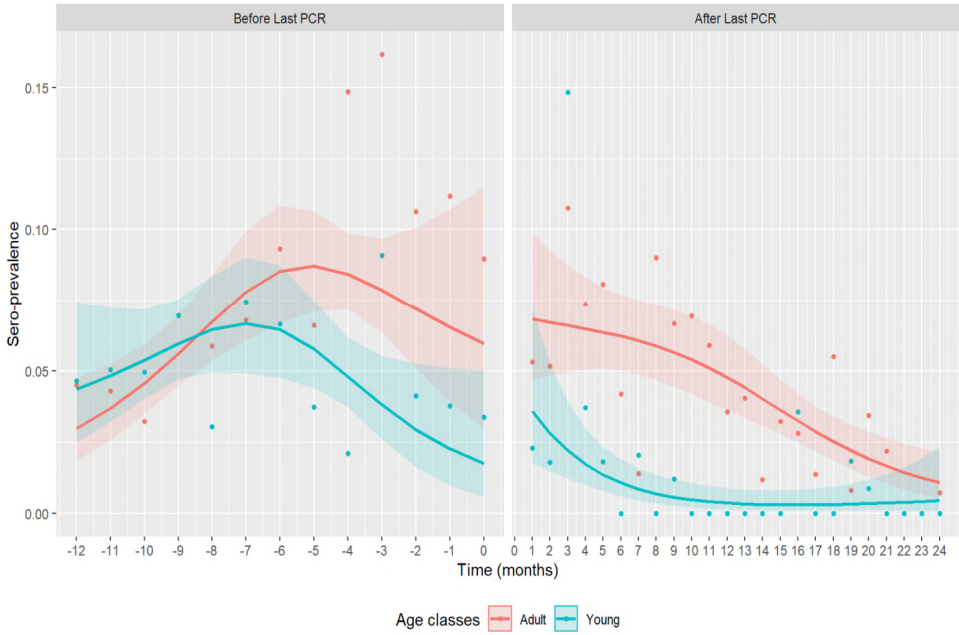
European Food Safety Authority (EFSA),
Søren Saxmose Nielsen, Julio Alvarez, Dominique Joseph Bicout, Paolo Calistri, Klaus Depner, Julian Ashley Drewe, Bruno Garin-Bastuji, Jose Luis Gonzales Rojas, Christian Gortazar Schmidt, Mette Herskin, Virginie Michel, Miguel Ángel Miranda Chueca, Paolo Pasquali, Helen Clare Roberts, Liisa Helena Sihvonen, Hans Spoolder, Karl Stahl, Antonio Velarde, Christoph Winckler, José Cortiñas Abrahantes, Sofie Dhollander, Corina Ivanciu, Alexandra Papanikolaou, Yves Van der Stede, Sandra Blome, Vittorio Guberti, Federica Loi, Simon More, Edvins Olsevskis, Hans Hermann Thulke and Arvo Viltrop

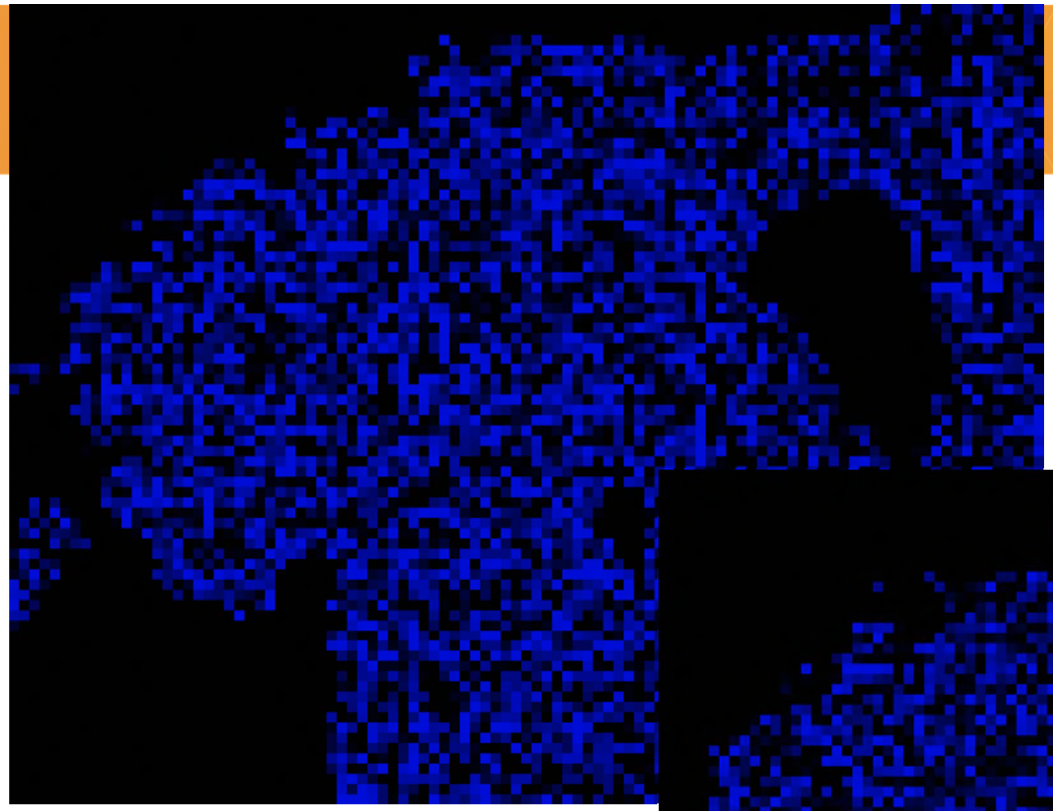
efsa
European Food Safety Authority

Terms of reference

- What are the factors contributing to multiple years of ASF circulation in countries under surveillance (persistence)?
- Role of seropositive animals if virus is not detected since a long period (how reliable are surveillance results) ?
- Pathways to substantiate evidence of absence of ASFV circulation when PCR detections.



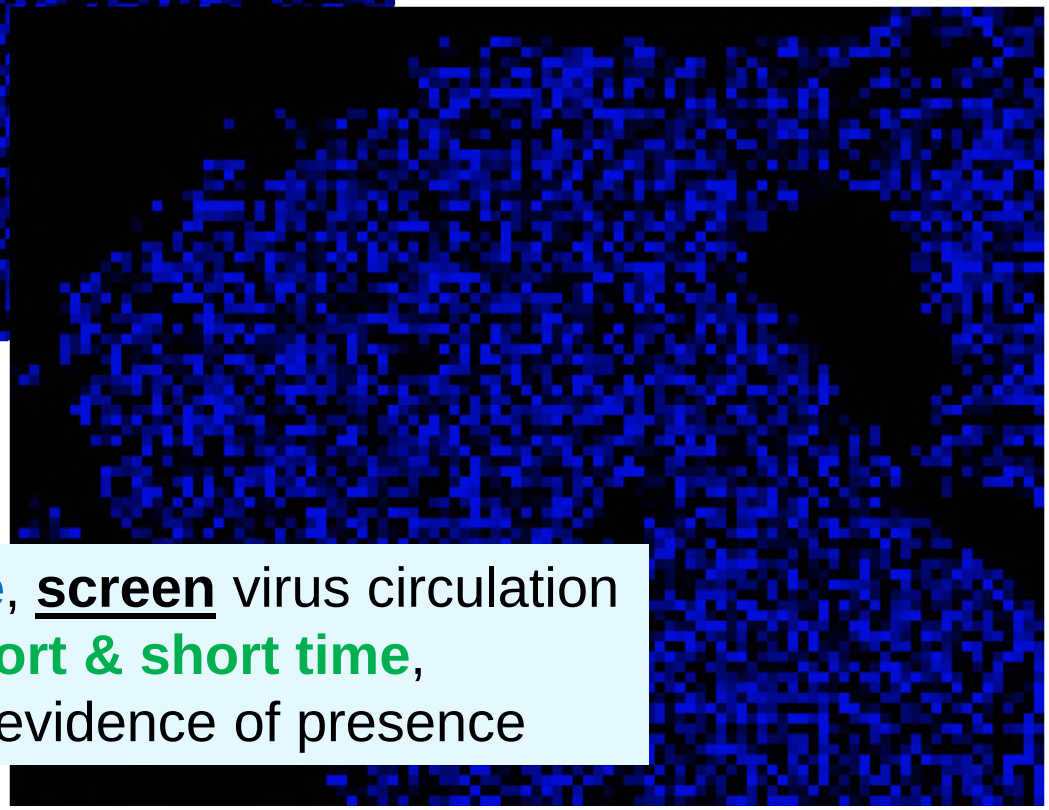




Fade out

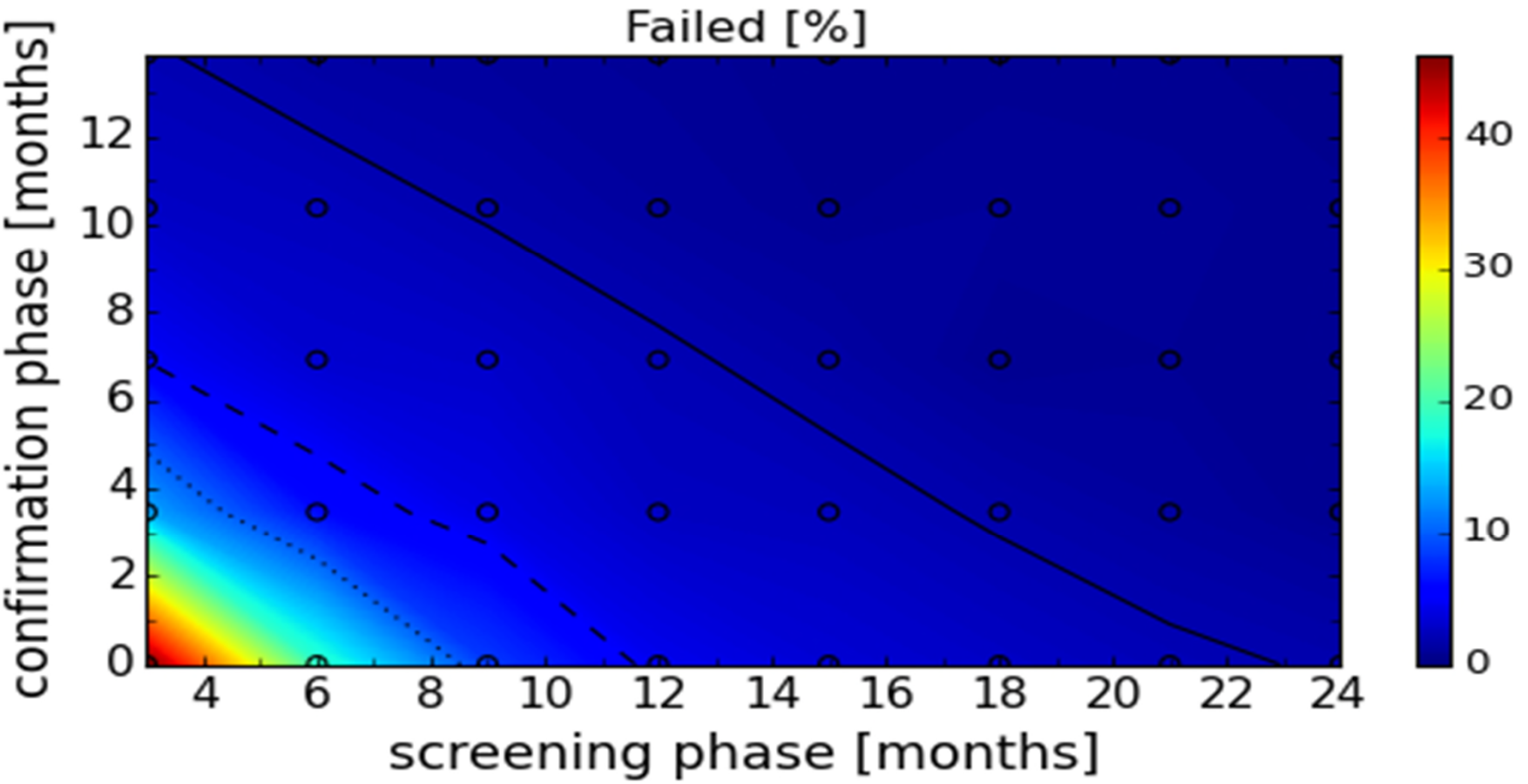
How can we proof that we are free of virus circulation?

No fade out



Screening: **“low” effort long time**, **screen** virus circulation
Confirmation: **“high” targeted effort & short time**,
confirm there is no evidence of presence

Two-phase approach



Conclusions

- As the exit scenario will be conducted during a period when there are very few infected pigs which are difficult to detect, and very few virus-positive carcasses, the time horizon and surveillance effort proposed with an Exit Strategy **must be sustainable** under field conditions
- The accuracy of the Exit Strategy approach to demonstrate freedom of ASFV circulation in a wild boar population is **increased with an increasing number of carcasses** being routinely collected and tested.
- The Exit Strategy is most likely to be achieved with a longer monitoring phase during routine surveillance effort (**the Screening Phase**) and a shorter monitoring phase of increased surveillance effort (**the Confirmation Phase**).
- Lengthening of the monitoring phase should be reasonably balanced against an **unnecessary prolonged 'time free'** with only a marginal gain in performance of the Exit Strategy.

Conclusions

- In general, the inclusion of **active surveillance** in the Exit Strategy has **very limited impact** on the performance compared with a lengthening the overall monitoring period.
- A **declining seroprevalence in sub-adults** could indicate the fade-out of the epidemic and trigger the decision to initiate the Exit Strategy, however, including this surveillance activity during the Exit Strategy only **marginally improves its performance**.
- An Exit Strategy is problematic in the presence of **lifelong infectious carrier** animals. That said, it should be emphasised that the existence of such carriers is speculative, based on current knowledge.

Conclusions

- **Higher natural mortality** that is not caused by ASF or hunting reduces the probability of finding infected carcasses in an affected area, and therefore reduces the performance of passive surveillance.
- It is rarely possible to accurately determine the date of death of animals on the basis of skeletal remains.
- Depending on the epidemiological situation, if PCR-positive, **skeletonised carcass** remains are detected, it is recommended that **virus isolation** is performed to verify the viability of the virus.
- Animals killed in car accidents should be considered as hunted animals in the Exit Strategy.
- The Exit Strategy recommendations were formulated per 1,000 km^2 and therefore need to be scaled with the size of the specific region of application. It is expected that the samples are distributed as evenly as possible in time and space in order to provide a good representation of the wild boar population of interest.

Recommendations for further research

- Persistence of **maternal antibodies** against ASFV and the duration of the immunity in survivors;
- **Long-term transmission of ASFV** by wild boar surviving infection (e.g. possible carriers, virus shedders);
- **Duration of the infectiveness of the environment** contaminated with ASFV, role of the environment as a source of the infection for wild boar and domestic pigs;
- **Role of vectors**, mainly arthropods, in mechanic or biologic transmission of ASF in the EU.
- Reduction of ASFV virulence due to long-term exposure (i.e. Sardinia) and circulation of **less virulent strains**

African swine fever and outdoor farming of pigs

Published: 9 June 2021 **Adopted:** 6 May 2021

EFSA Journal

on the Wiley Online Library

Read the article

Access the PDF

DOI: https://doi.org/10.2903/j.efsa.2021.6639

Terms of Reference

1. EFSA should
   - verify the **risk factors** for **ASF introduction** and **spread** that are linked to the **keeping of pigs outdoors**.
   - evaluate the **sustainability** of such farming **under different management and risk mitigation measures** and
   - assess the effectiveness of banning outdoor farming in already affected or at-risk areas, and the **risks linked to possible options for derogation to prohibition** of keeping of pigs outdoors **in affected areas**.

Terms of Reference

2. EFSA should

- **characterize** and **categorize** the **keeping of pigs outdoors**; and
- describe the **application of biosecurity measures** for keeping of pigs outdoors
- **evaluate the effectiveness of these practices** in different environments on **mitigating the risk of ASF introduction**

Outdoor pig farm types

I	Pigs have access to an outdoor area in forest, woodlands, on agricultural land or pastures	 
II	Pigs have access to an outdoor area on farm premises (adjacent to farm buildings)	 

- ***Kept animals**** = animals which are kept by humans; ***Wild animals**** = animals which are not kept animals
- ***Outdoor pig***
  - a suid animal (*Sus scrofa*) that is kept temporarily or permanently outdoors, not necessarily with means to constrain its movements, and with clearly defined ownership
  - including kept wild boar (identified and owned) as well as suid animals kept for non-commercial purposes; excluding hunting pens keeping wild boars in a fenced area without clear ownership

*REGULATION (EU) 2016/429 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law')

Main conclusions

- Outdoor pig farms are **common and present throughout the EU**
- No harmonised **system** to define or categorise different types of pig farms exists in EU legislation
- No harmonised **data** are currently available at EU level on (type of) outdoor access, number of outdoor farms, number of pigs per outdoor farm, commercial/ non-commercial nature or breed of pigs kept
- **Double fences** and **single solid fences** rate highest in terms of effectiveness for both outdoor farm types

Main recommendation

- There is no specific quantitative information on the effectiveness of on-farm biosecurity measures to mitigate ASF introduction/spread to/from pigs kept outdoors.
- The regular implementation of **independent and objective on-farm biosecurity assessments** using comprehensive standard protocols will further reduce the risk of ASF introduction and spread related to outdoor pig farms
- **Derogations from the current restriction of outdoor pig farming in ASF-affected areas** can be considered **on a case-by-case basis** if **appropriate biosecurity measures are implemented**
- **Kept wild boar populations** in MSs should be registered and their biosafety, particularly regarding fencing, feeding, animal movements among facilities, etc. should be assessed.
- Specific risk factors/biosecurity breaches leading to outbreaks in **backyard farms** should be determined, including collecting information about outdoor access and BSMs applied in these farms.

SCIENTIFIC REPORT

EFSA Journal

APPROVED: 26 March 2021

doi: 10.2903/j.efsa.2021.6572

Epidemiological analysis of African swine fever in the European Union (September 2019 to August 2020)

European Food Safety Authority (EFSA),
Daniel Desmecht, Guillaume Gerbier, Christian Gortázar Schmidt, Vilija Grigaliuniene, Georgina Helyes, Maria Kantere, Daniela Korytarova, Annick Linden, Aleksandra Miteva, Ioana Neghirla, Edvins Olsevskis, Sasa Ostojic, Tom Petit, Christoph Staubach, Hans-Hermann Thulke, Arvo Viltrop, Wallo Richard, Grzegorz Wozniakowski, José Abrahantes Cortiñas, Alessandro Broglia, Sofie Dhollander, Eliana Lima, Alexandra Papanikolaou, Yves Van der Stede and Karl Ståhl

Abstract

SCIENTIFIC REPORT

EFSA Journal

APPROVED: 30 March 2022

doi: 10.2903/j.efsa.2022.7290

Epidemiological analyses of African swine fever in the European Union

(September 2020 to August 2021)

EFSA (European Food Safety Authority),
Joaquín Vicente Baños, Anette Boklund, Andrey Gogin, Christian Gortázar, Vittorio Guberti, Georgina Helyes, Maria Kantere, Daniela Korytarova, Annick Linden, Marius Masiulis, Aleksandra Miteva, Ioana Neghirla, Edvins Olševskis, Sasa Ostojic, Satran Petr, Christoph Staubach, Hans-Hermann Thulke, Arvo Viltrop, Grzegorz Wozniakowski, Alessandro Broglia, José Abrahantes Cortiñas, Sofie Dhollander, Lina Mur, Alexandra Papanikolaou, Yves Van der Stede, Gabriele Zancanaro and Karl Ståhl

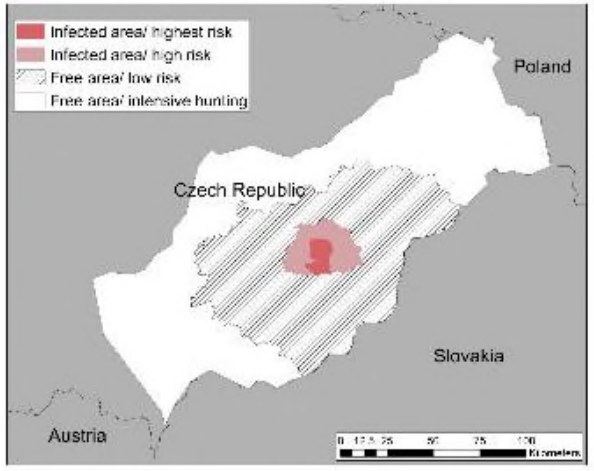
Abstract

White zones after focal introduction

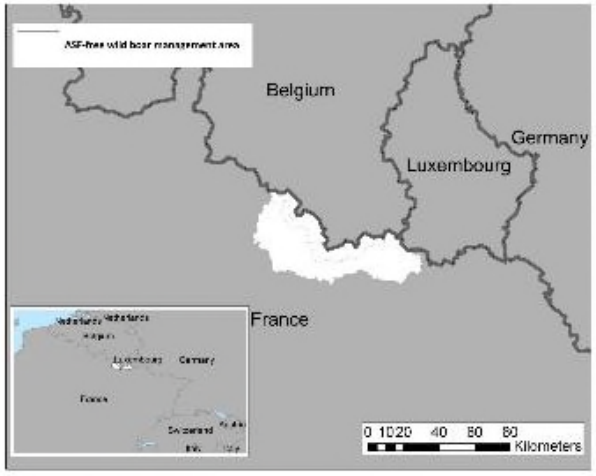
EFSA, 2021

- Width of the white zone?
- Distance from core area?
- Wild boar density at the moment of infection?
- Fence?

- Latvia

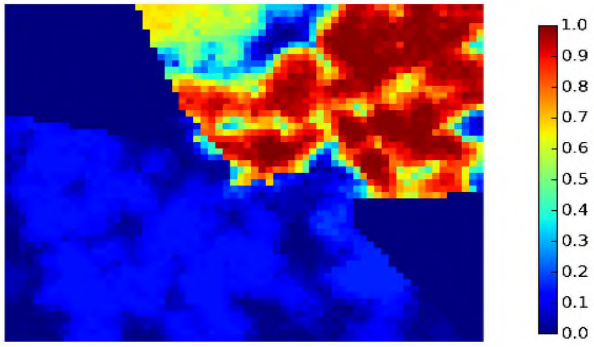
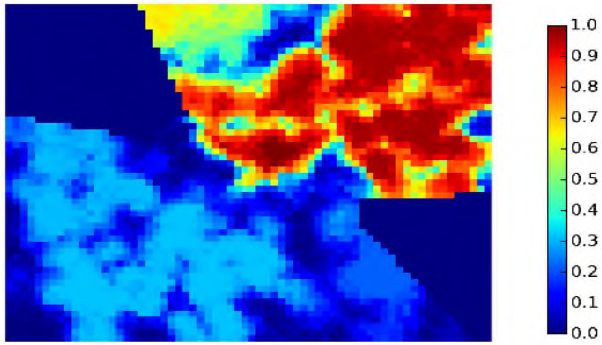
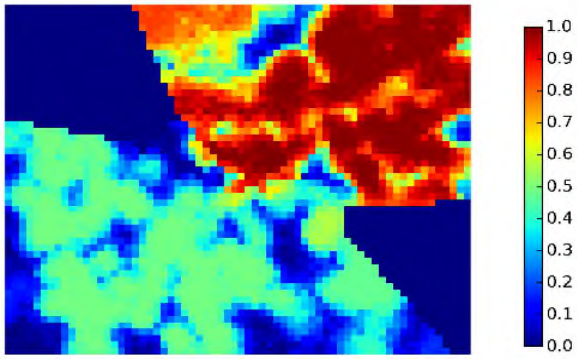
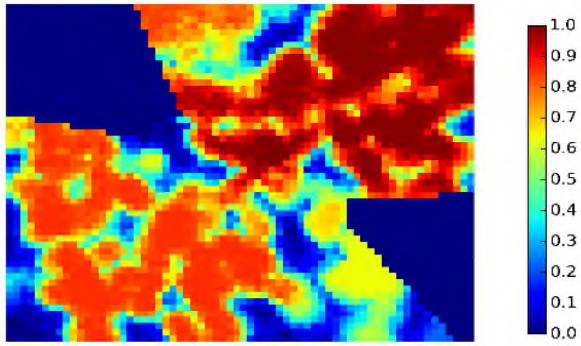


- Czechia



- France

Heat maps produced by stochastic model

Density (wild boar/km²)	Fence	No fence
Initial =2.8 Depopulation target = 0.25	A) 	B) 
Initial =4 Depopulation target =0.75	C) 	D) 

Simulated entry in white zone of France: Failure rate (A) 22%, (B) 46%, (C) 60% and (D) 91%.

Recommendations

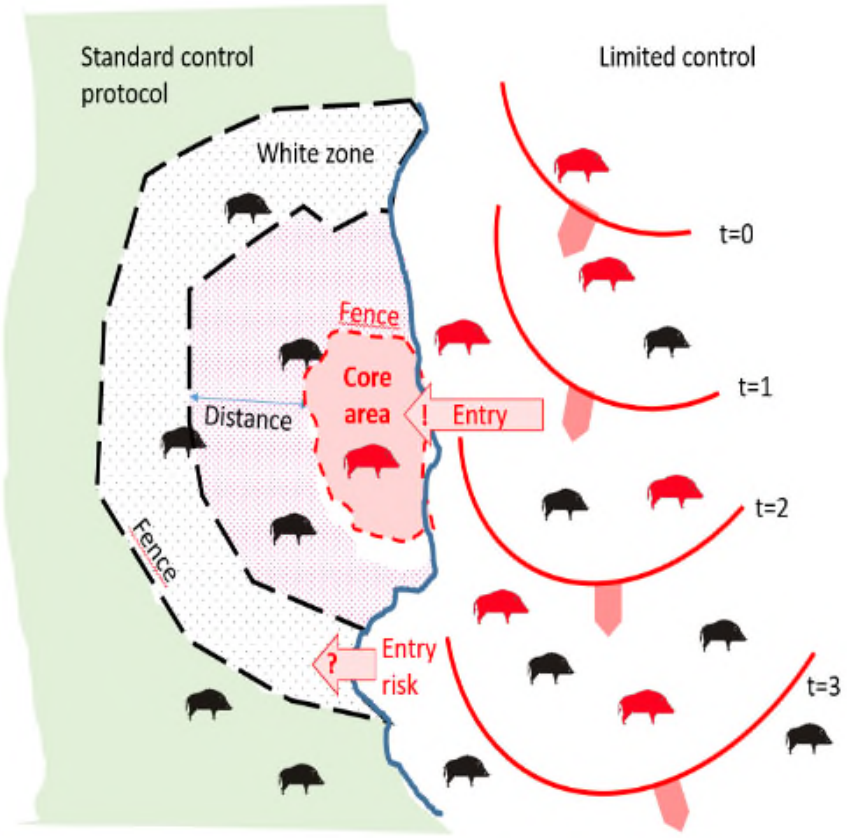
White zone applied in the focal introduction context

- Tangible, absolute **population reduction targets** in terms of numbers wild boar per km^2 in the white zone after a certain management period should be specified for the white zone implementation.
- The **distance** at which the border of the white zone is placed to the non-free area needs to consider the speed of the natural spread of the disease in wild boar. This speed did range at 2.9-11.7 km per year on average in Eastern EU MS but will be higher in densely populated areas.
- The white zone should have a minimum **width** (i.e. several wild boar home ranges) to prevent ASF passing through by short infection chains as wild boar-free white zones are unlikely to be achieved.
- The white zone in a focal ASF introduction context needs a reliable **fence** protection towards the risk area or silent culling of the population. In the focal context the white zone will always be close to the risk area and it is therefore needed to perform the pre-emptive measures in the white zone very quickly.
- Before WB culling activities start after a focal ASF introduction, the **infected area should be demarcated by intensive carcass search and fenced afterwards** in order to prevent the dispersal of ASF.

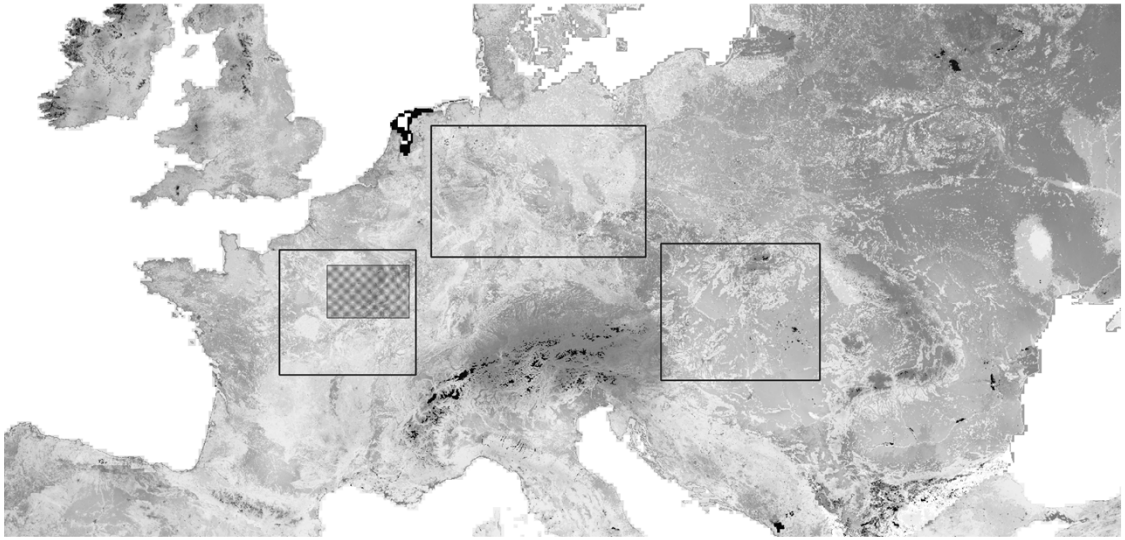
White zones adjacent to area with limited WB control (ALC)

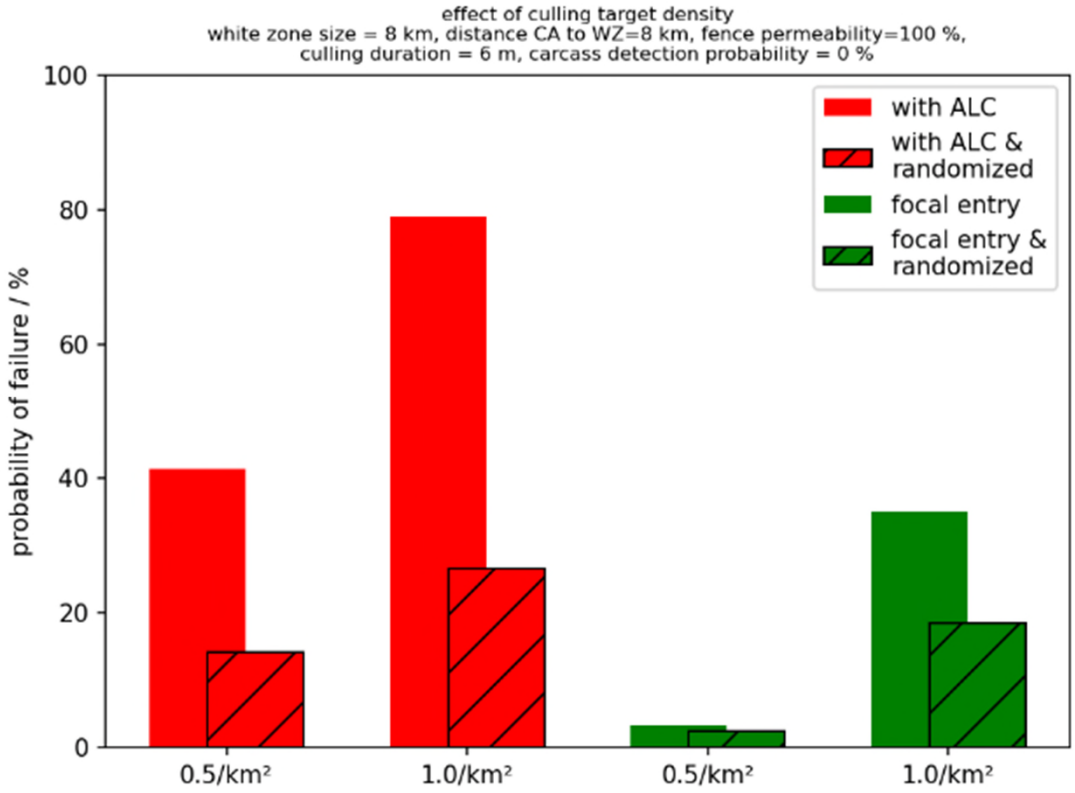
EFSA, 2022

- Are WZ useful in this specific context?
- Width of the white zone?
- Distance from core area?
- Wild boar density at the moment of infection?
- Fence?



Comparison of two scenarios



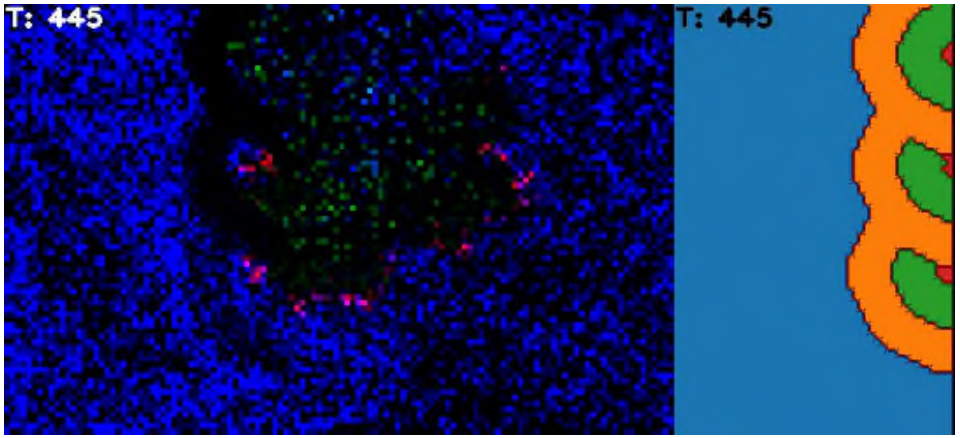


Different wild boar habitat has effect on ASF spread ☞

Stochastic model set to chose either **randomised** simulation landscape OR **fixed** landscape of the middle box.

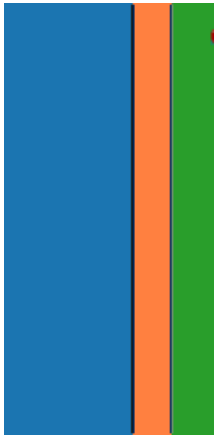
Comparison of white zone types

Reactive white zone



Lower culling efforts
Higher failure rate

Proactive white zone



Higher culling efforts
Lower failure rate

Recommendations

1. **White zone (WZ) applied in the context of adjacent affected area with limited wild boar control**

- The application of the WZ approach is challenged when the area of incursion is adjacent to a region where ASFV infections is widespread in wild boar and limited control efforts are applied.
- Stringent population reduction measures chosen a priori are key: Initially this will need higher culling efforts, but will result at the end in a lower total culling effort
- The wider a WZ is for a given target population density, the better is the expected control outcome.
- The choice of the distance between the core area and the WZ must respect the velocity of spread of the infection through the WB population (habitat dependent) and the time anticipated to finalise the population reduction measures in the WZ (management decision).
- Proactive white zone approaches applied adjacent to neighbouring ALC appear to be beneficial

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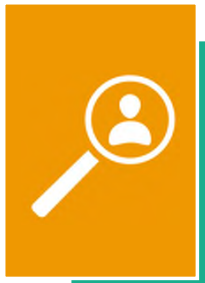

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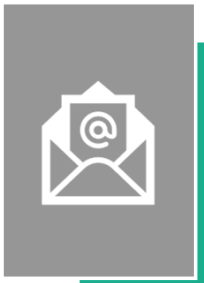

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