ASF in Wild Boar

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Animal and Plant Health

FACE meeting, 6 April 2017, Brussels
EFSA work on ASF

SCIENTIFIC OPINION
Scientific Opinion on African Swine Fever
EFSA Panel on Animal Health and Welfare (AHAW)
European Food Safety Authority (EFSA), Parma, Italy


Scientific Report

SCIENTIFIC REPORT OF EFSA
Evaluation of possible mitigation measures to prevent introduction and spread of African swine fever virus through wild boar
European Food Safety Authority

African swine fever
EFSA Panel on Animal Health and Welfare (AHAW)
THE VIRUS (EFSA, 2010)

- ASFV genotype II strain
- highly virulent
- causes acute ASF with high lethality in domestic pigs and wild boar
- no scientific evidence that the virus has reduced its virulence since the first outbreak in 2007 in Georgia
- very resistant to inactivation in the environment
- may persist for several months in frozen or uncooked meat
- no infectious ASF virus has been found in cooked or canned hams when heated at 70°C for 30 min

Source: www.nature.com
EVALUATION OF ASF INTRODUCTION PATHWAYS (EFSA, 2014)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>Frozen meat</td>
</tr>
<tr>
<td>High</td>
<td>Chilled meat, Skin fat, Wild boar (transported), Domestic pigs (transported), Vehicles for animal transport-contaminated inside</td>
</tr>
<tr>
<td>Moderate</td>
<td>Naturally smoked meat, Salted, fermented, dried (+/- spiced) meat (e.g. pepperoni, salami,...), Salted, dried meat (e.g., salted and dried hams, shoulders, loins...), Any vehicles-contaminated outside, People involved with pig-keeping, Slurry, Animal feed, Litter, Fomites</td>
</tr>
<tr>
<td>Low</td>
<td>People not involved with pig-keeping, Ticks</td>
</tr>
<tr>
<td>Very low</td>
<td>Vegetables, Crops, Pests (rodents), Pets, Hay and straw, Bloodsucking insects</td>
</tr>
<tr>
<td>Negligible</td>
<td>Meat cooked for 70 °C for 30 min</td>
</tr>
</tbody>
</table>
**ASF AND TICKS (EFSA, 2010)**

- *Ornithodoros spp.* ticks are the only species known to transmit ASFV.

- Important in maintaining local foci of ASF, but do not play a role in geographical spread of ASFV.

- Epidemiological role played by ticks may become important where pigs are managed under traditional systems, including old shelters/sties with crevices.

- Wild boar have never been found infested because they normally do not rest inside protected burrows, which may be infested by ticks.

Source: http://www.afrivip.org
WILD BOAR POPULATION CONTROL (EFSA, 2014)

- Hunting and trapping has never achieved a drastic reduction in a wild boar population in Europe.
- Intensive hunting pressure on wild boar populations leads to dispersal of groups and individuals.
- Depopulation efforts can lead to adaptive behaviour of the hunted wild boar, compensatory growth of the population and the influx of wild boar from adjacent areas.
- Artificial feeding of wild boar might rather increase than reduce the risk of ASFV spread.
- Increased hunting rates, especially for females, can reduce wild boar populations, as all age classes of females are highly reproductive.
## ASFV DETECTIONS IN WILD BOAR (EFSA, 2015)

### Table: Number of wild boar tested per 100 km² in each NUTS 3 level regions

<table>
<thead>
<tr>
<th>Country</th>
<th>Number tested by PCR</th>
<th>Number positive</th>
<th>Number tested by PCR</th>
<th>Number positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latvia</td>
<td>7,443</td>
<td>49</td>
<td>393</td>
<td>229</td>
</tr>
<tr>
<td>Poland</td>
<td>15,514</td>
<td>9</td>
<td>2,088</td>
<td>56</td>
</tr>
<tr>
<td>Lithuania</td>
<td>13,870</td>
<td>94</td>
<td>1,345</td>
<td>53</td>
</tr>
<tr>
<td>Estonia</td>
<td>1,194</td>
<td>63</td>
<td>239</td>
<td>94</td>
</tr>
<tr>
<td>Total</td>
<td>3,8021</td>
<td>215</td>
<td>4,065</td>
<td>432</td>
</tr>
</tbody>
</table>

Source: data extracted from the national laboratories from 1 February 2014 until 28 February 2015.

### Estimated average carcass detection rate:
- 8.9 % (n = 13, range 2.7–19.3 %)
- no significant correlation with prevalence, reported population density
- determined by factors such as season or habitat type
ASF OUTBREAKS BY HABITAT (EFSA, 2015)

Notifications by land cover (CORINE land cover map)

LAND COVER

- Arable land
- Forests
- Heterogeneous agricultural areas
- Inland waters
- Inland wetlands
- Pastures
- Scrub and/or herbaceous vegetation associations
- Urban fabric

Notifications by land cover:

- Wild Estonia: 0
- Domestic Latvia: 10
- Wild Lithuania: 50
- Domestic Poland: 0
- Wild Poland: 0
## SEASONAL ASF PREVALENCE VARIATION (EFSA, 2015)

PCR+ hunted wild boar, Poland, Latvia, 02/14-02/15

<table>
<thead>
<tr>
<th>Season</th>
<th>ASF virus prevalence (%)</th>
<th>Chi-squared test with Yates’ correction, P-values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“−”</td>
<td>“+”</td>
</tr>
<tr>
<td>Winter</td>
<td>4469</td>
<td>15</td>
</tr>
<tr>
<td>Spring</td>
<td>599</td>
<td>0</td>
</tr>
<tr>
<td>Summer</td>
<td>2162</td>
<td>25</td>
</tr>
<tr>
<td>Autumn</td>
<td>3228</td>
<td>18</td>
</tr>
</tbody>
</table>
# PREVALENCE VARIATION GENDER & AGE (EFSA, 2015)

<table>
<thead>
<tr>
<th></th>
<th>Mean Prevalence (%)</th>
<th>95% Confidence Interval (%)</th>
<th>Fisher’s exact test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hunted animals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>0.65</td>
<td>0.42–0.97</td>
<td>P = 0.1639</td>
</tr>
<tr>
<td>Females</td>
<td>0.38</td>
<td>0.18–0.69</td>
<td></td>
</tr>
<tr>
<td><strong>Animals found dead</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>32.7</td>
<td>20.3–47.1</td>
<td>P = 0.0635</td>
</tr>
<tr>
<td>Females</td>
<td>50.7</td>
<td>38.4–63.0</td>
<td></td>
</tr>
<tr>
<td><strong>Hunted animals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>0.32</td>
<td>0.2–0.6</td>
<td></td>
</tr>
<tr>
<td>Sub-adults</td>
<td>0.94</td>
<td>0.6–1.4</td>
<td>P &gt; 0.02</td>
</tr>
<tr>
<td>Piglets</td>
<td>14.3</td>
<td>3.1–36.3</td>
<td></td>
</tr>
<tr>
<td><strong>Animals found dead</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>47.7</td>
<td>38.1–57.5</td>
<td></td>
</tr>
<tr>
<td>Sub-adults</td>
<td>70.5</td>
<td>61.9–78.2</td>
<td>P &lt; 0.002</td>
</tr>
<tr>
<td>Piglets</td>
<td>66.7</td>
<td>44.7–84.4</td>
<td></td>
</tr>
</tbody>
</table>
current epidemiological picture of ASF in the EU suggests that ASF spreads locally in the wild boar population, independent of outbreaks in domestic pigs

currently no evidence that the virus persists in backyard farms

as yet, no scientific data demonstrates ASFV shedding by carriers

continued circulation of ASFV is possible as result of, e.g., illegal movement of infected pig meat, low biosecurity in pig holdings, aggregation of wild boar around feeding
EFSA COLLABORATION WITH ASF-AFFECTED COUNTRIES

Workshops - Data collection - Analysis - Reporting

Harmonisation of data collection
*Parma, Italy, 23-25 November 2015*

Descriptive epidemiological analysis
*Riga, Latvia, 29-30 June 2016*

Epidemiological modelling
*2017*
EXCEL-BASED TEMPLATE FOR DATA COLLECTION

XSD mapped to support automated XML export and data transfers. Drop down list for controlled terminologies.
COMBINATION OF DATA
"NATIONAL REPORT" (SAS SOFTWARE)
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.
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.
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)

- **Workshop:**
  - “Epidemiological and risk factors analysis of African swine fever”
  - Riga, Latvia
  - 29-30 June 2016

- **Workshop:**
  - “Epidemiological modelling”
  - Parma, June 2017

## 2017

MULTIYNNUAL PROJECT ON WILDLIFE SURVEILLANCE

Wildlife populations

Wildlife health

Existing data

Surveys

Model

Maps

Charts

Database

Harmonised methods/protocols

Projects

Organisations

EU-Network of wildlife specialists

Ad hoc scientific advice
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