

## **REPORT**

### **Expert Mission to North Macedonia on African swine fever**

**Period: from 02 to 04 November 2022**

**The Team:** Marius Masiulis (Lithuania) Team Leader, Tsviatko Alexandrov (Bulgaria), Maxim Sirbu (Republic of Moldova).

#### **Places visited during the mission:**

- Skopje: Food and Veterinary Agency (FVA) headquarters): opening and closing meeting with the staff of FVA;
- Veles: visiting the hunting association;
- Berovo: visiting large commercial pig farm and meeting with local FVA office representatives;
- Vinica: visiting middle size commercial pig farm, meeting with local FVA office representatives and private veterinary practitioners;
- Kumanovo: visiting small commercial pig farm, meeting with local FVA office representatives and private veterinary practitioners.

#### **Terms of Reference of the SGE<sup>1</sup> Expert Missions to North Macedonia**

1. The experts should perform on-the-spot visits (as detailed in the Annex) in order to gather data and be in a position to formulate recommendations on disease management.
2. The experts should work with the Veterinary Services in order to determine the following aspects:
  - a. If African swine fever (ASF) is occurring in domestic pigs (both in the commercial sector and the so-called backyard sector) and the extent of the areas of occurrence.
  - b. If ASF is occurring in wild boar and geographical distribution of ASF in wild boar.
  - c. Formulate a hypothesis on the drivers of ASF occurrence.
3. Propose measures intended for the control and eradication of ASF under local conditions, in line with the OIE International Standards and the Recommendations formulated by the GF-TADs SGE on ASF.
4. The experts should report to the Standing Group of Experts on African swine fever in Europe under the OIE/FAO GF-TADs and to the Veterinary Services of the country being visited. A written report should be produced for each mission.

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<sup>1</sup> SGE: Standing Group of Experts on African swine fever in Europe under the GF-TADs umbrella

## I. GENERAL INFORMATION

At the time of the visit to North Macedonia, African swine fever (ASF) was present in domestic pigs and in the wild boar.

The Food and Veterinary Agency of the Republic of North Macedonia (FVA) is the competent authority, responsible for food safety and domestic animal health.

The Ministry of Agriculture, Forestry, and Water Economy is responsible for the management of wildlife. Within FVA, Animal Health and Welfare Department is responsible for designing the ASF surveillance, control, and eradication program, data collection, and analysis and the Veterinary Inspection Control Department is responsible for the implementation of all measures foreseen.

The Republic of North Macedonia is divided into 8 regions and 84 municipalities and the city of Skopje is a separate unit of the local self-government. The surveillance activities for the ASF and control are implemented throughout the whole country.

### Domestic pigs

The pig industry in the Republic of North Macedonia is divided into 3 types of holdings:

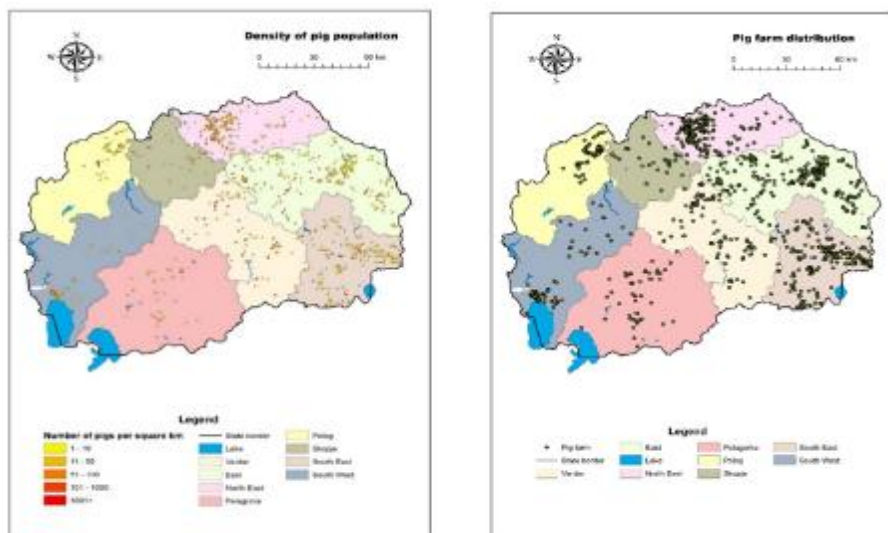
- Big commercial farms
- Small commercial farms
- Non-commercial backyard farms

In October 2021 FVA adopted a new classification of pig farms, according to their size and characteristic of production. According to the new division, the holdings are divided as follows:

- Big commercial farms are holdings with more than 51 sows or more than 1000 fattening pigs,
- small commercial farms are holdings with 1- 50 sows or 11-1000 fattening pigs, and
- non-commercial (backyard) farms with 1-10 fattening pigs, and which do not place either live pigs or products from pig origin on the market.

In accordance with the classification, there are 18 big commercial pig farms all over the country representing 80% of the domestic pig population.

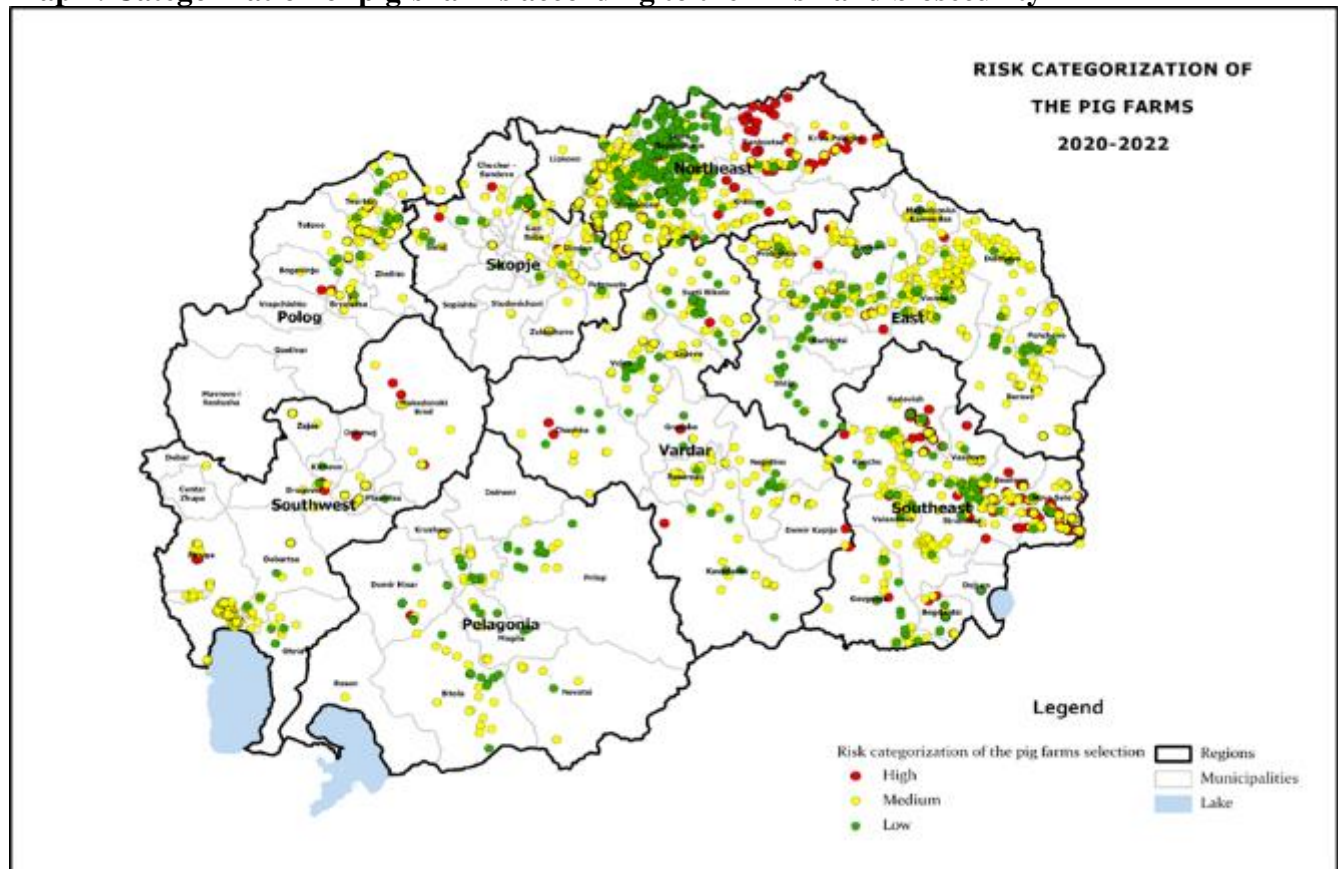
### Map 1. The density of the pig population



Based on the pig census performed in March 2022, there are 7642 pig holdings with 140 000 pigs in the country, where 7% are located in backyard holdings and the rest - in commercial pig farms. FVA explained, that the number of backyards could be under-reported and not all pigs in the backyards can be registered, as it was noticed during the eradication of the ASF outbreaks and at the time of depopulation/preventive slaughtering of pigs in the protection and surveillance zones.

Categorization of pig holdings according to the implementation of biosecurity measures during the mission was in place. Establishing and upgrading the biosecurity measures on the pig holdings has been one of the primary activities undertaken by the competent authority which started in 2018. This measure was primarily aimed to change the strategy (no vaccination policy) concerning the CSF, but also as a preventive measure for ASF. The farms were categorized into high, medium, and small-risk pig farms.

**Map 2. Categorization of pig’s farms according to their risk and biosecurity**



According to the information provided by FVA, it is very difficult to control the movement of pigs, while not all backyard owners request a veterinary health certificate, and not all pigs kept in the backyards are identified nor registered.

For the backyards, the main source of piglets remains small commercial farms with few sows kept and it is very traditional to slaughter the major population of pigs kept in the backyards at Christmas time and to repopulate the holdings again in March-April. Home slaughtering is practiced in the backyards, however, some of them use slaughterhouses for pig slaughtering. Markets are only for live animals, but due to ASF confirmation in the regions, all markets are closed, and the purchase of new pigs is possible from the holdings only.

An awareness campaign was provided all over the country, mainly targeting farmers and veterinary practitioners, and awareness materials in the form of leaflets or flyers, posters, and signs were distributed, however, through the mass media or local (regional) media the awareness campaign wasn't delivered.

## **Wild boar population**

The wild boar population in the country varies seasonally. According to the official census, the country is not particularly rich with respect to wild boar. The estimation based on the data for the biological minimum of the wild boars provided by the Ministry of Agriculture, forestry, and water economy (based on information provided by hunters) suggests low density which is between 0.15 and 0.29 animals per km<sup>2</sup>. The number of wild boars is directly influenced by the hunting season in the country which takes place from 1st October until 31st January each year. Taking into consideration the above-mentioned the real number of the wild boar population is approximately 0.5 animals per km<sup>2</sup>, which also includes the animals which are hunted annually, however, the data on the wild boar and the hunting bag in many of the hunting grounds were not available during the mission. The official data on the wild boar population as well as hunted animals are not reliable due to underreporting and the real density is significantly higher but still difficult to be estimated.

The hunting management is based on the spring data provided by the hunters on the estimated wildlife population. There are plans to be fulfilled within the hunting season and the driven hunt with dogs is very traditional and popular whereas individual hunting is not very practiced. The driven hunt in ASF-infected areas or in areas at high risk of introducing the disease is very dangerous due to the possibility of increasing the movement of infected wild boars and in the areas where ASF was confirmed, the total hunting ban is implemented.

The hunting season starts on 1 October and lasts until 31 January, however, after the detection of ASF in the wild boar population, in 2022 the hunting season was forced to be started on 1 September instead of 1 October.

Working hypotheses were established to determine the possible origin of the infection, and the movement of wild boars from the infected country was considered as a possible pathway for ASF introduction in the eastern part of N. Macedonia.

Currently, compensation is foreseen for reporting dead animals to the Authorities and for submission of the samples from the hunted wild boar. However, the level of passive surveillance (reporting of the presence of dead wild boar) is very low and only a few animals were reported and sampled for ASF.

Categorization of hunting grounds based on the biosecurity measures implemented started in 2022 and only 23 hunting grounds were categorized out of 256.

## **II. SURVEILLANCE ACTIVITIES**

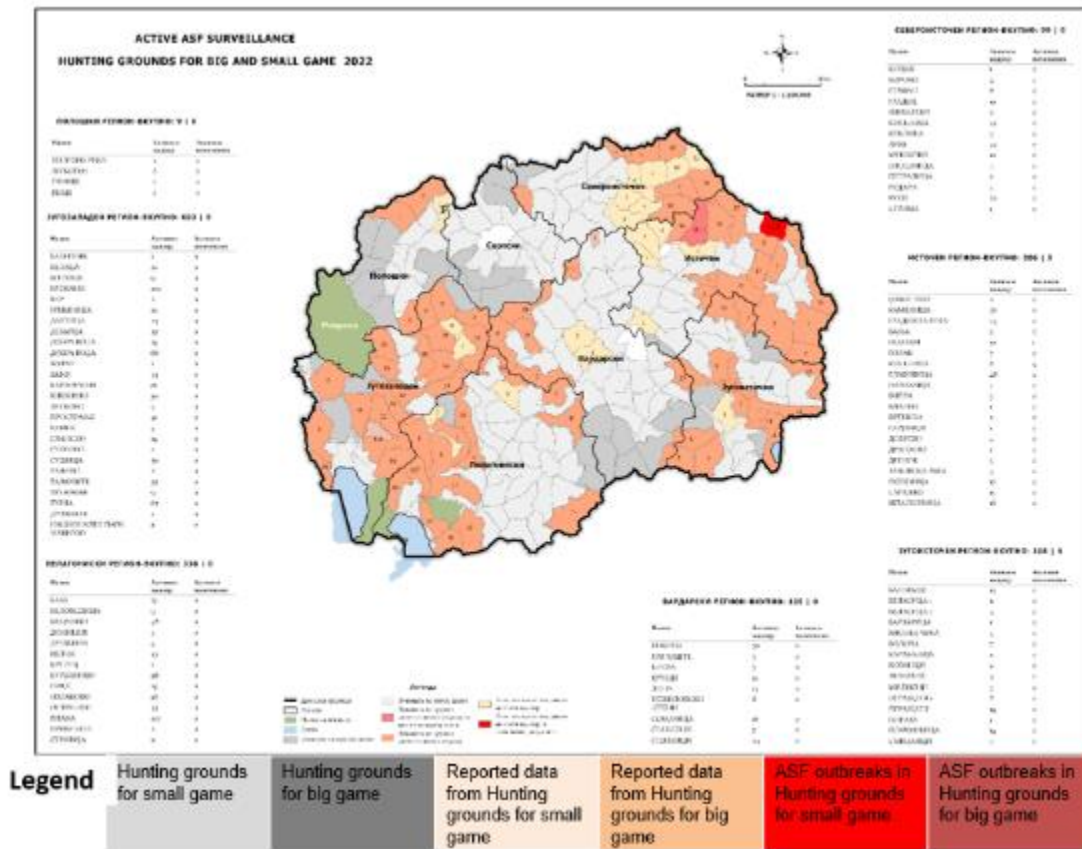
During the meetings, representatives of the national and regional veterinary services of North Macedonia and of the affected regions presented information about the pig sector, the wild boar population, biosecurity requirements, ASF surveillance, and control strategy. In addition, explanations were given on the evolution of ASF in domestic pigs and wild boars, the actions taken by the local veterinary service, as well as the results of the epidemiological investigations.

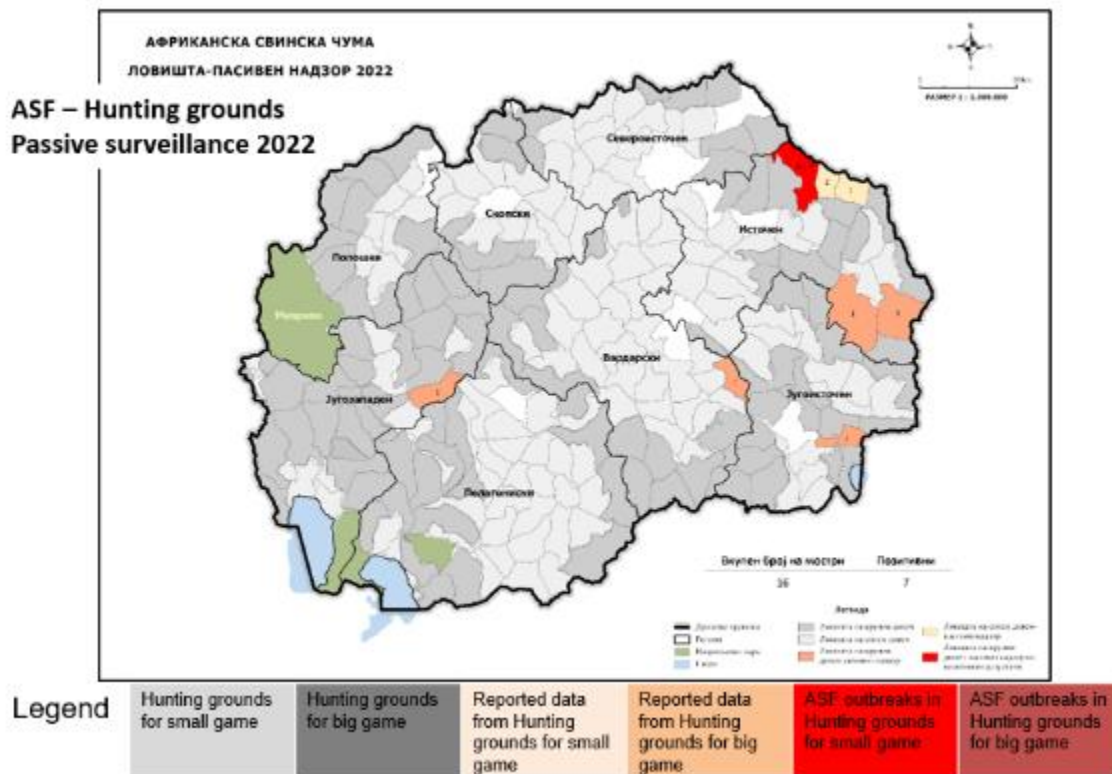
The Food and Veterinary Agency, as a competent veterinary authority, has taken all ASF surveillance, control, and eradication measures, to control and eradicate the disease from the domestic pig population. Active and passive surveillance in domestic pig holdings was introduced. Active clinical surveillance is carried out as animal health visits and performed by private veterinary practitioners. During the visits, blood samples are taken according to the annual surveillance plan, as well as in the framework of active surveillance samples are collected at the slaughterhouses. Passive surveillance is implemented throughout the country in commercial pig holdings and in non-commercial holdings (backyards).

Within the year 2022, for active surveillance 158 samples from the backyards were taken and 8 of them have been found as positive. In the framework of passive surveillance, 552 samples have been taken from backyards and 50 were confirmed as positive. In the commercial pig holdings, 95 samples have been taken in the framework of active surveillance with no positive results. In the framework of passive surveillance 446 samples were taken and 8 of them were found as positive.

As the very first outbreaks in the wild boar population occurred in March 2022, active and passive surveillance has been implemented at the hunting ground level, however, for active surveillance 1630 hunted wild boar samples were obtained, from which 6 have been found to be positive, within the framework of passive surveillance only 16 dead wild boars were samples and 7 have been found as positive.

**Map 3. Active and passive surveillance of the wild boar population at the hunting ground level in the Republic of North Macedonia**





### III. ASF IN DOMESTIC PIGS

#### African swine fever in domestic pigs

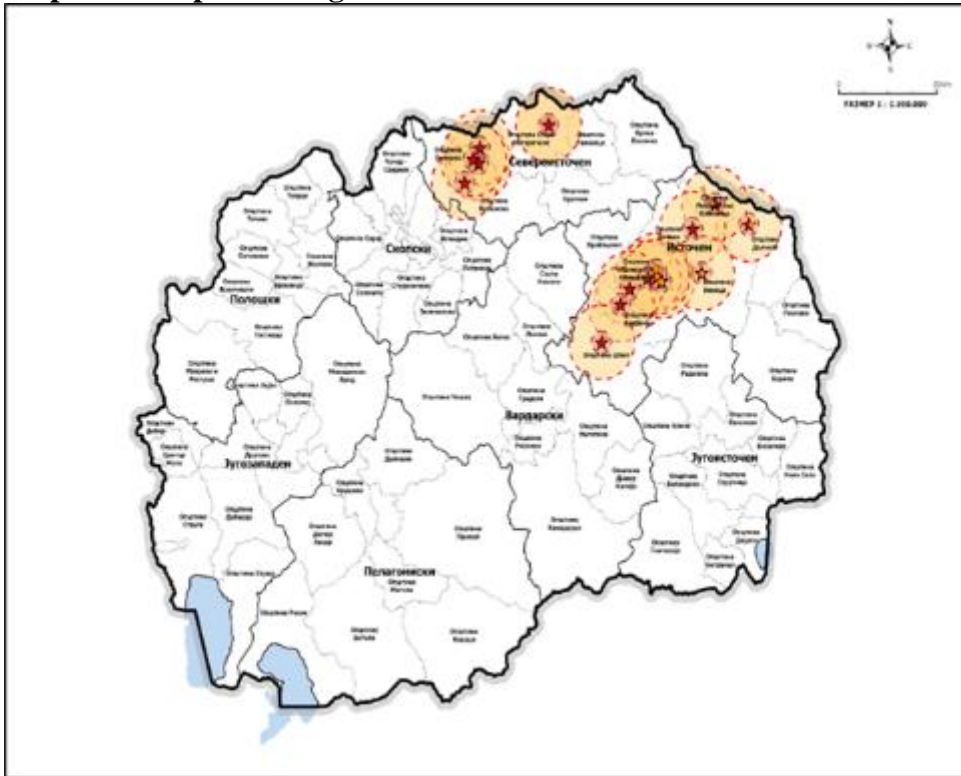
On the 6th of January 2022, ASF was confirmed for the first time in North Macedonia in the domestic pig population, and on the 15th of March, the presence of ASF was confirmed in the wild boar population as well.

The risk areas were defined in the Republic of North Macedonia before the outbreaks occurred including all municipalities on the borderline with the Republic of Bulgaria and the Republic of Serbia.

The two ASF outbreaks in January 2022 were successfully eradicated and the stamping out policy (emptying the backyard holdings by means of depopulation or slaughtering) was successfully implemented in the surveillance and protection areas (in 3 and 10 km zones around the infected holdings). No secondary outbreaks were detected at that time.

The secondary wave of ASF started on 26 July 2022 and by 25 October 2022 in total 36 outbreaks have occurred in domestic pig holdings, following the partial depopulation of the unsafe pig farms in the protection zone and the slaughtering of pigs in the surveillance zone.

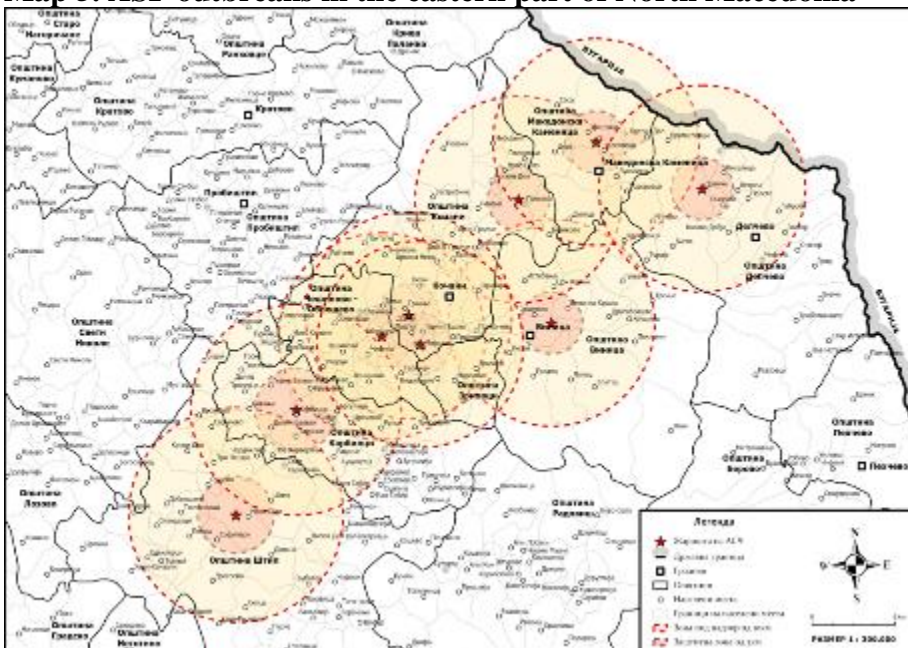
**Map 4: ASF epidemiological situation\***



\* *Information provided by the Food and Veterinary Agency of the Republic of North Macedonia*

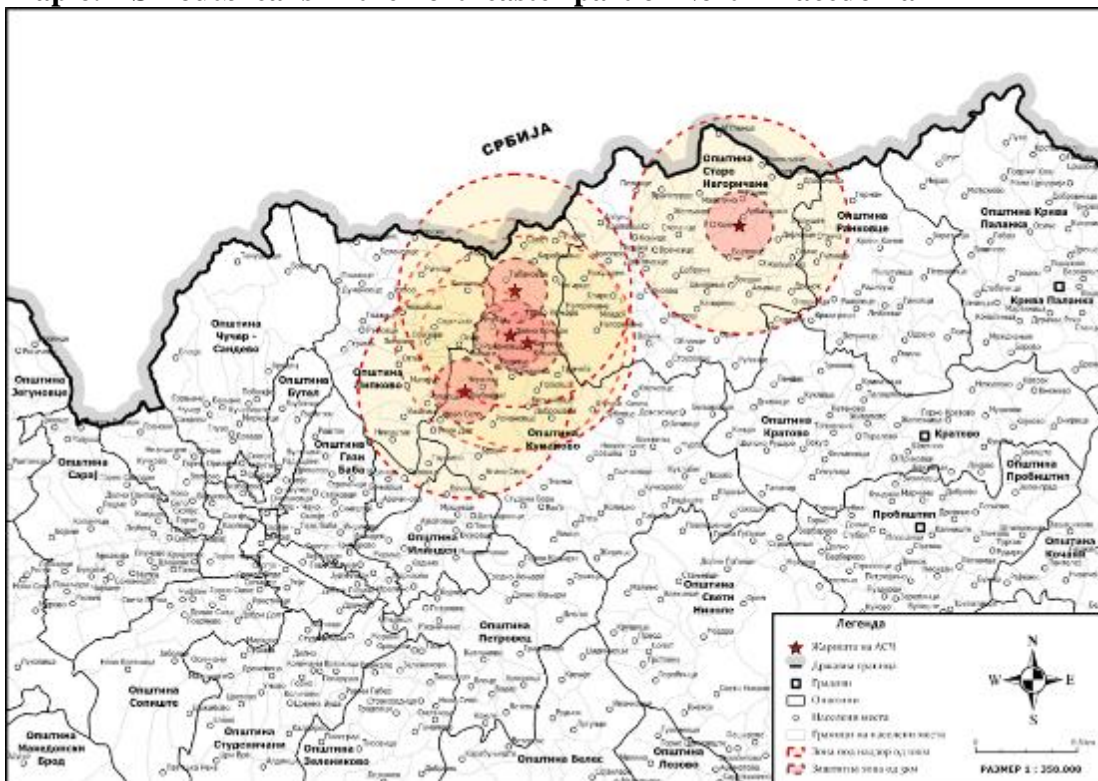
Most of these events occurred in the area that had been already identified as at risk of ASF and where previously ASF was confirmed in January 2022 in the eastern part of the country, bordering the Republic of Bulgaria, where outbreaks of ASF have recently occurred in the wild boar population.

**Map 5. ASF outbreaks in the eastern part of North Macedonia**



The next incursion of the ASF was observed in the northeast part of the country, where the first detection of the ASF virus was confirmed on 29 September 2022. Since then up to the date of the mission, 6 outbreaks in total were confirmed and 10 farms have been depopulated.

**Map 6. ASF outbreaks in the northeaster part of North Macedonia**



According to the information provided by FVA, all pig owners for the depopulated pigs received compensation, even for the non-registered ones. The measures in January 2022 were stricter and more focused on cleaning the protection and surveillance zone from the unsafe holdings, performing total depopulation of the backyards (killing and disposal of the pigs with the compensation) as well as performing slaughtering, testing of pigs, allowing for usage the meat for personal consumption inside the zone. No secondary outbreaks due to such measures implemented were registered.

#### **IV. PLACES VISITED**

##### **Veles: visiting the hunting association**

In Veles there are two hunting associations each of them having respectively 10 and 4 hunting grounds with around 700 hunters. During hunting events, the groups are usually organized for driven hunts with 10 - 20 people. Each association has a president and management board.

The hunter that we met had good knowledge of ASF and sampling and showed good cooperation with the official municipal veterinarian. However, the awareness among hunters in the region is a weak point. According to the hunter, the wild boar population is incredibly high compared with previous years. Much lower than the real number of wild boars reported during the spring census (due to costs for permission for hunting more wild boar). This leads to underreporting of the hunted animals. He had never seen or heard of a wild boar found dead during the past several years.

As regards sampling procedures for ASF a trained hunter takes samples and provides them to an official veterinarian. The official veterinarian packs the samples and sends them to the diagnostic laboratory in



the Veterinary Faculty in Skopje. A registered veterinarian provides the accompanying letter and submits the data for the wild boar in the national database.

A concern was expressed that some of the hunting grounds are taken from the regular hunters and the associations are provided by the state to concessionaires, where all information as regards the harvesting and management of the wild game is lost.

There are no rules and/or practices for biosecurity applied during hunting.



**Berovo: visiting a big commercial pig farm and meeting with local FVA office representatives**



We visited a big commercial farm with a closed production cycle and met with the manager of the farm and the responsible for the region's official veterinarian. The farm is supported by 41 workers including an all-time veterinarian employed. On the farm, there are 641 sows, 230 gilts, 12 boars, approx. 2000 weaned piglets, 3000 small piglets, and 4000 fattened pigs with an annual production (selling) of around 22 thousand pigs.

The last modernization took place in 2018. The farm is fenced, and the fence is 2 m high. Pigs are kept on a concrete grid. Feed is produced by the owner (have their own mill). The feed enters with a truck from outside into the farm

Disinfection is performed before the vehicles enter the territory of the farm using a hand sprayer and later on with the automated disinfection system. This was demonstrated during the visit. However, there was no proper cleaning procedure before the disinfection.

The farm manager sends pigs to several slaughterhouses. The collection of pigs from the holding is via a ramp, trucks for animals do not enter the territory. Pigs are chased from the stables via open air and through the ramp loaded into the truck of the same company and then delivered to the slaughterhouse. The mortality rate is up to 5 %.

Dead animals are collected and disposed of by burial on the territory of the farm and 2-5 pig samples are submitted on a weekly basis 3 times a week in the framework of passive surveillance for ASF testing. Samples are collected by the employed veterinarian,

According to the contract conditions, the farm workers are not allowed to be hunters or keep the pigs at home. To enter the stables with pigs, workers should go into the shower. Catering is provided.

Pigs are not brought from other farms to renew the population, except for boar, while some of them are purchased for renewal of the breeding line, but before entering the stables, they pass 30 days of quarantine and are regularly supervised by the on-farm veterinarian.

The manager of the farm had a good knowledge of the ASF risk in the country and in the neighbourhood and of the symptoms and prophylaxis thereof, has attended as a manager several trainings in the past, and has regular contacts with the official veterinarians on the disease surveillance activities.

**Vinica: visiting middle-size commercial pig farm, meeting with local FVA office representatives and private veterinary practitioners**





The owner of the middle-size commercial pig farm is a veterinary technician. Before pig growing activities, he had worked for more than 14 years in private veterinary practice, but currently is working only on his farm. The farm has 55 sows, 12 gilts, 230 fattening pigs, and approx. 200 piglets (almost 600 pigs in total).

The farm is fenced, video surveillance is in place, and the automated disinfection system at the entrance is installed.

There are only two workers on the farm due to the closed cycle. The owner has a butcher shop, where the pork is sold. Pigs are slaughtered in two slaughterhouses. In January 2022, due to ASF in the region, the farm was included in the surveillance zone (10 km) and the pigs were slaughtered and sold only inside the surveillance zone.

Current ASF surveillance is based on the increased mortality of pigs only and if the mortality does not exceed the normal limits, the dead animals are not sampled for ASF. The owner informed us that within the last year only 5-6 pigs died.

Normally, the carcasses of dead pigs are disposed of by the communal enterprise. The farm is supervised by the official veterinarian, who is performing animal health visits and clinical inspections.

Due to the depopulation/slaughtering of pigs in the backyards, there are no pigs in the vicinity.

As the owner is a veterinary technician, he has a good understanding of biosecurity measures and ASF, however, ASF-related training was attended only several years ago.

## Visit: Veterinary station in Vinitza



The Veterinary Station visited is located in the area, where several ASF outbreaks have occurred, and the veterinary practitioners have been involved in the depopulation/slaughtering activities.

FVA issued the Annual Order and most of the veterinary stations have a contract with FVA for the surveillance activities and animal health visits and all farmers are obligated to have a contract with the private veterinarian or veterinary station.

The surveillance activities are planned by FVA, and all data should be included in Veterinary Information Management System (VIMS), only then Veterinary Stations are paid for the work performed.

Veterinary Stations are responsible for the issue of animal health certificates before pigs can be moved from the holding, as well they are performing suspicion visits, sample collection, and sending them to laboratories for ASF testing.

The Veterinary Station visited has more than 500 contracts with the pig owners, and the private veterinarians there are performing animal health visits and had collected samples from the suspected holding, which turn into the outbreak after being tested positive.

The private veterinarians have performed depopulation activities in the pig holdings, located in the protection zone, and followed strict personal biosecurity measures.

The veterinarians we met haven't attended any specific training for ASF nor for depopulation activities, but have printed materials on ASF signs, prevention, and control.

**Kumanovo: meeting with local FVA office representatives and private veterinary practitioners and a visit to a small commercial pig farm.**



The local FVA office representatives and private veterinary practitioners are located in the area, where ASF outbreaks have occurred, and the veterinary practitioners have been involved in the outbreak eradication activities. The local FVA office are implemented measures for a strategic action plan for combating animal disease in conformity with the Annual Order approved by the FVA and the veterinary stations have a contract with FVA for the surveillance activities and animal health visits and all farmers are obligated to have a contract with the private veterinarian or veterinary station.

All data of the surveillance activities are included in Veterinary Information Management System (VIMS), only then Veterinary Stations (private veterinarians) are paid for the work performed. The local FVA office serves 3 municipalities. In the territory served until the outbreak, there were 1,500 - 1,800 registered pig farms. At the time of the visit, official veterinarians informed that there were only 826 pig farms left with a total number of 9,000 pigs. Official veterinarians informed that only farms are included in the surveillance program approved by the FVA.

During 2022, 15 notifications of suspicion of African swine fever were reported, of which 6 were confirmed. Official veterinarians have informed that the laboratory results for African swine fever are notified within 2-4 hours after the samples have arrived in the laboratory.

The veterinarians visited haven't attended any specific training for ASF nor for depopulation activities, but have printed materials on ASF signs, prevention, and control.



During the visit to the small pig farm, the following was observed:

- The farm is registered by the territorial service and has a contract with a private veterinarian;
- The farm is enclosed with a fence that does not allow access for strangers and wild animals;
- The farm is divided into two parts - the animal breeding area, and the owner's living area;
- At the moment the owner of the farm has 5 sows for maintenance;
- Pigs are kept in separate areas;
- Semi-enclosed shelters are built (house with outdoor exit area);
- The farm is visited by a private veterinarian at the request of the owner;
- The farm has a special register where all the registrations and manipulations with the animals are carried out (artificial insemination, farrowing, preventive measures carried out, slaughtering or selling animals, visits to official veterinarians and private veterinarians);
- For the farm visited, it is a tradition to raise piglets up to 25 kg, which are slaughtered in the slaughterhouse designated for the region;
- Feed for pigs is own production;
- The slaughtering of pigs for own consumption is carried out on the territory of the farm, and is carried out by a person specialised in slaughtering pigs;
- Whenever the slaughter or movement of animals is carried out, prior notification to a private veterinarian is submitted.



## V. ADDITIONAL MEASURES FORESEEN BY THE COMPETENT AUTHORITY

In case of detection of **positive pig holding to ASF**, the following measures are implemented without delay:

- movement restrictions of all animals (susceptible and not) located on the holding;
- movement ban of all animals located within the restricted zones;
- epidemiological inquiry and sampling for laboratory tests;
- tracing backward and forward of direct and indirect contacts from the infected holdings;
- control and suspension of artificial insemination of pigs;
- killing and safe disposal of carcasses from the infected holding;
- destruction of animal's by-products, feed, and fomites;
- cleaning and disinfection of the infected holding;
- establishing of the protection and surveillance zones, animal health visits and census is performed;
- In the protection zone (in radius at least of 3 km) all pigs in the holdings without biosecurity are killed and safe disposed of with the compensations provided to owners;
- In the surveillance zone (in radius at least 10 km from the infected holding), a slaughtering policy is implemented, and pigs can be used for personal consumption or pork can be used within the zone as raw meat or, if sent outside the zone - only after heat treatment.

In case of detection of **positive wild boar to ASF**:

- infected areas are determined;
- ban on hunting is implemented;
- passive surveillance is in place with the incentive for hunters for reporting, however, the current level of the surveillance is not sufficient and passive surveillance needs to be enforced;
- active surveillance is in place and samples are collected for ASF testing with the incentives for hunters for the collected sample.

## VI. CONCLUSIONS AND RECOMMENDATIONS

### Domestic pigs:

#### Prevention, surveillance, control, and eradication

- The Competent Veterinary Authority has knowledge of the ASF susceptible domestic pigs' population - most of the holdings are registered and identified, and the categorization process based on their level of risk is constantly ongoing. However, in backyards, the level of control of the registration system, pig identification, and movement control must be improved.
- Ongoing surveillance activities require a lot of human resources and in case the number of samples will be increased in the framework of passive surveillance, additional financial resources might be necessary. It is recommended by the Team not to use active surveillance for ASF early detection and not to test the collected blood samples for ELISA, but to enhance passive surveillance and to target sick or dead pigs and all the samples should be tested by PCR.
- Inspections of holdings should take place a minimum of once per year in the areas where ASF is present in wild boars or was detected in domestic pigs and were backyards/commercial farms continuing their activity. This area can be further extended based on a risk assessment carried out by the competent authority. Inspection means that the veterinarian at task performs a veterinary interview with the farmer and observes and examines the pigs. In case of suspicion samples (blood or organs) for laboratory investigations should be taken during a visit. During the inspection, the veterinarians are checking the identification of pigs, and the biosecurity of the farm and perform a verification of the owner data while performing a census of the pigs.
- During epidemiological inquiry additional samples might be taken from contact pigs farms.
- Under the current epidemiological situation and the current pig raising conditions (mainly in the backyards without biosecurity), the ASF eradication activities with the depopulation of the unsafe farms following the compensation in the radius set by the competent authority (3 and 10 km (protection and surveillance zones)) have been proven an effective measure in avoiding the further spread of the ASF due to the secondary outbreaks. Such a strategy should be maintained until the improvement of the legislation on biosecurity requirements for all types of farms following implementation and control of the biosecurity measures of all types of pig holdings including the backyard will occur, having a reliable system of movement control and traceability of the pigs.

#### Backyards

RNM has about 140.000 domestic pigs of which about 93% are reared in commercial farms and ca. 7% of domestic pigs are kept in backyard holdings (non-professional holdings).

According to the national legislation all pig holdings have to be registered in a central database, however, not all the backyards appear in the register.

Based on the categorization of the Competent Veterinary Authority, the backyard is considered to have 10 fattening pigs for personal consumption, however, the current legislation does not foresee the biosecurity requirements for the backyards.

#### Recommendation:

- To improve the registration (including identification of pigs) of all backyard holdings and traceability of pig movement by enforcing the obligation of the pig owners to notify about all movements of animals (in and out of the farm for trade, further growing, or slaughtering). This activity should be enhanced by the contracted private veterinarians under official control by the competent authority.



- It is recommended, that during the home slaughtering private veterinarian would be present and in case of suspicion, samples should be taken.
- The minimum biosecurity requirements for the backyards should be developed and when the pigs are introduced in the registered empty holdings, they should be allowed to restock or to introduce the pigs only if the minimum biosecurity measures are implemented.

The CA has regional-level private veterinarians under contract, which are engaged in certain national strategic activities like compulsory vaccination campaigns or sampling activities. During such activities, private veterinarians have to contact the regional veterinary office in case they suspect a notifiable disease. In case of suspicion, private veterinarians take the requested diagnostic samples. In case of an ASF outbreak, the private vets are involved together with the regional official vets in handling the outbreak.

**Recommendation:**

- The Team recommends performing the specified training on ASF for private veterinary stations and official veterinarians, focusing on the ASF clinical signs, sampling, differential diagnosis, and depopulation procedures (killing, disposal, cleaning, and disinfection).

Private vets in times of strategic plan implementation take blood samples (serum) from domestic pigs in backyards holding and organ samples in times of suspicion of ASF. The results come after 1 – 2 weeks.

**Recommendation:**

- The Team recommends performing sampling for laboratory investigations in case of any clinical signs, in case of increased morbidity and mortality due to suspected infectious disease, including ante- and post-mortem signs raising suspicion at home slaughtering. Laboratory investigations need to be done in the shortest possible time.

**Commercial pig farms**

- Discussions with the representatives of Food and Veterinary Agency (both central and local levels) and the owners of the pig farms visited indicated a general knowledge of the disease and biosecurity measures applicable in order to prevent the disease introduction.
- The large commercial holding visited in the non-infected area has high standards of biosecurity and high standards of production. The level of biosecurity has also been improved as a reaction to the presence of ASF in the neighbouring countries and after the detection of ASF in North Macedonia. The farm submits the samples of the dead pigs within the framework of passive surveillance on the weekly basis for ASF testing, samples are being taken by the veterinarian employed on the farm.
- The middle-size commercial holding visited was previously included in the surveillance zone due to the outbreak detected in January 2022. In that farm, surveillance is based on passive surveillance and samples due to the small number of pigs kept (approx. 5-6 hundred) would be taken only in case of increased mortality.

However, the expert team suggests to the Food and Veterinary Agency revise the current surveillance strategy and focus to enhance passive surveillance in all commercial pig holdings irrespective of their size and perform the sampling on at least the first two dead kept porcine animals over the age of 60 days (if there are dead sows or boars - they should be primary sampled), or, in the absence of such dead animals over the age of 60 days, on any dead kept porcine animals after weaning, in each

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epidemiological unit. The samples should be tested by PCR and the pooling of samples (2-5 samples per pool) should be considered as the possible cost reduction factor.

Taking into consideration the current number of staff available at the Food and Veterinary Agency dealing with animal health issues and in particular with ASF, additional human resources might be of crucial importance to deal with.

- Continuation of the risk assessment and the review of the biosecurity status of pig farms across the country would help to assess the overall protection of the pig sector against the risk of the ASF virus spreading to farms.
- The level of awareness targeting the pig farmers and the public, in general, should be increased, using all available tools primarily focussing on mass media (TV and radio), local newspapers, trying to disseminate the information on the disease itself and the measures on how to prevent the ASF and to whom to report any suspected cases in the domestic pigs and in wild boars.
- Continuous training and education for the commercial pig farmers, managers, and veterinarians employed on such farms on key knowledge of ASF, transmission ways, clinical signs, ASF prevention, surveillance and control measures, biosecurity on pig farms, and during the trade is necessary.
- Individual contingency plan is recommended for every large-scale commercial farm including all the procedures for culling and safe disposal of carcasses and potentially contaminated materials. Due to the lack of rendering capability for managing bigger ASF outbreaks, all commercial pig farms should have pre-agreed burial sites. Updating contingency plans including the killing methods and disposal of carcasses is urged. It should be discussed and agreed, upon what will be done in the large-scale outbreaks in pig farms with a high number of animals kept.

## **Wild boar**

- Awareness among hunters needs to be significantly improved. Continued training for hunters in all hunting clubs must be carried out on all aspects of ASF detection, prevention, sampling, and biosecurity
- Communication among services and all stakeholders on all levels needs to be considerably improved. It is a critical point for the successful control of ASF. Particularly efforts need to be targeted to communicate and coordinate the actions with the Department of Forestry at the Ministry of Agriculture as regards the wild boar census and obtaining real data as regards the number of hunted and found dead wild boar. Free of payment permission for wild boar hunting throughout the whole year and without any number limitations is strongly recommended.
- Continuous strong reduction of the wild boar population is highly recommended all over the country and throughout the whole year. Reduction of the wild boar population must be particularly considered and applied in the territories around the big industrial holdings. All methods with proven efficiency for the reduction of the wild boar population (including trapping of wild boar, and additional hunting equipment) are recommended to be applied.
- When planning culling activities disturbance and chasing of wild boar from infected and high-risk areas must be avoided. No driven hunting with dogs must be applied in such cases. The reduction of the wild boar density needs to be coupled with a complete ban on feeding including the medium-risk area as well and while performing the hunt, female wild boars should be targeted as a part of the long-term strategy. Incentives for the hunters for the hunted females would be helpful to increase the number of females hunted.

- The minimum biosecurity measures during hunting, searching for wild boar carcasses and collection and disposal of ABP to be required for the whole territory of the country in compliance with the Strategic approach to the management of ASF for the EU. Categorization of hunting grounds based on the biosecurity measures implemented started in 2022 and only 23 hunting grounds were categorized out of 256. It is recommended by the Team to continue the categorization of the hunting grounds.
- The sampling procedure for ASF in wild boar needs to be simplified (at the moment hunters are taking the samples, official veterinarians are providing the information and sending the samples to NRL and private veterinarians are issuing the accompanying letters and submitting the information into the database). The time between sampling and obtaining the laboratory results for ASF must be as short as possible but in any case, within the week.
- Passive surveillance in wild boar is weak and it should be reinforced for the whole territory of the country (including financial incentives). So far, the number of samples tested from found dead wild boar demonstrates a very weak activity and it might not allow early ASF detection in the wild boar population. The number of tested found dead wild boar must be significantly increased.
- Active surveillance must be performed on every hunted wild boar all over the country and particularly in the areas around the ASF outbreak in domestic pigs.

### **Final Remark**

The working atmosphere during the mission was very positive. The North Macedonian colleagues were transparent in providing the information and gave support and assistance to facilitate the mission. The Team wishes to thank the interpreters for their support.