

Hackathon HackYeah – description of the challenge: Report map of wild boar occurrence

– Introductory information –

What is ASF

African swine fever (ASF) is a rapidly spreading infectious viral disease to which domestic pigs and wild boars are susceptible. ASF is a challenge not only in Poland. Except for Poland, ASF concerns also other European Union countries – Latvia, Estonia, Lithuania, Romania, Czech Republic, Hungary, Belgium, Germany – as well as third countries.

The disease does not affect humans, but it causes negative environmental, economic, and social effects, in particular for the health of wild boar population and the pork sector. A country affected by ASF loses the ability to export pork to third countries and the trade in the domestic EU market is subject to considerable restrictions.

Wild boars or their remains are the main reservoir of and direct source for transferring this disease onto healthy animals and keep the virus active in the environment.

The occurrence of the disease in the wildlife population and the lack of a vaccine and treatment make it difficult to limit the spread of the virus and to control ASF.

Thus, in combating ASF it is crucial to eliminate the infected carrion from the environment and to obtain data on the wild boar occurrence.

We are in the period of the COVID-19 pandemic when we search for solutions of protection against SARS-CoV-2. We do our best to avoid situations which favour virus spread from infected persons, we avoid big crowds and contacts with infected persons. In the case of ASF, virus carriers may count only on the help of humans. Lack of action on our part means an increase in the incidence and, as a result, a successive decrease in both wild boar and pig population, with no guarantee of its restoration in the future.

Caution!

**ASF causes a high mortality rate among infected wild boars and pigs reaching even up to 100%.
There is no vaccine or a medicine for this disease. The disease is not dangerous to humans - it is
dangerous only to animals.**

Atypical guests - Wild boars in cities and on beaches

Wild boars are abundant in Europe. Living in their natural environment they are useful, particularly from the point of view of a forest ecosystem. Primarily, they limit the number of pests' larvae which feed on plant roots. Their main habitat is a forest. However, wild boars often meander to neighbouring farm fields where they forage for food (mainly maize, potato, and oats). But they can also feed on dumping grounds. Wild boars are omnivores. They feed on various types of invertebrates, earthworms, insects and their larvae, small rodents, and other small vertebrates as well as carrion.

Although these animals live mainly in the close neighbourhood of a forest, they are increasingly popular also in the cities. Wild boars lead mainly a nocturnal life, but they can be often met during a day. Such a situation has been significantly influenced by people who feed the animals or do not properly secure their garbage. Furthermore, expansion of cities to forest areas and agricultural lands has a significant impact.

What to do when we meet a wild boar:

The most important thing is the safety of the human who met a wild boar. Thus, we should not panic, scream, chase away or frighten the animals.

When we meet a wild boar, we should calmly and silently withdraw, do not scream, do not make any sudden movements, and not try to chase it away. It is important not to frighten a wild boar. We should keep in mind that large wild boar males may weigh up to 300 kilos. Therefore, a frightened animal may cause serious harm. Wild boars do not attack a man without a reason. They usually get close to a man to force out some food.

They are not aggressive, but may attack when they feel insecure, provoked, or are hurt. However, precaution must be extreme when a sow leads her piglets since it is easy to raise her fear and aggression at that moment.

When we see a wild boar in a city, we should inform city guards or a municipality.

– Wild boar challenge –



Aim of the challenge

Since we know something about wild boars and their role in spreading the ASF, it is essential to know where wild boars regularly live, in what numbers, where their migration corridors are and where their remains are located. It is from the found remains of wild boar that, samples for testing are collected to find whether the dead animal was infected by ASF. The carcasses should be removed as fast as possible so that they cannot be eaten by other wild boars or spread around by predators.

To protect the animal health, it is also important to make them contact rarely which will significantly limit the ASF spread.

Therefore, we would like to ask citizens to help us precisely locate wild boars – dead and alive with the use of a simple is use e-tool.

It is recommended to create a system that enables everyone to report the location of wild boars, alive or dead, and allows the analysis of these reports by competent institutions.

We hope that making such a tool available will enable the protection of wild boar population against the ASF spread, improve efficiency of the risk management in swine breeding, increase the society's awareness of the need to protect health of these animals' population and will contribute to p

Challenge:

The prepared tool should consist of the following:

- 1) a free application for a user along with an internet service where collective information on reports and the number of reporting persons would be published,
- 2) a system including data and an analytical module that enables generation of reports and lists (also in the form of maps including administrative divisions to the municipality level) with access for administration users (employees: of the Ministry of Agriculture and Rural Development, General Veterinary Inspectorate, veterinary inspectorates at the voivodeship level, veterinary inspectorates at the provincial level, voivodeship offices, general and regional directorates of the State Forest National Forest Holding, representatives of the management board and regional boards of the Polish Hunting Association).

Persons using a application should be able to report an observed wild boar or boars (alive or dead) together with a photo and location, and to send reports to the system. The first use of the application should be comfortable, easy, and anonymous (a user takes a nick).

In the analytical model of the system, data from reports may be placed on the map on the layers representing data on the area (e.g. an administrative division to the municipality level, range of the ASF zones, etc.).

Groups of users:

1) **of the application** - each person (access to the application) - **a user** that reports the encountered wild boar with the use of the application (alive or dead). When installing the application, users would also obtain a preview (visualization) on the present concentration of wild boar for their location. It would provide some information whether one can safely go for a walk or it is better to stay away from the given area. It will be also useful **for farmers**, who will see whether there are wild boars in the close neighbourhood of their fields, and whether they should undertake any actions towards protection of their property (cultivated fields - protection against pests, increase of bio protection of farms that breed pigs, etc.).

2) **of a system with data and analytical module:**

- **Provincial Veterinary Inspectorates** – there are 305 of them. Information on a dead wild boar would be sent to the provincial veterinary inspectorate of proper venue in real time. An enclosed photo would also enable to assess whether nothing happened to the carcass from the time of report to the time of arrival , e.g. whether it has not been intruded by scavengers which could contribute to the spreading of the disease.
- **Voivodeship Veterinary Inspectorates** – there are 16 of them. They have a supervisory role over the Provincial Veterinary Inspectorates. At this level, data analysis from the area of voivodeship, including concentration and location of reported wild boar and found carcasses is useful.
- **The Ministry of Agriculture and Rural Development** and the **General Veterinary Inspectorate** – a preview of all data of any kind included and analysed by the system. The total number of 20 persons should have technical access to the system.
- **Voivodeship offices** – 16. Data on wild boars (alive or dead) are significant from the point of view of actions undertaken as a part of the voivodeship team of crisis management (e.g. planning actions of collecting carcasses of dead wild boars).
- **The Management Board of the Polish Hunting Association** (1), **Regional Management Boards of the Polish Hunting Association** (49), **General Directorate and Regional Directorates of the State Forests** **State Forest Holding** (18) – access to the system with

a preview and recording of all data referring to the live wild boars and generation of analyses.

General requirements for the application and its system:

- the application should work on mobile devices,
- the application should have a user-friendly and easy-to-operate user interface, to encourage use. Reporting must be easy and comprehensible,
- the application should also function offline and enable sending the report after the Internet connection is restored,
- a report should be made in the application through a form with an autocomplete or feeding option for data concerning at least: the number of observed wild boars, their potential age and location of reports,
- the application should include an alternative solution if the user does not agree to automatic determination of their location,
- the application should enable adding images of the observed wild boars, particularly dead ones, at the same time including solutions that would not excessively burden the system,
- application users should be able to observe effects of their actions in the form of at least: return information on whether the report was correctly sent and reached the system, and access to information on the number of reports made by them. Additional ideas that would encourage the application users to use the system are preferred.
- the application should enable the cancellation of the report submitted, together with providing the reason for the cancellation,
- each report in the application should have a unique ID and include information on the date and time of sending the report,
- the application should include an informative value for the users, e.g. informing them how to behave if they encounter a live wild boar,
- the system should be able to graphically present the location of the observed and found wild boars, both alive and dead, and to generate statistics for these data, i.e. visualization on the map: population of wild boars, frequency of reports on the particular area, location of carcasses. Additional ideas on other than the above indicated visualizations of the data collected in the system are preferred,
- data and visualizations from the system should be recordable in commonly read formats (e.g. pdf, jpeg). Interactions with data are welcome, e.g. a possibility of narrowing the period of data analysis or defining the area of data analysis in the territorial dimension,

- both the application and the system should provide solutions which would provide security against introduction of false data - images of objects different than wild boars, images of false locations, images of the same wild boars (dead and alive) from various locations etc.
- the analytical model of the system should enable visualization of data on reports distinguishing whether wild boars were observed in the city, in rural areas, in a built-up or non-built up area, in which municipality etc. (data positioning). Enabling data positioning from reports with regard to the range of areas covered by restrictions due to ASF is welcome,
- the system should be equipped with a solution that counteracts doubling of the same reports, animals (alive or dead) in a given area within a given time unit,
- the system should be easy for update and maintenance.

Good luck!!!

