

# SURVEILLANCE OF INFECTIOUS DISEASES IN ANIMALS AND HUMANS IN SWEDEN 2019

Chapter excerpt -  
Infectious diseases in wild boar



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**Reporting guidelines:** Reporting guidelines were introduced in 2018 for those those chapters related to purely animal pathogens. The guidelines build on experiences from several EU projects, and have been validated by a team of international experts in animal health surveillance. The aim is to develop these guidelines further in collaboration within the global surveillance community and they have therefore been made available in the form of a wiki on the collaborative platform GitHub (<https://github.com/SVA-SE/AHSURED/wiki>). Feel free to contribute!

**Layout:** The production of this report continues to be accomplished using a primarily open-source toolset. The method allows the source text, produced by authors, to be edited independently of the template for the layout which can be modified and reused for future reports. Specifically, the chapter texts, tables and captions are authored in Microsoft Word and then converted using pandoc and R to the LaTeX typesetting language. Most figures and maps are produced using the R software for statistical computing. Development for 2019 has further improved the importing of content from Word to LaTeX. The method can now import text, tables and figure captions from Word, as well as the newly designed 'IN FOCUS' sections of some chapters. The tool is available as an R-package at GitHub (<https://github.com/SVA-SE/mill/>). This year the report was also built with a continuous integration pipeline on Microsoft's Azure DevOps platform, allowing every committed change to the content to be built and tested automatically. The report generation R-package and process was designed by Thomas Rosendal and Stefan Widgren. In 2019, figures and the final typesetting were done by Wiktor Gustafsson and Thomas Rosendal with contributions from the report authors.

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# Infectious diseases in wild boar



Surveillance of infectious diseases in wild boar, which has been ongoing since 2000, provides evidence that the Swedish wild boar population remains free from several important diseases, including African swine fever, Classical swine fever and Aujeszky's Disease. Photo: Martin Mecnarowski/Shutterstock.

## BACKGROUND

Wild boars are susceptible to contagious diseases that affect domestic pigs and they can therefore play a role in spreading disease to and from domestic pigs. For example, Aujeszky's Disease (AD) is present in several wild boar populations in the EU, which has led to the sporadic transmission of the disease to domestic pig herds. Wild boars were involved in the spread of Classical swine fever (CSF) during outbreaks in domestic pigs in several EU countries in the 1990s and early 2000s. In recent years, African swine fever (ASF) has spread in Europe and the disease is now found in the wild boar population of nine EU countries.

The Swedish wild boar population is increasing rapidly and is now estimated to be 250 000–300 000 animals. Established wild boar populations are found primarily in the southern parts of the country, but the northern border of the wild boar's range in Sweden is extending and it has, at present, passed the level of the river Dalälven. Surveillance of infectious diseases in Swedish wild boar has been ongoing since 2000. The purposes of this monitoring are to provide

evidence that Sweden is free from several important infectious pig diseases and to enable early detection of new introductions of these diseases into the country.

## LEGISLATION

Several diseases capable of infecting wild boar, including ASF, CSF, AD, brucellosis and Porcine reproductive and respiratory syndrome (PRRS), are included in the Swedish Act of Epizootic Diseases (SFS 1999:657 with amendments) and are therefore notifiable upon clinical suspicion. If any of these diseases are suspected or confirmed, measures will be taken to control the disease and to prevent further spread.

## SURVEILLANCE

### Passive surveillance

An enhanced passive surveillance programme for ASF in wild boars has been in place since 2013. Anyone who finds a dead wild boar can voluntarily submit the whole carcass or samples from it to the National Veterinary Institute for post mortem examination. All submitted samples are analysed for the presence of ASF virus genome with PCR, whether lesions suggestive of the disease are present or not.

Additionally, any sick or dead wild boar that is reported to have shown clinical signs, or found to have post mortem lesions consistent with a disease included in the Swedish Act of Epizootic Diseases, is sampled and investigated.

### Active surveillance

Since 2000, hunted wild boars throughout Sweden have been sampled yearly for surveillance purposes. Hunters voluntarily collect blood samples when free-living wild boars are harvested. The samples are sent to the National Veterinary Institute for analysis for the presence of antibodies to infectious agents that are of importance to domestic pig production. In 2019, the samples were used for the active surveillance of AD and CSF. The samples were tested for antibodies against AD and CSF using ELISA kits (SVANOVIR® PRV-gB-Ab ELISA, Svanova and IDEXX™ HerdChek CSFV Ab Test Kit, respectively). The surveillance was designed to detect these diseases at a 1% prevalence with a 99% confidence level. To reach this level of confidence, it was calculated that 500 samples would need to be submitted for analysis.

## RESULTS

### Passive surveillance

Two clinical suspicions of CSF or ASF in free-living wild boar were investigated in 2019. In one case, a group of three dead wild boars that showed no obvious cause of death was found by a hunter. All three animals were sampled and tested for CSF and ASF. In the other case, three individual wild boars were found dead without any outward signs of injury or illness in the same area within a short period of time. One of the animals was sampled (the other two carcasses could not be re-located) and tested for ASF. All samples collected during the two investigations were negative.

Thirty-four wild boar that were found dead were submitted by members of the public for examination for the presence of ASF virus genome in 2019. This represents an approximate doubling in the number of animals submitted for analysis as compared to previous years. This increase is likely a result of several awareness campaigns that were carried out to increase voluntary reporting of dead wild boar findings, as well as heightened awareness and concern about ASF among the general public as a direct result of the spread of the disease in the EU in recent years. The geographic distribution of the sampled dead wild boars is shown in Figure 34. All samples from the submitted wild boars were negative for ASF. Additional post mortem findings in these wild boars are reported in the chapter “Post mortem examinations in wildlife” in this report.

### Active surveillance

In 2019, 104 blood samples were collected from hunted wild boar and analysed for the presence of antibodies against AD and CSF. All samples were negative. The geographical distribution of sampled wild boar was roughly correlated to the distribution and density of the Swedish wild boar population (Figure 34) (location information was not available for 13 of the hunted wild boar). The goal of analysing 500 samples for antibodies against these two diseases was not met. However, the surveillance evidence collected in 2019 is sufficient to indicate that the prevalence of AD and CSF in the Swedish wild boar population is <3% with a certainty of 95%.

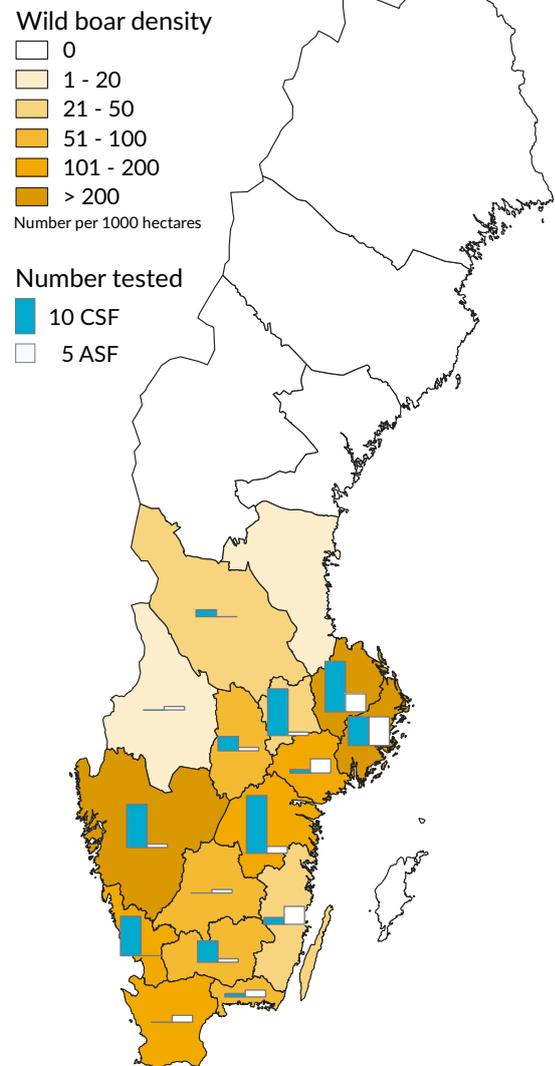


Figure 34: Geographical distribution by county of origin of wild boar samples included in the surveillance. The blue bars indicate the number of hunted wild boar sampled and tested for antibodies against Aujeszky's Disease (AD) and Classical Swine Fever (CSF) in 2019 (total 91). The white bars indicate the number of wild boar found dead and tested for ASF (total 34). The background colours indicate wild boar density based on hunting statistics from 2018 ([www.vilt-data.se](http://www.vilt-data.se)).

## DISCUSSION

The Swedish wild boar population is growing, and the boundary of the population is moving north. In areas where wild boars are already present, the population is also becoming more dense, which increases the risk of direct and indirect contact between wild boars and domestic pigs. The area in Sweden inhabited by wild boars is surrounded by the sea so there is no risk of wild boars migrating into Sweden. Instead, the role of the wild boar in disease spread might be to pick up infectious agents introduced into Sweden by other routes. For example, wild boars could gain access to infected meat or other animal products in garbage or following indirect spread by other means from people, vehicles or equipment. The unfavourable development of the global ASF situation is of special concern and calls for efficient approaches to early detection of disease in the wild boar population. As such, methods to further increase the number of wild boars found dead that are voluntarily submitted by the public for postmortem and ASF testing are currently being investigated.