

The surveillance programme for
Trichinella spp. and specific pathogenic
viruses and bacteria in wild boar
(*Sus scrofa*) in Norway.
Hunting season 2013

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The surveillance programme for *Trichinella* spp. and specific viral and bacterial infections in wild boar (*Sus scrofa*) in Norway. Hunting season 2013

Knut Madslie, Rebecca K. Davidson, Adam M. Zerihun, Kjell Handeland, Chiek Er, Bjørn Lium

Trichinella spp. and specific viral (AD, PRRS, PRCV, TGE, SI) and bacterial (*Mycoplasma hyopneumoniae*) infections were *not* detected in *any* of the 9 wild boars (*Sus scrofa*) examined during the 2013 licensed hunting season.

Introduction

Surveillance for *Trichinella* in wildlife population is regarded as a tool for risk assessment in domestic animal (1). *Trichinella* spp. has never been detected in wild boar in Norway, but is reported annually in Sweden (2). The surveillance and control program for specific viral infections in Norwegian swine herds has for many years documented that the domestic swine population is free from AD, PRRS, PRCV, TGE and influenza A virus except the H1N1pdm strain, which was introduced into Norwegian swine herds in 2009 (3). The Norwegian pig population has been documented as free from *Mycoplasma hyopneumoniae* since 2009 (4).

Aim

The aim of the programme is to screen for *Trichinella* spp. and to ascertain the absence of specific viral (Aujeszky's disease-virus, Porcine respiratory and reproductive syndrome-virus, Porcine respiratory corona virus, Transmissible gastroenteritis virus, Swine influenza virus) and bacterial (*M. hyopneumoniae*) infections in wild boar, in order to evaluate migrating wild boars as a risk factor for the health of domestic swine herds in Norway.

Material and methods

Sampling

Diaphragm muscle and blood were collected from wild boars shot during the 2013 licensed hunting season (year round open season) were included in this year's program. Only the south-eastern part of Norway (Østfold County) was represented in the sampling regime. Hunters were invited to participate based on the list of registered wild boar hunters provided by Statistics Norway.

A standard form that included information on where and when the wild boar had been hunted, as well as the sex (male, female) and presumed age of the animal (juvenile, adult), was completed by each hunter.

Laboratory analyses

All analyses were performed at the Norwegian Veterinary Institute in Oslo. All inconclusive or positive samples in the routine tests were re-tested with specified reference tests.

Aujeszky's disease

All serum samples were tested for antibodies against AD virus using a commercial blocking ELISA kit (SVANOVIR™ PRV gB-Ab). This test detected antibodies against glycoprotein B (previously glycoprotein II) found on the surface of the virus. Positive or dubious (inconclusive) results are retested with the same kit and if the result is still positive or inconclusive, a neutralisation test (NT) is used.

Porcine reproductive and respiratory syndrome

All serum samples were tested for antibodies against PRRS virus using the HerdChek PRRS 3XR Antibody Test Kit (IDEXX) which detects the most (pre)dominant European and American strains of PRRS virus. In the case of dubious or positive results, the samples were re-tested at the National Veterinary Institute Technical University of Denmark using blocking ELISAs and immune-peroxidase tests (IPT).

Transmissible gastroenteritis virus and porcine respiratory coronavirus

A combined blocking ELISA (SVANOVIR™) was used to detect antibodies against TGEV/PRCV. This ELISA test makes it possible to differentiate between antibodies against TGEV and PRCV in serum samples.

Swine influenza virus

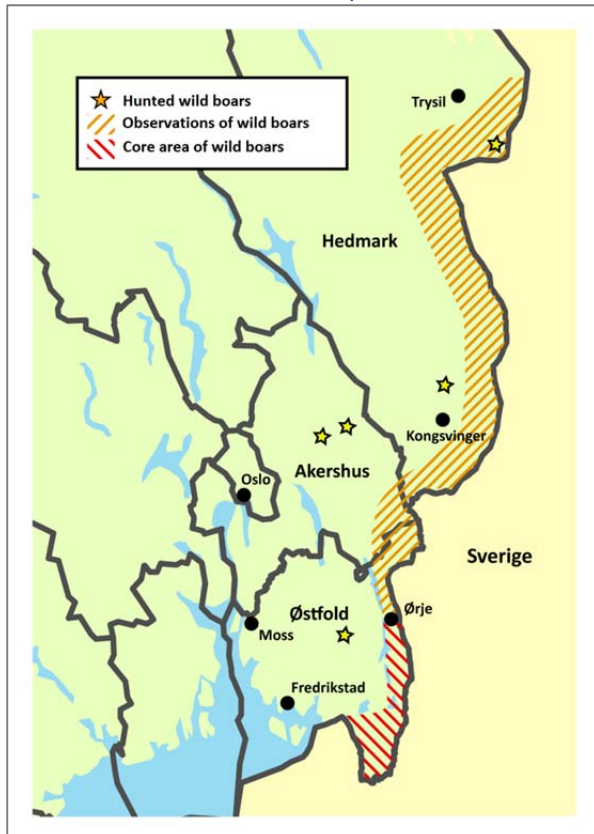
Serum samples were initially analysed for swine influenza virus antibodies using an ELISA kit (ID Screen® Influenza A Antibody Competition multi-serotypes test, IDVET) designed to detect anti-influenza A specific antibodies. Serum samples with positive and inconclusive results were re-examined using the hemagglutination-inhibition (HI) assay for antibodies to H1N1pdm and European H1N1, H1N2 and H3N2 serotypes, according to the method described in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (5). The antigens for the tests were produced at the Norwegian Veterinary Institute.

Trichinella

A minimum of 10 grams of muscle was examined using the reference method, magnetic stirrer method with HCl-pepsin digestion, as individual samples in accordance with EU directive 2075/2005, annex 1 chapter 1 and annex III. A digestion time of 60 minutes was used (6). The sensitivity using this method, provided sufficient muscle from predilection sites is used, is estimated to be a minimum of 3-5 larvae per 100 grams of muscle (7).

The wild boar population in Norway is uncertain, but highly restricted and is essentially part of the Swedish population of around 150.000 wild boars (8) (Figure 1).

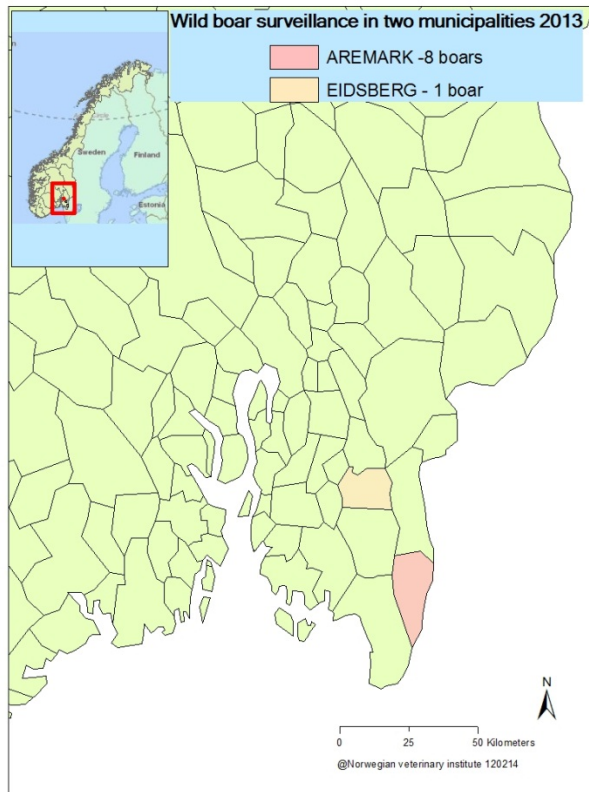
Figure 1. Map of south-eastern Norway and bordering area in Sweden showing distribution and core area for wild boars in 2011. Modified with permission from the leaflet "Villsvin - til glede og besvær"



Results

A total of 9 wild boar samples were collected during the 2013 hunting season (Figure 2), of which all were adequate for examination. All samples were negative for *Trichinella* spp. and specific viral and bacterial pathogens for domestic swine. In total, 12 wild boar samples (blood and diaphragm muscle) from Norway have been tested for *Trichinella* between 2011 and 2013.

Figure 2. Map of Norway showing numbers and hunting municipality of wild boar examined for *Trichinella* spp. and specific viral and bacterial pathogens during the licensed hunting period in 2013.



Discussion

The 2013 result is in agreement with the results from previous years with *no* positive samples detected. Based on our results and the strictly limited population size of wild boars in Norway, we can argue that this species does not represent a significant risk for domestic pig health. However, the sample size is limited and this must be taken into account when evaluating our results.

Nevertheless, this situation may change rapidly. The detection of African swine fever (ASF) in wild boar in Lithuania on January 24th 2014 (9) and later in Poland February 17th, its first detections in many years in the EU, with the exception of Sardinia, has significantly increased the risk of introduction of this disease with wild boars into Norway. As a consequence, an annual surveillance programme of the joint wild boar population of Sweden and Norway is necessary to document continued disease free status and should consider including screening for ASF in the future.

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The Norwegian Veterinary Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad og Tromsø, with about 360 employees in total.

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