

Research

EDITORIAL

African swine fever in wild boar in Europe: a notable challenge

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AFRICAN swine fever (ASF) has recently emerged in several European countries, with cases often linked to the movement of native Eurasian wild boar (*Sus scrofa*). ASF is devastating for the pork industry, causing massive losses of animals due to mortality and stamping out and further economic loss from trade restrictions.

ASF was reintroduced into continental Europe via an incursion in Georgia in April 2007 from where it rapidly spread into Armenia, affecting domestic pigs and wild boar (Sanchez-Vizcaino and others 2013). ASF further expanded through wild boar populations around the Caucasus mountains (OIE 2012, Sanchez-Vizcaino and others 2013). Spread into Azerbaijan, Chechnya, the Russian Federation, Ukraine and Belarus caused large-scale epidemics in domestic pigs. Concurrent infection of

domestic pig and wild boar populations has led to the persistence of ASF in many areas. Controlling ASF in Russia and the Caucasus region proved to be extremely difficult, reflecting the complexity of regional sanitary, economic, environmental and sociocultural factors (Sanchez-Vizcaino and others 2013). There are no vaccines and ASF is still on the move (Oura 2014). ASF entered the European Union in 2014, with the first cases in Lithuania followed by Poland, Latvia and Estonia. The first detections in all of these EU member states were in wild boar found dead.

Wild boar play an important role in the spread of ASF and potentially in its maintenance. It is difficult to eliminate ASF from wild boar populations once it has become endemic (Gogin and others 2013). Contact between infected wild boar and domestic pigs on outdoor farms poses a risk of transmission. Although large pig farms in Europe are better protected by strict biosecurity and hygiene practices, ASF-infected wild boar contaminating the surrounding environment could pose a threat. Expanding wild boar populations in many parts of Europe compound these risks.

Addressing these concerns, a workshop entitled 'African Swine Fever in Wild Boar' was held in Uppsala, Sweden, on March 6 to 7, 2014. Organised by the Wildlife Disease Association and the Swedish National Veterinary Institute (SVA), over 80 people from 17 European countries contributed, with expertise in several fields. The participants represented a wide range

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of experts and stakeholders, including governmental and EU authorities, reference laboratories, veterinarians, universities, hunters, food and livestock industries and vaccine manufacturers.

Four aspects of ASF in wild boar were discussed and the main conclusions are summarised below.

Wild boar management

Current wild boar population monitoring in Europe is inadequate, and improved monitoring tools are needed. The effect of hunting on wild boar demography is not well understood. For population control, intense hunting (more than 50 per cent of the estimated population, specifically targeting sows and piglets) can reduce wild boar numbers locally, particularly in closed populations, but such intense hunting pressure is difficult to maintain. In evenly distributed populations, long-term reduction can be achieved if feeding is limited and hunting pressure is increased. In infected areas, wild boar hunting should continue at similar levels but without actions that might promote increased movement, such as depleting local populations or feeding. The removal of carcasses and hunting remains should be considered. Feeding causes aggregation in wild boar, increasing the risk for ASF transmission, and also improves survival during winter, but prohibiting stakeholders from feeding boar is challenging. The current situation and future feeding options should be assessed. Hunters can contribute to ASF control by actively searching for carcasses. Compensation for wild boar found dead could help.

Contact between wild boar and domestic pigs should be avoided by small-scale fencing. Larger barriers to restrict wild boar movements are unlikely to succeed and have undesirable consequences. However, some natural barriers such as mountain chains, rivers and highways (or combinations of the above) may help to reduce wild boar movements. This could be combined with a limited ban on driven hunting to reduce disturbance. Wild boar translocations should be thoroughly monitored. Population genetics may help in assessing the origin and characteristics of wild boar populations.

Diagnosis and surveillance

The ASF diagnostic capacity in European laboratories is considered to be good and diagnostic tools are available and adequate. The performance of tests developed for domestic pigs is considered to be good when applied to wild boar but full validation for wild boar has not been conducted. Serology is useful for monitoring ASF in endemic areas but is not the method of choice for early detection, for which virus detection techniques,



Wild boar sow and piglets in Sweden

usually PCR, are applied. Two main scenarios were also discussed at the Uppsala meeting:

Early warning and detection in previously ASF-free areas

The testing of sick and dead animals is key, and efforts should be made to collect carcasses for postmortem examination and testing. A second best alternative, particularly in remote areas, is the submission of samples from animals found dead (for example, blood, swabs, bones). Even autolytic carcasses are useful, and bone marrow is the sample of choice. For optimal passive surveillance, communication with established networks of relevant stakeholders (hunters, field samplers, veterinarians, and so on) is crucial. A system to rapidly report dead wild boar, for example, via mobile phone apps, is needed.

Infected areas with sporadic introductions

Animals found dead or sick should be removed and tested. The usefulness and cost effectiveness of extensive testing of healthy, hunted animals may need reassessment. DG-SANCO guidelines describe procedures if ASF is detected, including in feral pigs (DG-SANCO 2014). The requirements to declare freedom from ASF are not yet clearly defined.

Prevention and management

It would be useful to develop tools for risk classification of wild boar populations (risk of becoming infected and risk of transmitting the disease to other wild, feral or domestic populations) and to define risk levels which are easy to communicate.

Increased awareness among pig keepers, hunters, customs officers and the general public is crucial to prevent the introduction of ASF via movements of animals, vehicles, hunting equipment, hunting clothes and foodstuffs. Appropriate communication techniques (for example, social media) and target audiences (for example, travellers, vehicle cleaning stations, organisers of hunting and agrotourism) should be identified.

Courses on practical biosecurity measures for involved parties need to be user-friendly, tailored to specific groups, easily accessible (online) and preferably linked to incentives such as compensation and insurance fees.

Preventing a disease that affects both wild and domestic animal populations requires cooperation and coordination between authorities, scientists, hunters, the pig industry and other stakeholders; and also cooperation across borders. The meat industry should be actively involved due to the impact an outbreak could have on trade. Contingency plans should engage all stakeholders and exercises involving all parties are necessary to test the systems.

Research needs

Ongoing laboratory research includes investigation into the pathogenesis and immunology of ASF in wild boar and the development of a vaccine. Current field research aims to develop new monitoring and noninvasive sampling tools.

The current situation in Europe provides the opportunity to design a comprehensive study on the epidemiology and transmission dynamics of ASF in wild boar, including an estimation of basic parameters of ASF virus transmission within and between wild boar groups, and what influences whether ASF can be maintained in wild boar populations. Research is also needed regarding wild boar population control options and attitudes towards compliance with ASF control guidelines.

The first reports of ASF in all affected EU member states were from wild boar found dead, corroborating the importance of efforts to find and test wild boar carcasses for early detection. Inclusion of wildlife surveillance expertise and networks is essential for the design and implementation of prevention and control strategies of diseases at the wildlife-livestock interface.

The workshop in Uppsala showed that bringing experts and stakeholders together provides a good basis for contingency planning and disease prevention, and for identifying the best methods to control disease outbreaks in wildlife.

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