

A simulation model to determine sensitivity and timeliness of a surveillance strategy for Classical Swine Fever in wild boar

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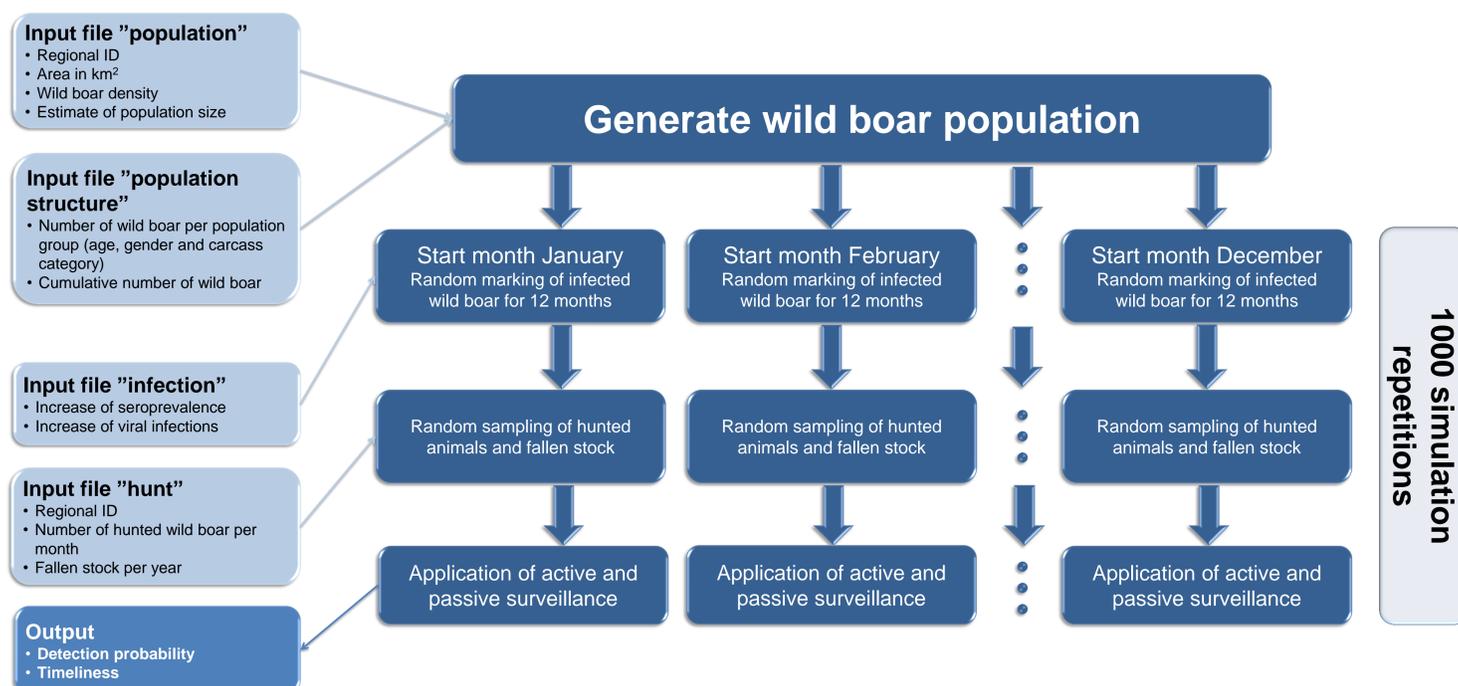
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Introduction

Classical Swine Fever (CSF) is a contagious viral disease that affects all suid species (Kaden et al., 2005). Fritzemeier et al. (2000) found that CSF outbreaks within commercial pig holdings are often due to direct or indirect contact to wild boar. It is therefore vital to be aware of the disease status in wild boar populations, which is only possible through effective surveillance. Sensitivity and the ability to detect an outbreak rapidly (timeliness) as attributes of surveillance systems should be regularly evaluated in connection with the demonstration of disease freedom (Drewe et al., 2013).

Objective: Development of a **simulation model** to determine sensitivity and timeliness of surveillance strategies

Material and methods



Results

Figure 1. Detection probabilities of the simulation of virological investigation of samples resulting from passive surveillance

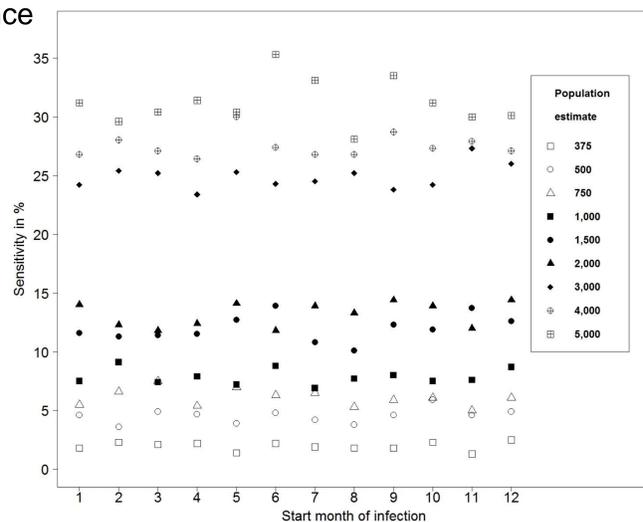


Table 1. Values for the **timeliness** of the surveillance simulation for all start months of infection and population estimates from 375 to 5,000 wild boar

	Active surveillance Investigation of 59 randomly chosen hunted wild boar			Passive surveillance Investigation of fallen stock
	Serological	Virological	Serological and virological	Virological
Minimum	0.113	0.078	0.118	0.053
Maximum	0.136	0.111	0.141	0.112
Average	0.125	0.096	0.129	0.085

Conclusions

- Simulating active surveillance strategies yield satisfactory results whereas passive surveillance solely seems to be insufficient
- Methodology can easily be used as a template to investigate the sensitivity and timeliness of surveillance strategies for other diseases

References

1. Drewe, J.A., Hoinville, L.J., Cook, A.J.C., Floyd, T., Gunn, G., Stärk, K.D.C., 2013. SERVAL: A New Framework for the Evaluation of Animal Health Surveillance. *Transboundary and Emerging Diseases* 62.
2. Fritzemeier, J., Teuffert, J., Greiser-Wilke, I., Staubach, C., Schlüter, H., Moennig, V., 2000. Epidemiology of classical swine fever in Germany in the 1990s. *Veterinary Microbiology* 77, 29-41.
3. Kaden, V., Steyer, H., Schnabel, J., Bruer, W., 2005. Classical swine fever (CSF) in wild boar: the role of the transplacental infection in the perpetuation of CSF. *Journal of Veterinary Medicine Series B - Infectious Diseases and Veterinary Public Health* 52, 161-164.

