

Risk mapping to identify areas with higher probability of introduction of African swine fever virus to Swedish wild boar

African swine fever (ASF)

ASF, caused by ASF virus, is a devastating disease that results in up to 100% mortality in domestic pigs and wild boars. Whereas wild boar dominate local disease dynamics, humans play the main role for long distance spread.

Situation in Sweden

African swine fever has never been detected in Sweden, but today the risk of its introduction is a reality. Geographically, Sweden does not share a border with infected countries, and most areas where wild boar are found are bordered by the sea. Therefore, human-related activities are considered to be the most likely route for the introduction of ASF into Sweden.

Prevention is better than cure

By better understanding the spatiotemporal complex interactions among wild boar, environments, and human-related activities, we aim to detect areas of likely ASF introduction.

Spatial risk assessment tool

We are developing a web-based spatial risk assessment tool to evaluate the risk of ASF introduction considering wild boar population, human activities, climate and environments.

$$Risk_i = \begin{cases} \sum r_{WB} = 0: 0 \\ \sum r_{WB} > 0: \sum_{j=1}^m r_{human_j} w_{human_j} + \sum_{k=1}^n r_{WB_k} w_{WB_k} \end{cases}$$

- r_{human} = risk factors associated with human activities
- r_{WB} = risk factors associated with wild boar
- w = weights between 0 and 1
- m = number of human-related factors
- n = number of WB-related factors
- i = cell index
- j = from 1 to m
- k = from 1 to n



- Wild boar
- Environments
- Climate
- Human activities
- ⋮
- Land cover

