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Impact of risk factor selection on assessing the risk of introduction of African swine fever to Swedish wild boar

African swine fever (ASF) in Sweden

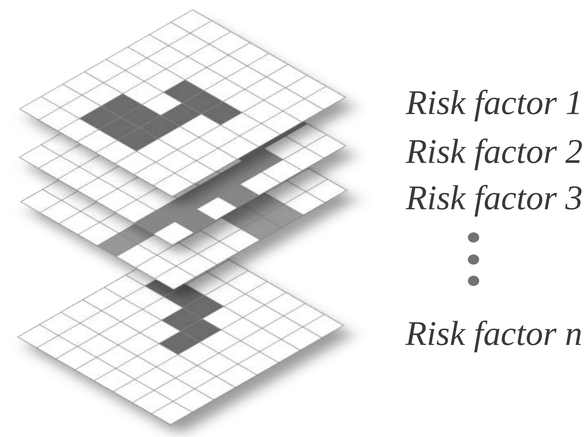
- September 2023: First case of ASF confirmed in Sweden.
- Geographical isolation: No direct contact with infected wild boar populations. Human activities suspected.
- Municipal waste collection centre nearby: Lacks wild boar-proof fence and potential contribution to virus spread.

ASF introduction risk calculation

- Risk data were converted to rasters at 1km^2 resolution and weighted based on expert opinion.
- Data includes: wild boar population, wild boar habitat, human population, road traffic, international port trade volume, and municipal waste collection centre.
- Risk values are not defined probabilistically but on a relative scale.

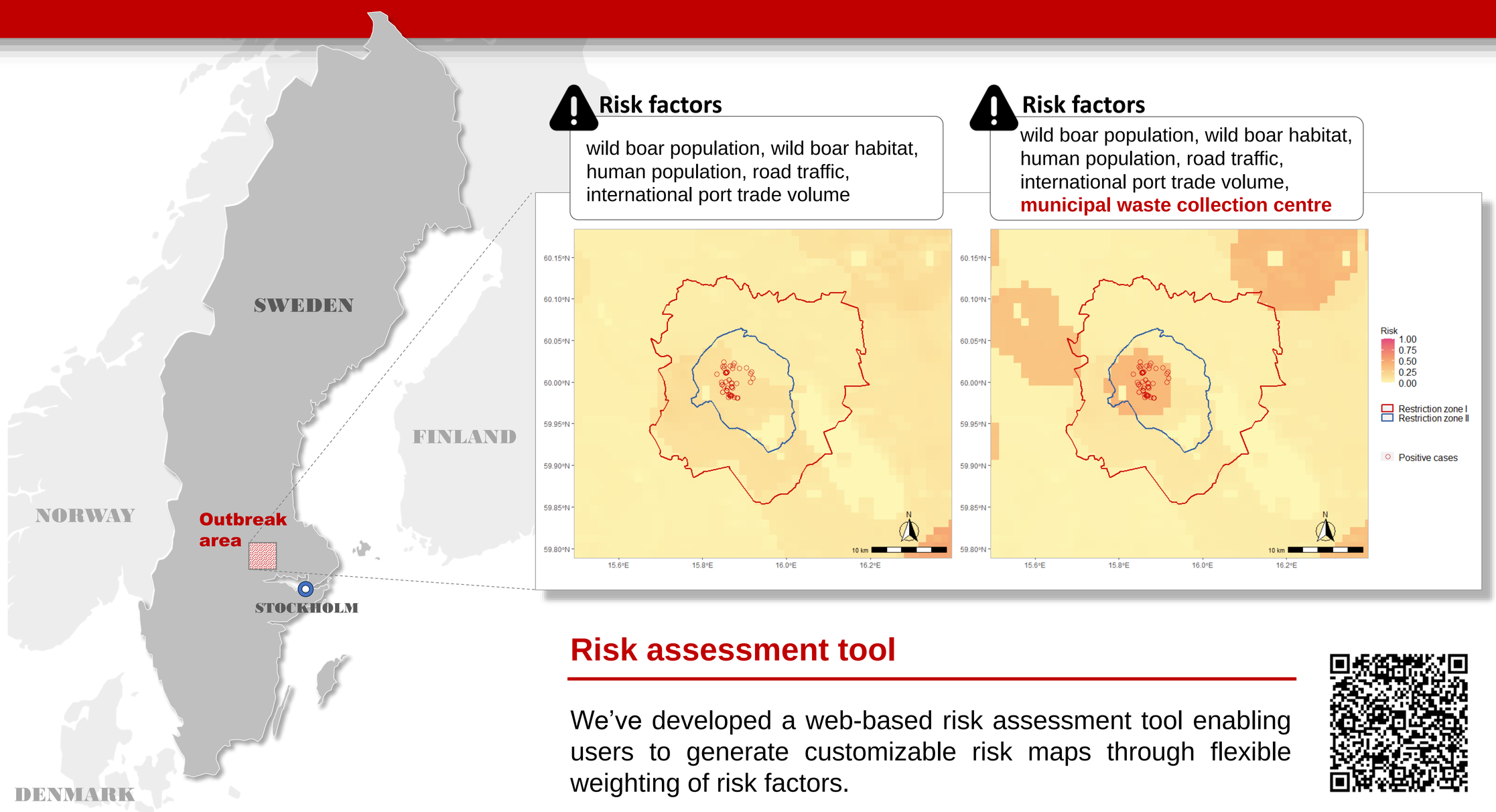
$$Risk_i = \begin{cases} \sum r_{WB} = 0 : 0 \\ \sum r_{WB} > 0 : \sum_{j=1}^{m} r_{human_j i} w_{human_j i} + \sum_{k=1}^{n} r_{WB_k i} w_{WB_k i} \end{cases}$$

r_{human} = human activity-related risks
r_{WB} = wild boar-related risks
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



Impact of risk factor selection

- ✓ The hotspot area changes depending on the inclusion of municipal waste collection centres as a risk factor.
- ✓ All positive cases were detected in areas with higher risk when municipal waste collection centres were considered.
- ✓ Identification of influential risk factors is crucial for targeted prevention and mitigation strategies.



Risk assessment tool

We've developed a web-based risk assessment tool enabling users to generate customizable risk maps through flexible weighting of risk factors.

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