

Eradication of bluetongue serotype 8 in Sweden

Swedish Board of Agriculture
National Veterinary Institute



Monitoring in order to provide the Commission with substantiated information demonstrating the absence of bluetongue virus circulation in an epidemiological relevant geographical area during a period of two years, as referred to in Article 6(2):

— shall consist of at least one, or a combination of, serological monitoring with sentinel animals, serological/virological surveys and targeted risk-based monitoring, as set out in points 1.1.2.1, 1.1.2.2 and 1.1.2.3

Footnote

3. It has been assumed that 10 % is the normal annual rate of seroconversion in a vaccinated zone. However, if there is evidence that the annual rate of seroconversion in the epidemiologically relevant vaccinated geographical area is lower than 10 % the sample size has to be calculated to detect the lower estimated prevalence.



Strategy before first case

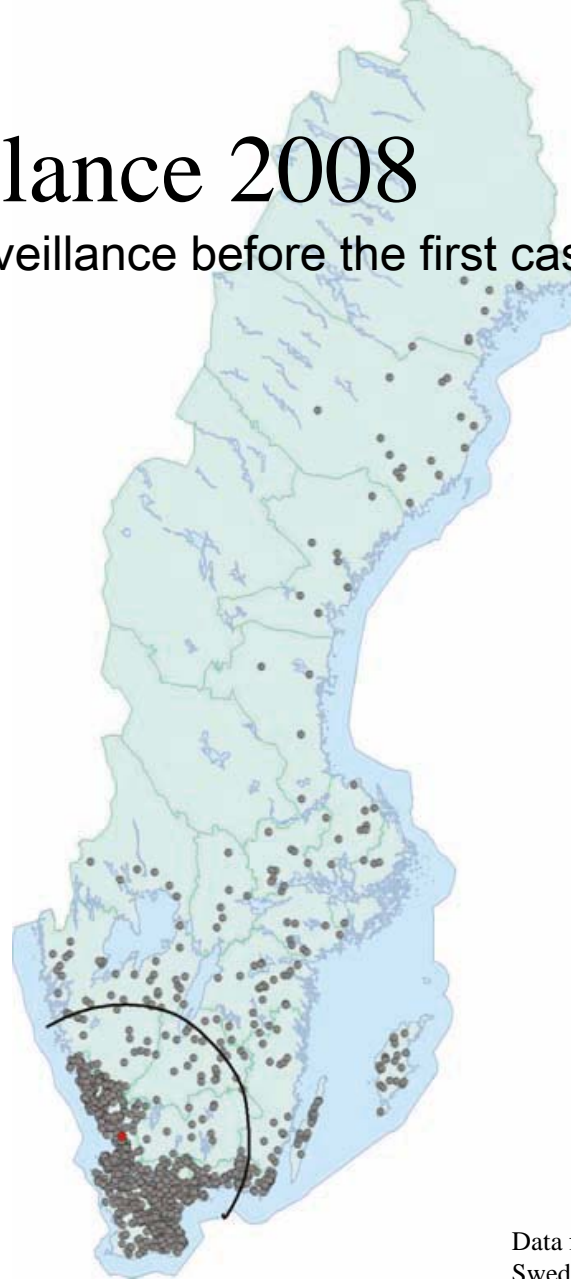
- Entomologic surveillance began in 2007. Relevant *Culicoides* species were endemic to Sweden.
- Due to BTV-8 situation in 2008 a strategy was prepared for the vector active season in 2008, including increased surveillance and preparation for vaccination.



Surveillance 2008

bulk milk surveillance before the first case

- Focus on early detection.
- Monthly bulk milk samples in risk areas: the counties of Skåne, Halland and Blekinge.
- The first case on September 6, 2008 in the county of Halland



Herds included in the bulk milk screening from July 2008 until the detection of the first case of bluetongue (red).

The area of the restriction zone as of September 9, 2008, is demarcated by the black line.

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Data from Infection with bluetongue virus serotype 8 in Sweden in 2008. S. Sternberg Lewerin et al. 2010 Vet Rec167:165-170.



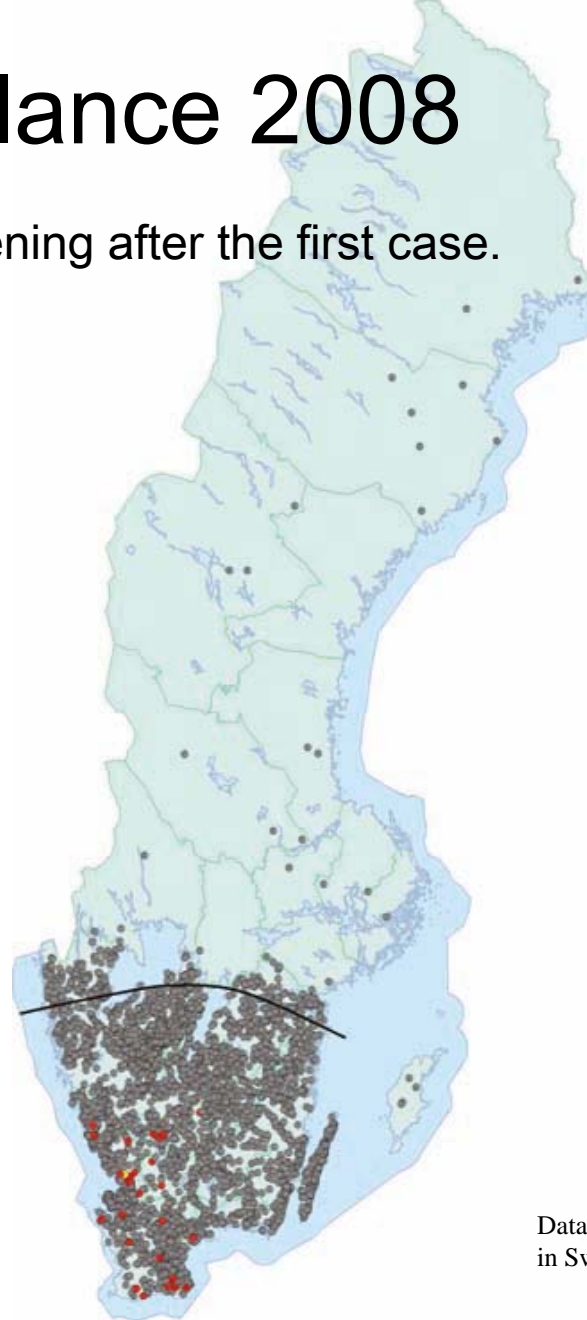
Actions taken after the first case

- Extensive testing to assess geographical distribution and to estimate prevalence.
- Vaccination started locally 2 days after the first case was confirmed.
- Vaccination campaign during winter to achieve 80% coverage by the start of the next vector period. Two full years of vaccination was performed.



Surveillance 2008

bulk milk screening after the first case.



Herds included in the bulk milk screening from the detection of the first case of bluetongue until December 2008. Herds with positive reactions (by serology or PCR, or both) are indicated in red; the index case is in yellow. The northern boundary of the restriction zone as of December 31, 2008, is demarcated by the black line.

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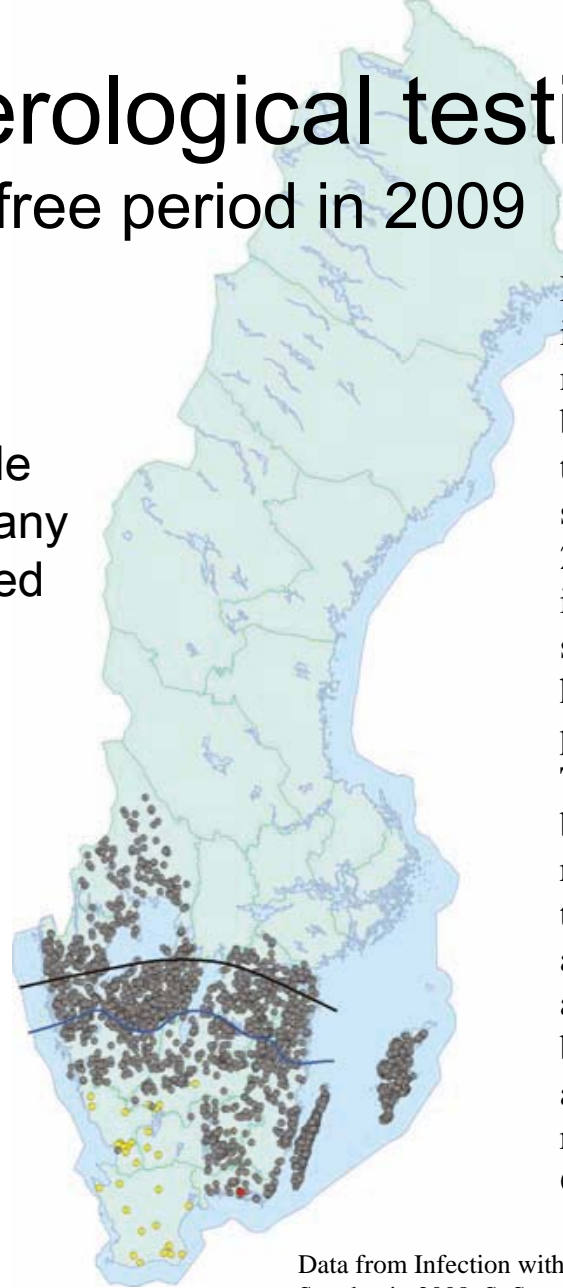
Data from Infection with bluetongue virus serotype 8 in Sweden in 2008. S. Sternberg Lewerin et al.



Additional serological testing

in the vector free period in 2009

- In February 2009 (and 2010) an additional bulk milk survey was made outside the vaccinated zone to find any previously infected but yet undetected herds.
- Testing was done in the county of Värmland due to the first case in Norway (infected in 2008).



Herds included in bulk milk screening for bluetongue during the vector-free season in early 2009. Positive herd identified in 2009 is shown in red, and herds identified previously in yellow. The northern boundary of the restriction zone and the vaccination area as of February 2009 are demarcated by the black line and the blue line, respectively.

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Data from Infection with bluetongue virus serotype 8 in Sweden in 2008. S. Sternberg Lewerin et al. 2010 Vet Rec 167:165-170.



Surveillance 2009



- 2009 Serological monitoring of non vaccinated young animals in the protection zone.
- Monthly bulk milk monitoring in the restriction zone. Serological and bulk milk testing of individual animals in the free area.
- No circulation was detected

Sentinel test results, 2009.11.18 - 2009.12.30

PPN: 272 / 287 present on map

Serology test: 603 animals tested

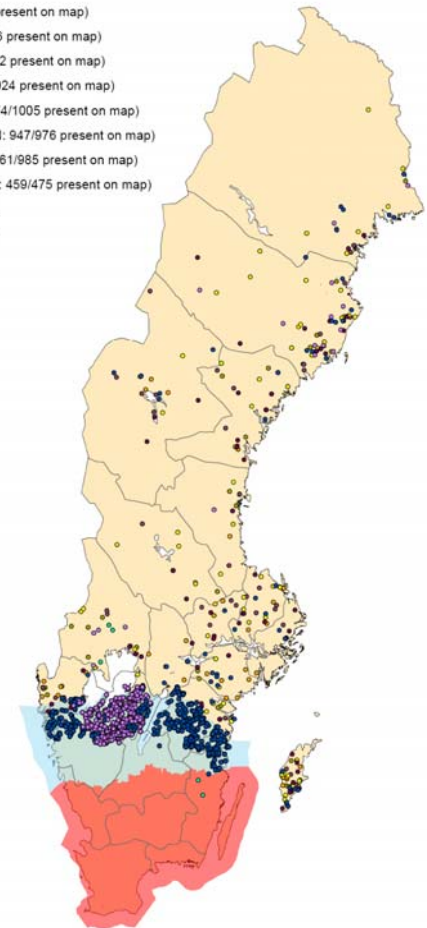
Restriction zone
Stand still zone



Tank milk samples 2009, results on monthly basis

- April (PPN: 5/5 present on map)
- May (PPN: 45/46 present on map)
- June (PPN: 69/72 present on map)
- July (PPN: 897/924 present on map)
- August (PPN: 974/1005 present on map)
- September (PPN: 947/976 present on map)
- October (PPN: 961/985 present on map)
- November (PPN: 459/475 present on map)

Restriction zone
Stand still zone



Surveillance 2010

Surveillance in the free area and risk based monthly bulk milk monitoring in the restriction area outside the vaccination zone 2010 was similar to that of 2009.



Intensive risk based monitoring 2010

1

- Holding prevalence in the restriction zone (bovines) 2008: 1 %
- Sampling was concentrated to the epidemiological high-risk area, i.e. the vaccinated zone, and was designed to find the estimated prevalence in 2008. All animals on each holding were sampled.
- The sampling was initiated in the late peak season in September, and continued in October well after the end of the vector activity.



Intensive risk based monitoring 2010

2

Target group

The target group were holdings (both bovine and ovine) where no vaccination had taken place.

Testing

Testing of samples by PCR.



Intensive risk based monitoring 2010

3

Total number of tests (sheep and bovine): 2764

Total number of tested herds (sheep and bovine): 574

Number of tested bovine herds: 308

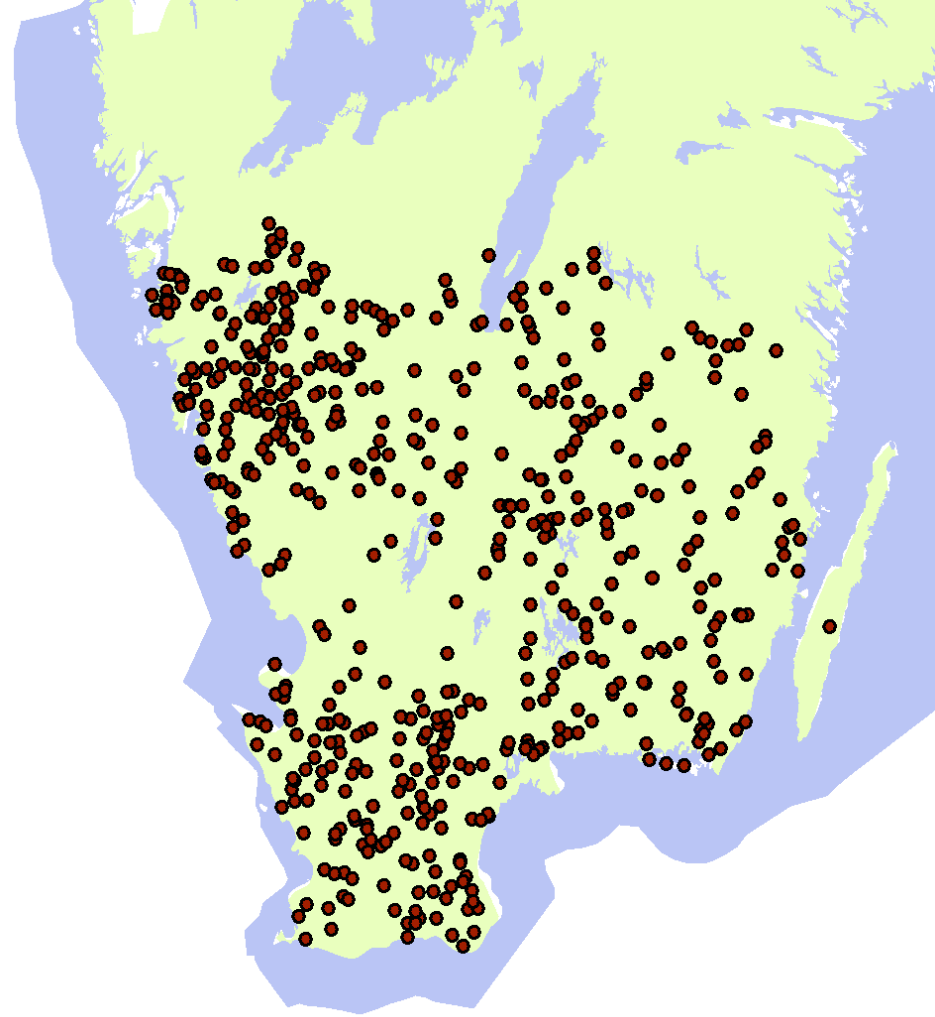
Total number of tested bovines: 1158

Number of tested sheep farms: 266

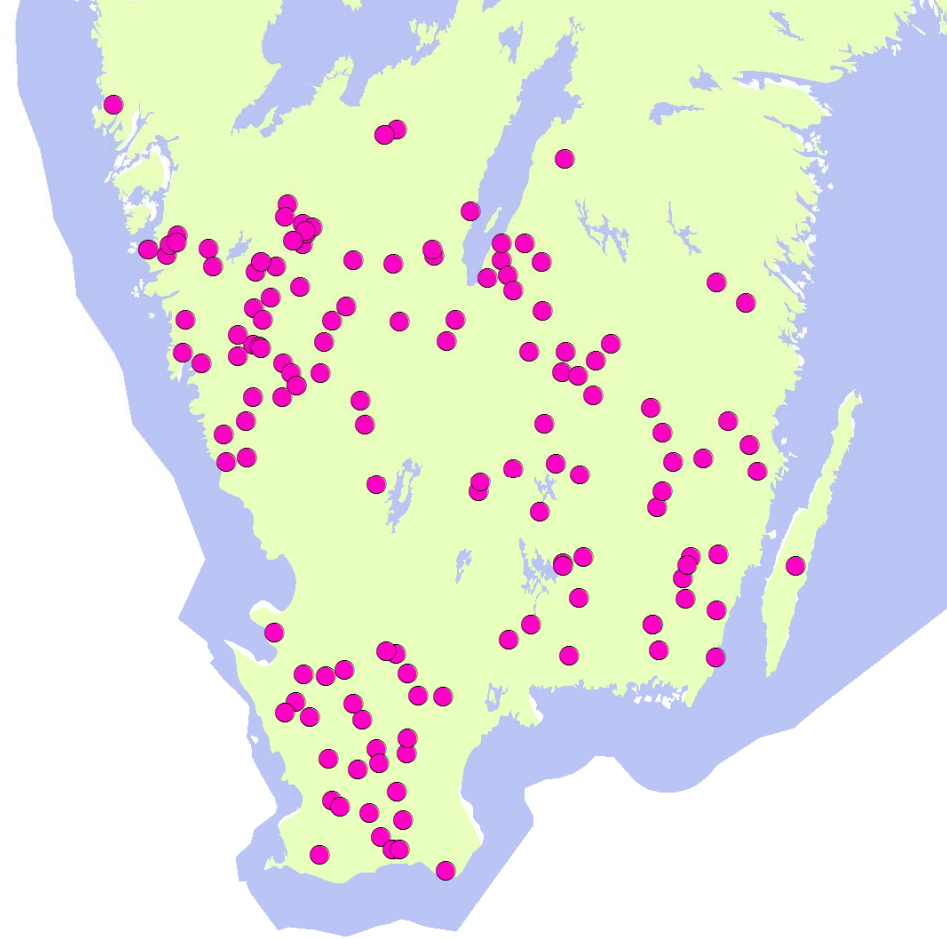
Total number of tested sheep: 1606

No positive samples were found. In all, the survey confirmed with a 95% confidence level that the virus was absent below 1% on herd level.





Distribution of 308 cattle farms and
266 sheep farms, tested with Pan-PCR
In September-October 29, 2010



147 herds sampled after 9th of October , last
finding of vectors.

Vector surveillance

Traps were operated at least to establish the beginning and end of the seasonal activity.



Conclusions

- No evidence of virus circulation in 2009 and 2010.
- All tests from the herds in the vaccination zone were negative for the presence of BTV-8. Thus, it was concluded that the herd prevalence of BTV-8, if present, would be less than 1% with 95% confidence level both in 2009 and 2010.

Sweden can therefore be regarded as free from BTV-8 and the restriction zone lifted.

