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# Contingency planning for vector-borne diseases, a Swedish perspective.

# Listed VBDs

| Name of disease | AHL category | Species (SE) | vector | epizootic disease in SE |
|---|---|---|---|---|
| Bluetongue serotype 1-24 | C+D+E | Antilocapridae, Bovidae, Camelidae, Cervidae | Culicuides spp. (biting midges) | Yes Until BTV-3 outbreak 2024 |
| Epizootic haemorrhagic disease virus | D+E | Antilocapridae, Bovidae, Camelidae, Cervidae, | Culicuides spp. | No |
| African horse sickness | A+D+E | Equidae | Culicuides spp. | Yes |
| Rift valley fever | A+D+E | Antilocapridae, Bovidae, Camelidae, Cervidae, | Culicidae (mosquitoes) | Yes |
| Japanese encephalitis | E | Equidae | Culicidae | Yes |
| West Nile fever | E | Equidae, Aves | Culicidae | Yes until 2025 |
| Venezuelan equine encephalomyelitis | D+E | Equidae | Culicidae | Yes |
| Equineencephalomyelitis (Eastern and Western) | E | Equidae | Culicidae | Yes |
| African Swine fever | A+D+E | Suidae | Ornithodorus (soft ticks) also direct transmission | Yes |
| Equine infectious anemia | D+E | Equidae | Tabanidae (horse-fly) | Yes |
| Surra | D+E | Equidae, Artiodactyla | Tabanidae | No |
| lumpy skin disease virus | A+D+E | Bison ssp., Bos ssp., Bubalus ssp | Haematophagus arthropods (blood feeding insects) | Yes |



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# Outbreak experience and learning

- Bluetongue serotype 8 outbreak 2008-2010 -successfully eradicated
- Bluetongue serotype 3 outbreak 2024 –ongoingt
- Schmallenberg virus outbreak 2012 – recurring now

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# Bluetongue BTV-8 and BTV-3

# Bluetongue serotype 8 outbreak 2008-2010

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Wind borne vectors from affected areas in other MS.

The outbreak: 31 establishments found using specific surveillence in 2008. No clinical cases, No signs of virus circulation.

- Effective and early detection possible with bulk milk surveillance.
- Compulsory vaccination of all bovine and ovine herds with 10 or more individuals for two years was successful.
- Vector monitoring for 3 years to define vector free period.

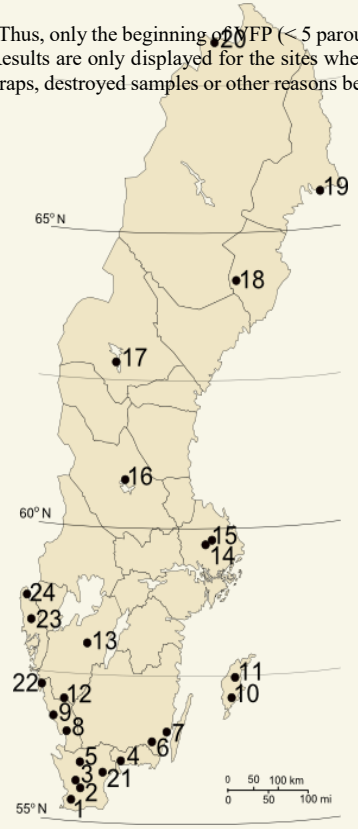
# Vector detection for determining vector free seasons

- Guarantee for safe trade
- Reliable data?

The Swedish survey of Bluetongue-vectors was implemented on the 22nd of July 2007. Thus, only the beginning of VFP (< 5 parous *Culicoides*/trap/night) could be established for that year. A total of 24 sites have been surveyed since 2007. Results are only displayed for the sites where end and beginning of VFP were possible to establish. Thus, excluded data are due to technical problems with traps, destroyed samples or other reasons beyond control to perform sampling.

**Table 1**
Sampling sites of *Culicoides* 2007-2010

| No. | Site | Province | Coordinates EU-BTNET [x, y] | |
|---|---|---|---|---|
| 1 | Bara | Skåne | 13,209502 | 55,590624 |
| 2 | Löberöd | Skåne | 13,542875 | 55,755854 |
| 3 | Svalöv | Skåne | 13,091801 | 55,915806 |
| 4 | Svängsta | Blekinge | 14,715195 | 56,301630 |
| 5 | Vittsjö | Skåne | 13,701596 | 56,334670 |
| 6 | Torsås | Småland | 15,825888 | 56,354064 |
| 7 | Ljungbyholm | Småland | 16,213806 | 56,529475 |
| 8 | Halmstad | Halland | 13,171200 | 56,672436 |
| 9 | Falkenberg | Halland | 12,528541 | 56,918072 |
| 10 | Hemse | Gotland | 18,360799 | 57,210810 |
| 11 | Romakloster | Gotland | 18,494280 | 57,377366 |
| 12 | Torestorp | Västergötland | 12,658971 | 57,404260 |
| 13 | Axvalla | Västergötland | 13,718974 | 58,456779 |
| 14 | Uppsala LH | Uppland | 17,750151 | 59,812581 |
| 15 | Uppsala BO | Uppland | 17,750151 | 59,812581 |
| 16 | Orsa | Dalarna | 14,631517 | 61,147317 |
| 17 | Oviken | Jämtland | 14,470597 | 63,079 |
| 18 | Lycksele | Västerbotten | 18,669678 | 64,595375 |
| 19 | Kalix | Norrbotten | 23,605450 | 65,745869 |
| 20 | Abisko | Lappland | 18,748908 | 68,349000 |
| 21 | Kristianstad | Skåne | 14,189182 | 56,081574 |
| 22 | Fjärås | Bohuslän | 12,149112 | 57,446935 |
| 23 | Dingle | Bohuslän | 11,583443 | 58,581520 |
| 24 | Strömstad | Bohuslän | 11,352678 | 58,955886 |



# Culicuides vectors: Vector free period 2008-2010

- Historical vector free periods in Sweden:
- 2008-2009: 15 November 2008 - 21 April 2009
- 2009-2010: 1 November 2009 - 28 May 2010
- 2010- start 25 October 2010 –
- December 2010 -SE declared free from BTV-8

# Compulsory vaccination

**The vaccination campaign in 2008-2010 was successful.**

# Are vaccines responsible for production loss after vaccination?

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## Result on specific study on dairy cattle data

- **"No signs that vaccination against bluetongue 8 caused any production loss in dairy herds.**
- **Caveat: due to insufficient data, potential effects on fertility and culling after the second vaccination cannot be ruled out.“**


ATL
EXTRA SKOG • VARJE TISDAG
KRÅNGLIGT LÄMNA FÖRENING
Lantbrukets affärstidning
VACCINET KAN DÖDA
Jordbruksverket backar om blåtunga
Tema Fastigheter
Glassmejeri i stället för fler kor i stallet
Kändisar som trivs på landet
Rätt ekofoder för dina djur!

Ulf Emanuelson
Inst. för Kliniska Vetenskaper
SLU (Swedish University of Agricultural Sciences)

# Bluetongue serotype 8 outbreak 2008-2010
# An economic analysis 2010

# Is Bluetongue eradication worthwhile?


• **Diana Viske**, *DVM* (Department for Animal Welfare and Health)
• **Bo Norell**, *Agro-Economist* (Crop Production Department )
• **Janne Johansson**, *Reimbursement administrator, math teacher*
(Department for Rural Development )

• **Lars Pettersson**, *Economist* (Department for Rural Development)
• **Lars M Widell**, *Economist* (Market Department)

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# Aim of the analysis

- To show possible economic consequences of endemic Bluetongue in Sweden
- To give guidance for Swedish decision- and policy-making on Bluetongue control from an economic perspective

# Calculation of costs for endemic Bluetongue in Sweden 2008

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National data on

- morbidity and mortality (no)
- production losses (no)
- rate of disease spread (no)
- incursion area (yes)
- Vaccination (yes)

# General conclusions

- Free distribution of the disease would affect both dairy herds and sheep flocks with large losses. (60 million SEK/year for 20 years)
- Disease freedom has high economic value — compulsory vaccination is often cost-effective even for reoccurring disease in a smaller region.
- If widespread introductions of the virus occur annually, voluntary vaccination becomes a more viable strategy.
- Voluntary vaccination is mainly profitable in dairy herds, and only if farmers are allowed to vaccinate their own animals.
- From an animal welfare perspective, all livestock owners should be encouraged to vaccinate.

# Impact of AHL categorisation of BTV 1-24 on BTV contingency planning

- Coordinated vaccinations between MS for eradication purposes not on the table.
- Elevated risk of recurring incursions with possibly endemic BTV serotypes in nearby countries.
- Need to develop sustainable national vaccination strategy possibly including profylactic vaccination of animals.

# Bluetongue serotype 3 outbreak 2024 – actions taken

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- Voluntary vaccination was allowed through change in legislation.
- Mandatory registration of vaccinated animals (will to vaccinate and for surveillance).
- Animal owners allowed to vaccinate themselves after being taught proper technique. (cost reduction)
- Surveillance:
  - Mandatory reporting of suspected index case in every herd.
  - Veterinary visits for sampling clinical suspicions financed by SBA until march 2025 after that only the analyses are financed.
  - Surveillance for other serotypes (PCR and serological)
  - Surveillance to assess spread.

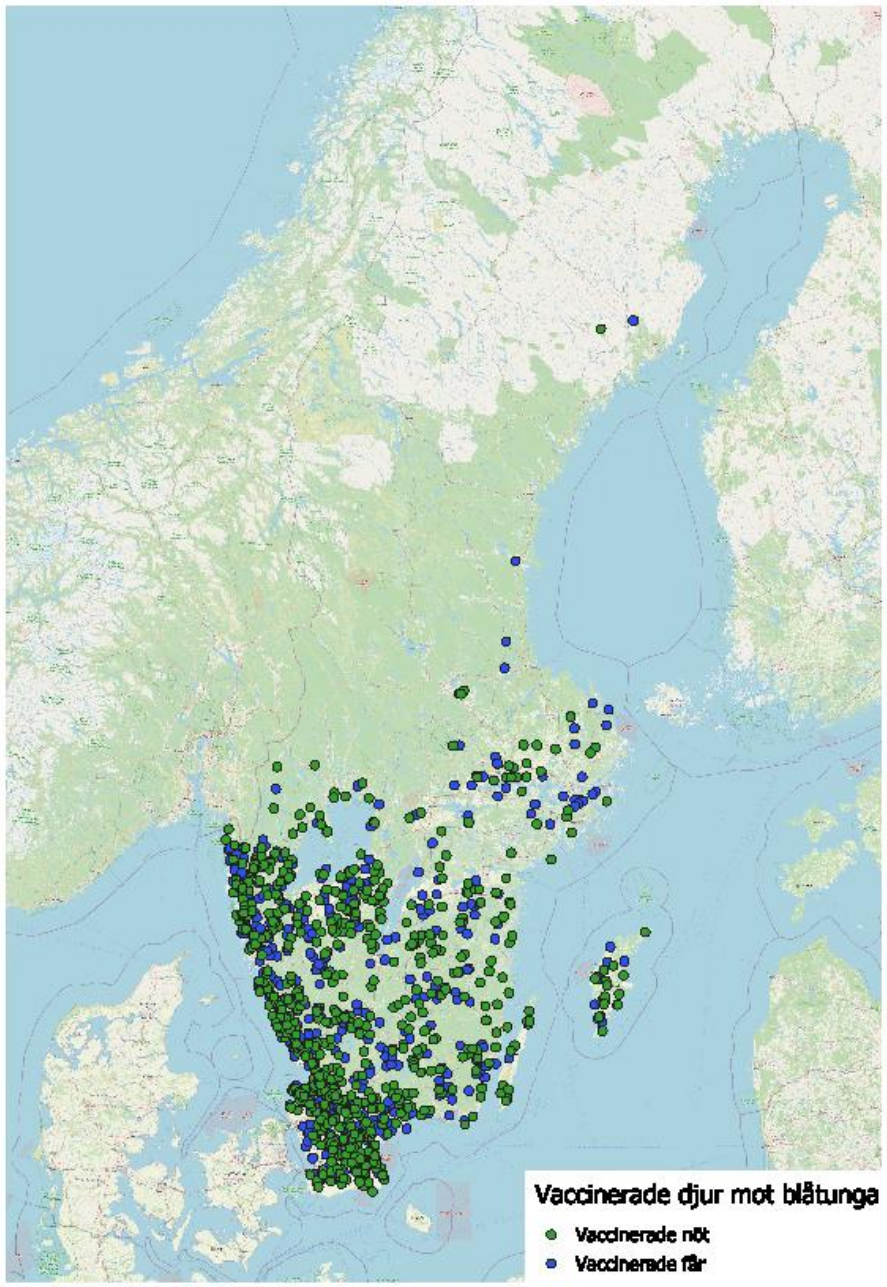
- Active promoting vaccination to protect animals, information, webinars and other. Information, webseminars for veterinarians and stakeholders. Joint groups of veterinary services for the purpose of advising on vaccination. Information also on the similarities of BTV and FMD.

# Registered vaccinations BTV-3

- Sheep
  - Vaccinated flocks: 584
  - Vaccinated animals 33 675 (11%)
  - Total number of sheep in Sweden
    312 000

- bovines
  - Vaccinated herds: 799,
  - Vaccinated animals 87881(6-7%)
  - Total number of bovines in Sweden
    1 333 800

- Registered until May 2025

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# Not enough vaccine?

- Few vaccinations in autumn,
- Combined effort by veterinary services to inform on disease and emergency vaccine.
- Vaccine ordering higher in spring possibly aided due to much reporting of dummy calves.
- Vaccine deliverys delayed
- Late relese of animals to pasture due to voluntary vaccination

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# Schmallenberg in Sweden

2025-07-03

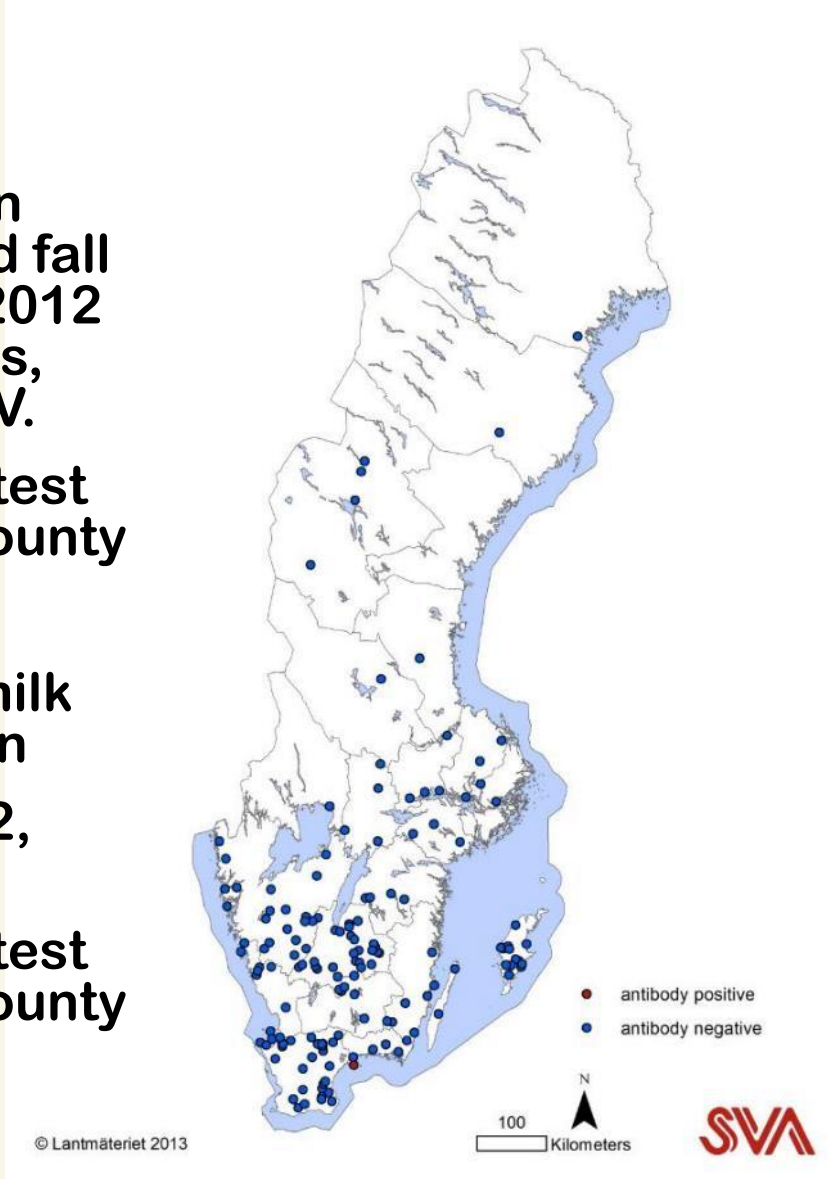
Sheep: Frozen blod collected fall winter 2011-2012 from150 farms, tested for SBV.

One positive test in Blekinge county

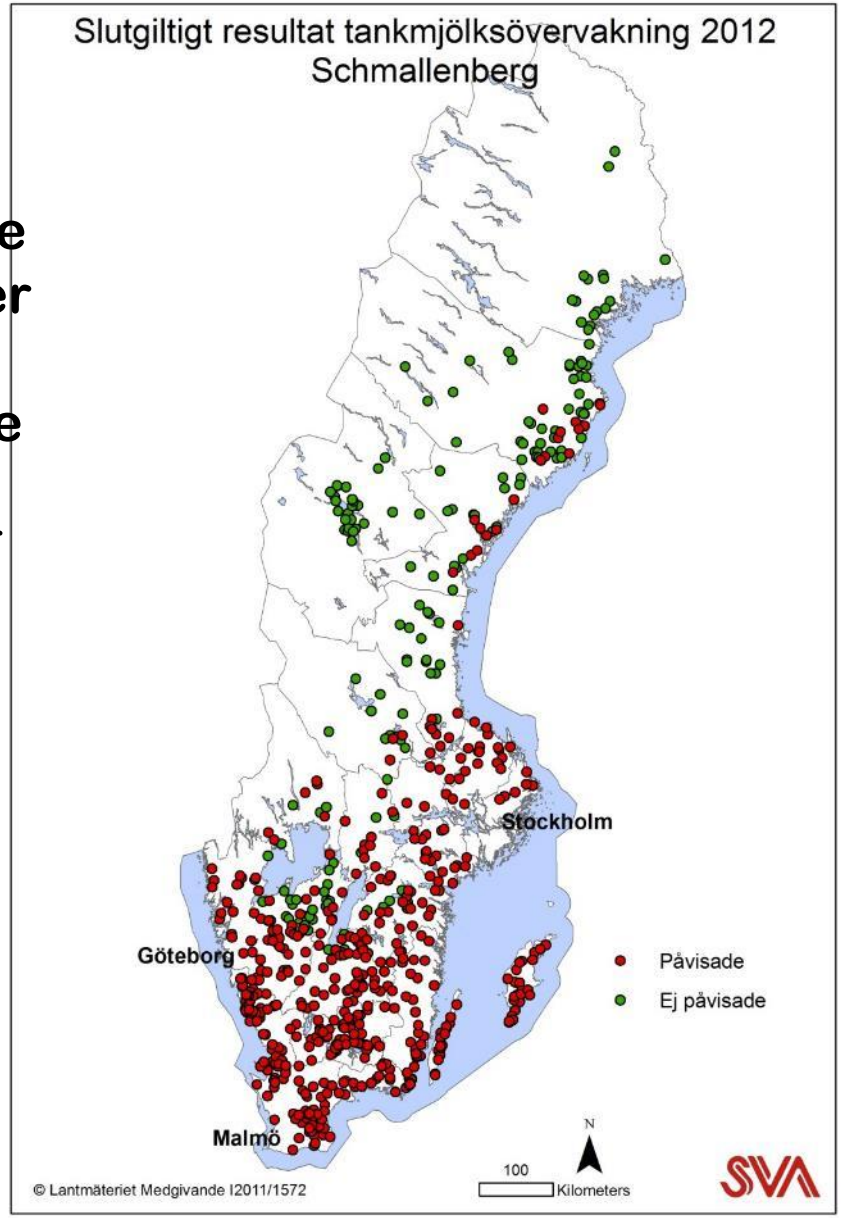
Cattle: Bulk milk surveillance in

maj-june 2012, 750 farms.

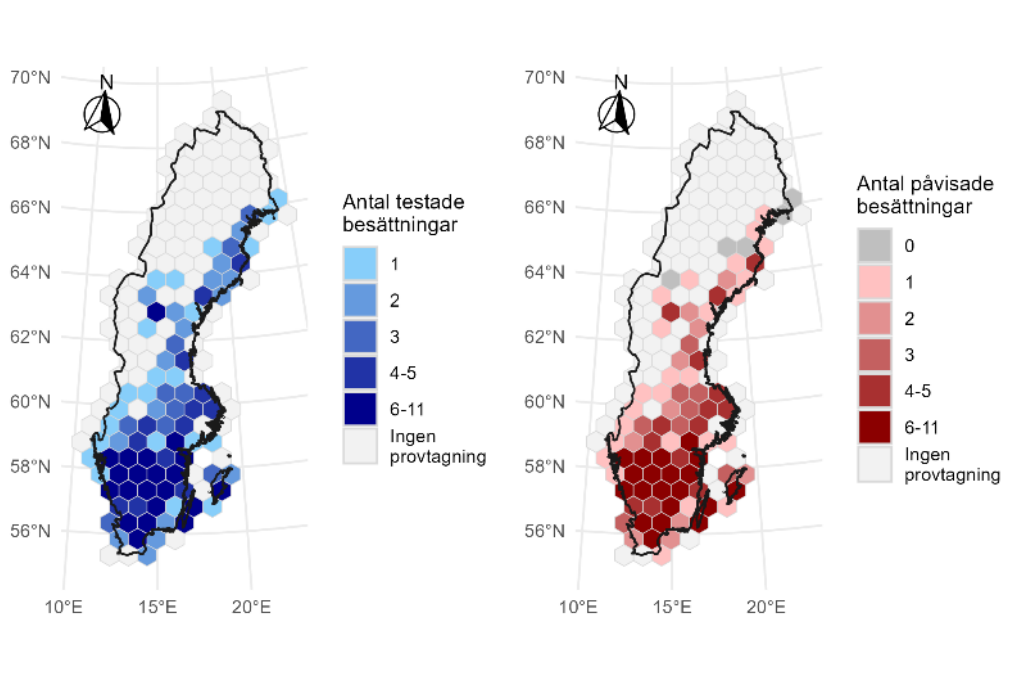
One positive test in Blekinge county




Bulk milk surveillance in november 2012:
520 positive bulk milk tests out of 723



# Schmallenberg in Sweden today.




- 2024 (results from SVAs webb)
- Few clinical cases, cyclic reapperence.
- Not a classified disease.
- Endemic ?

- Schmallenbergvirus hos idisslare - SVA

# Summary outbreak experience and contingency planning

- Bluetongue serotype 8 outbreak 2008-2010 -successfully eradicated

- Schmallenberg virus outbreak 2012 – recurring
- Bluetongue serotype 3 outbreak 2024 – most likely ongoing

    - Learning experience still
    - Need more data on economic impact
    - Look into options for promoting vaccination

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# Thank you for your attention

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