

# Update on PD in Norway

Anne Berit Olsen, Mona Dverdal Jansen, Jinni Gu, Marta Alarcon  
Norwegian Veterinary Institute Bergen, Oslo, Trondheim, Harstad

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**Veterinærinstituttet**  
— Norwegian Veterinary Institute

# Outline

- PD statistics
- The SAV3 epidemic
- The SAV2 epidemic
- PD in the North
- Some epidemiological features
- Summary

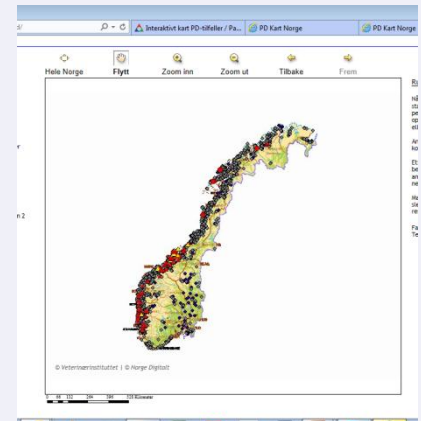


# PD-statistics

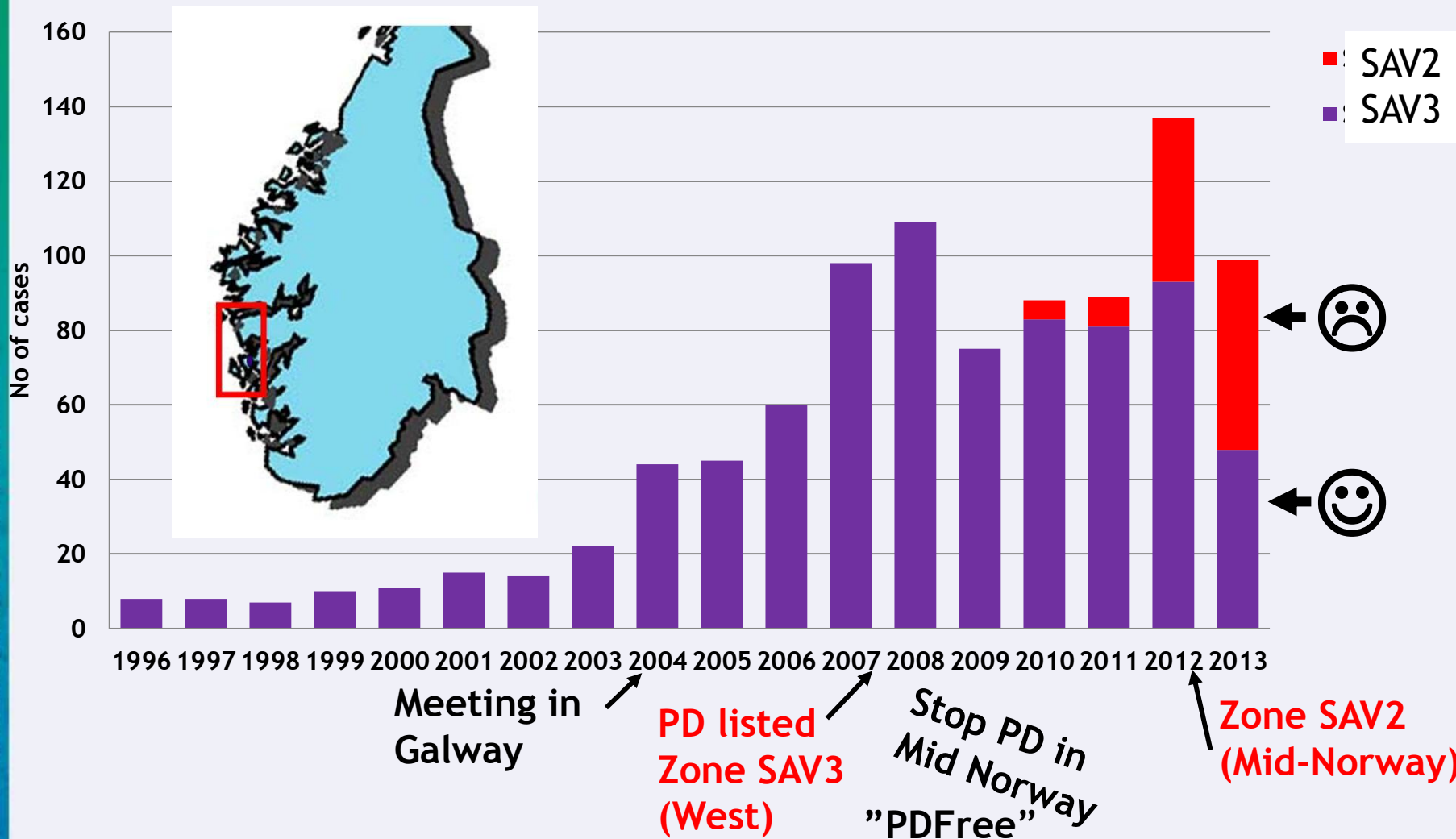
- PD in Norway since the 80's
- Statistics since 1995
- SAV subtypes: SAV3 and from 2010 also marine SAV2
- Diagnostic criteria
  - **Suspicion of PD:**
    - Typical histopathological findings
    - Marine SAV2: PCR-positive test as the only finding
  - **Confirmed PD:** Typical histopathology and virus detection, same individual, usually real time RT-PCR
  - **Positive PCR by screening in SAV3 area - no disease:** not in NVI's statistics

# Statistics cont.

- Statistics made by the Norwegian Veterinary Institute in cooperation with the Food Safety Authorities
  - [www.vetinst.no](http://www.vetinst.no)
  - monthly reports
  - daily updating of maps
- Only new sites/new populations counted  
i.e.: actual number of sites with PD includes new cases of the year and affected sites from previous year

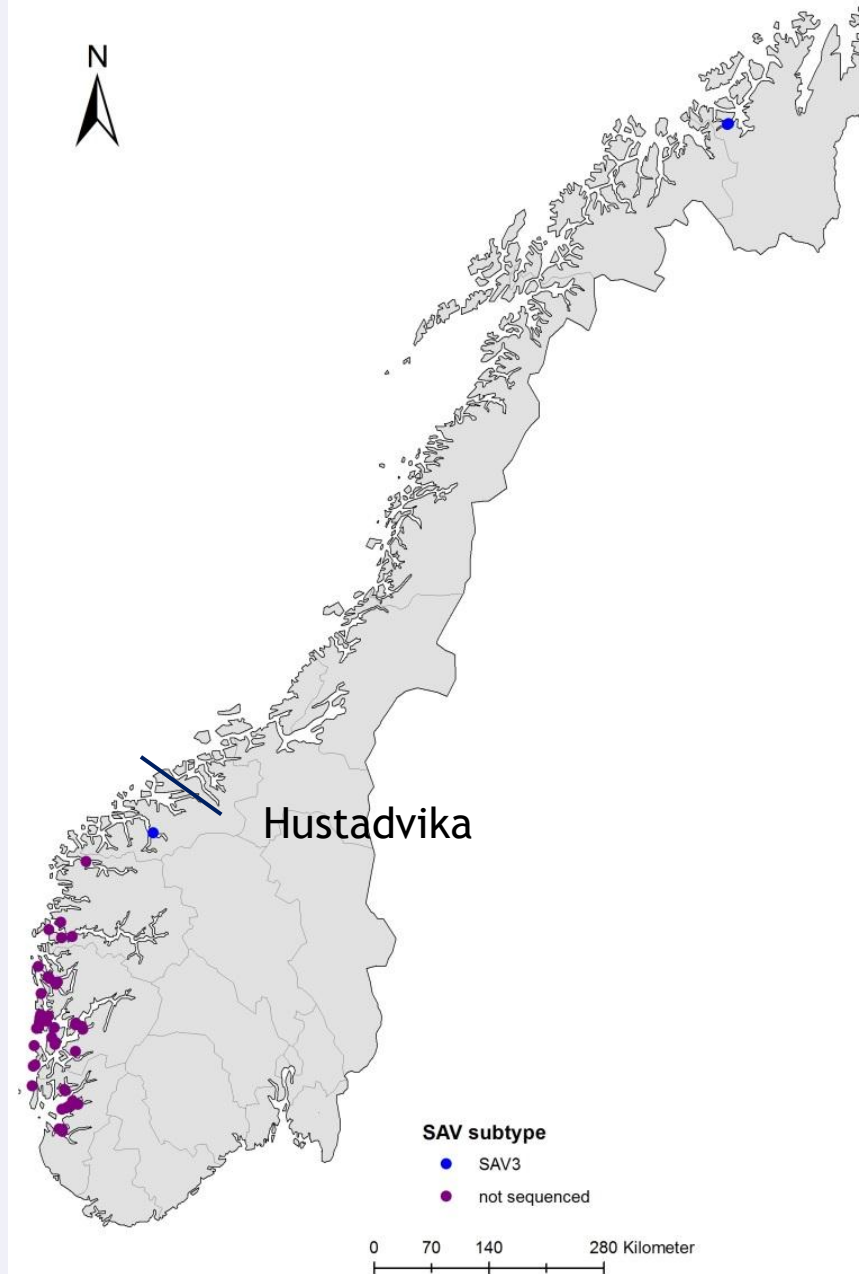
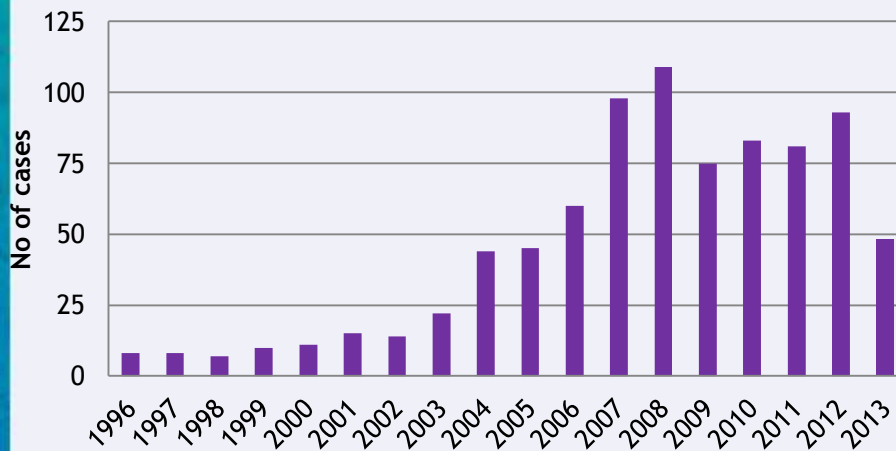


# PD in Norway 1996-2013

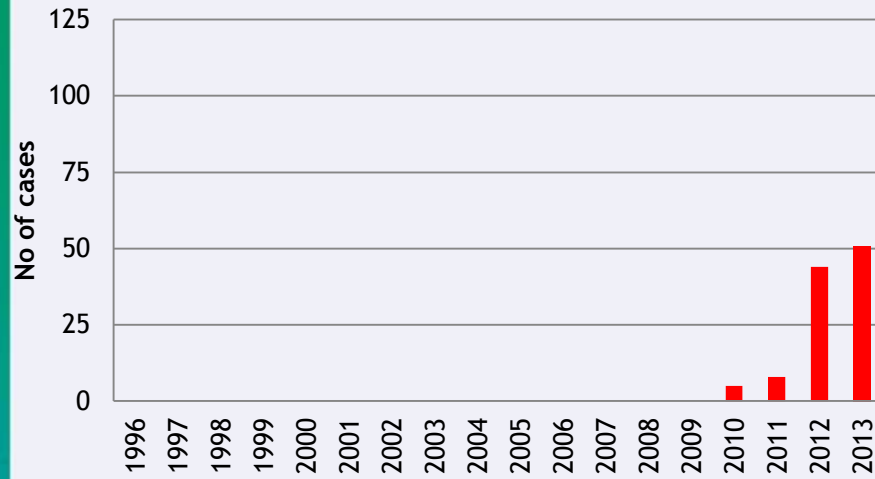


# Geographical distribution

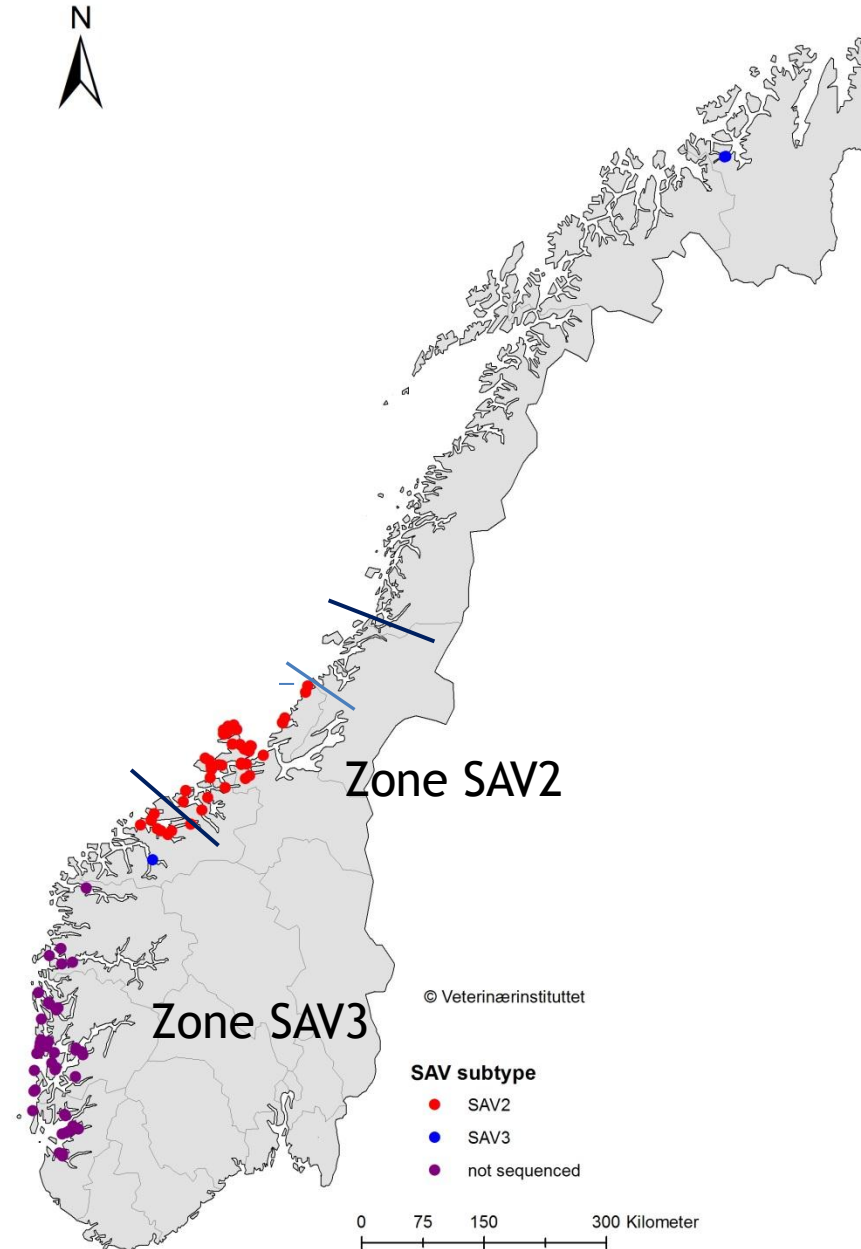
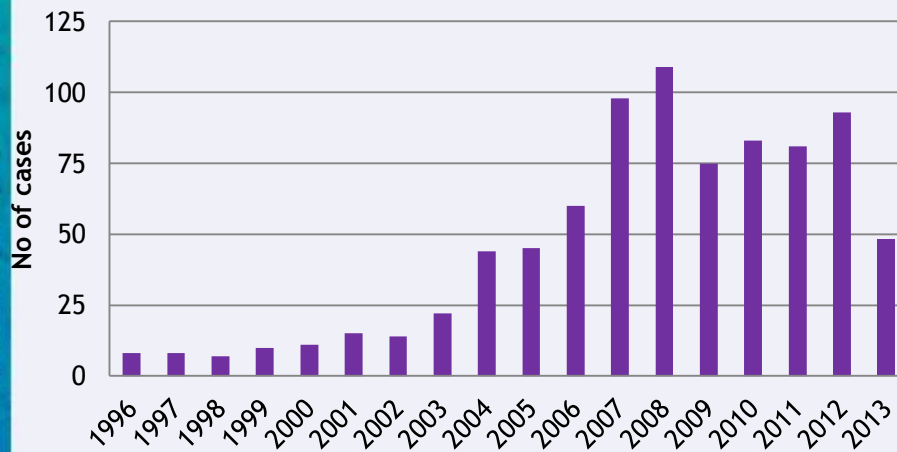
## PD SAV3 1996-2013



## PD SAV2 1996-2013

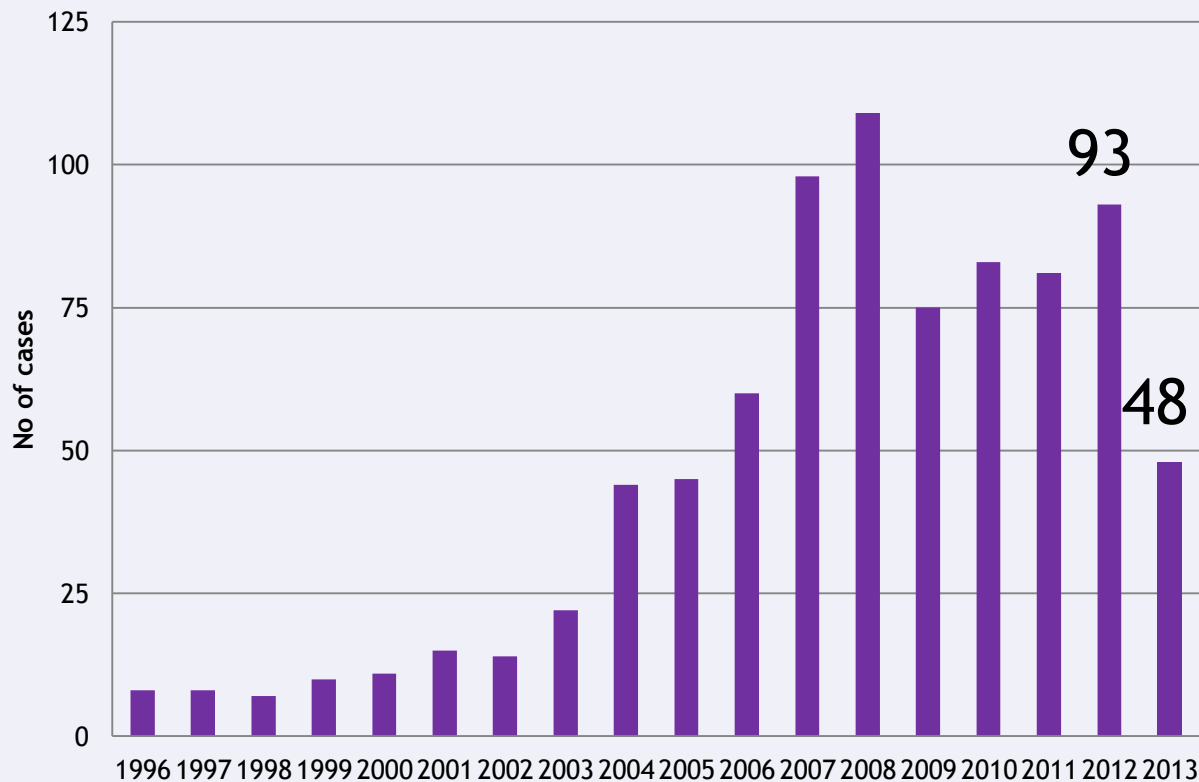


## PD SAV3 1996-2013



# The PD SAV3 epidemic

## PD SAV3 1996-2013

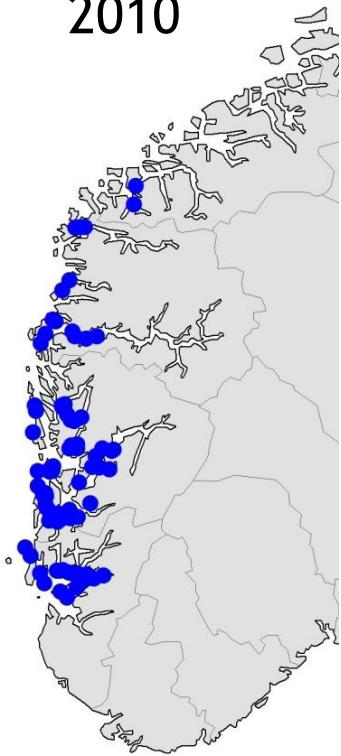


New SAV3 cases reduced by nearly 50 %

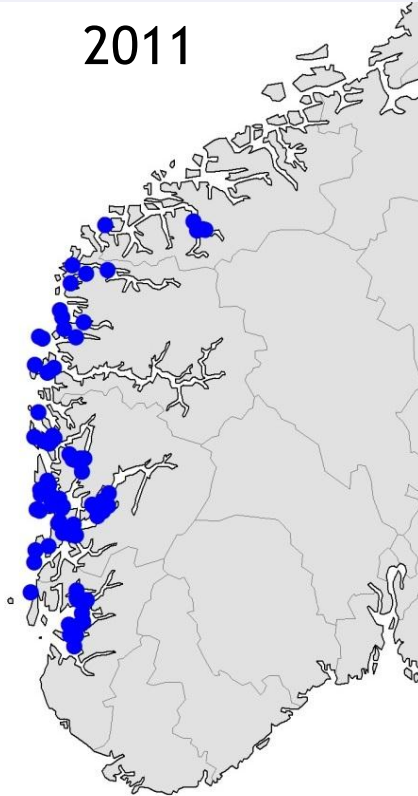


# West Coast cont.

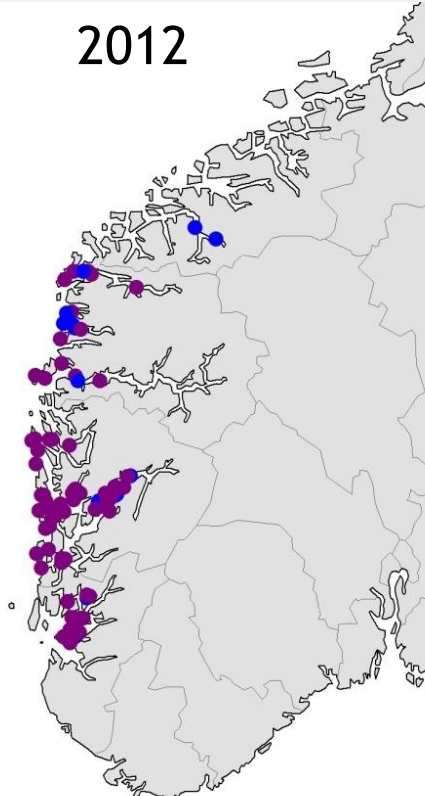
2010



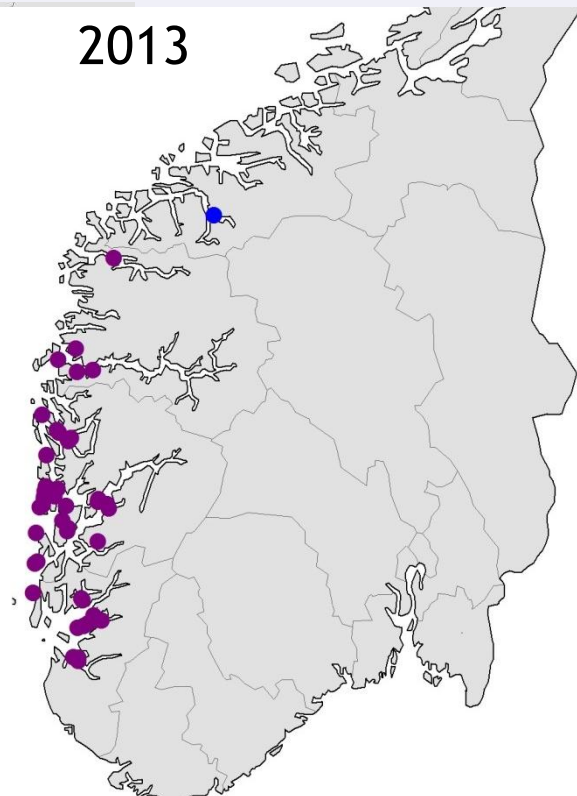
2011



2012

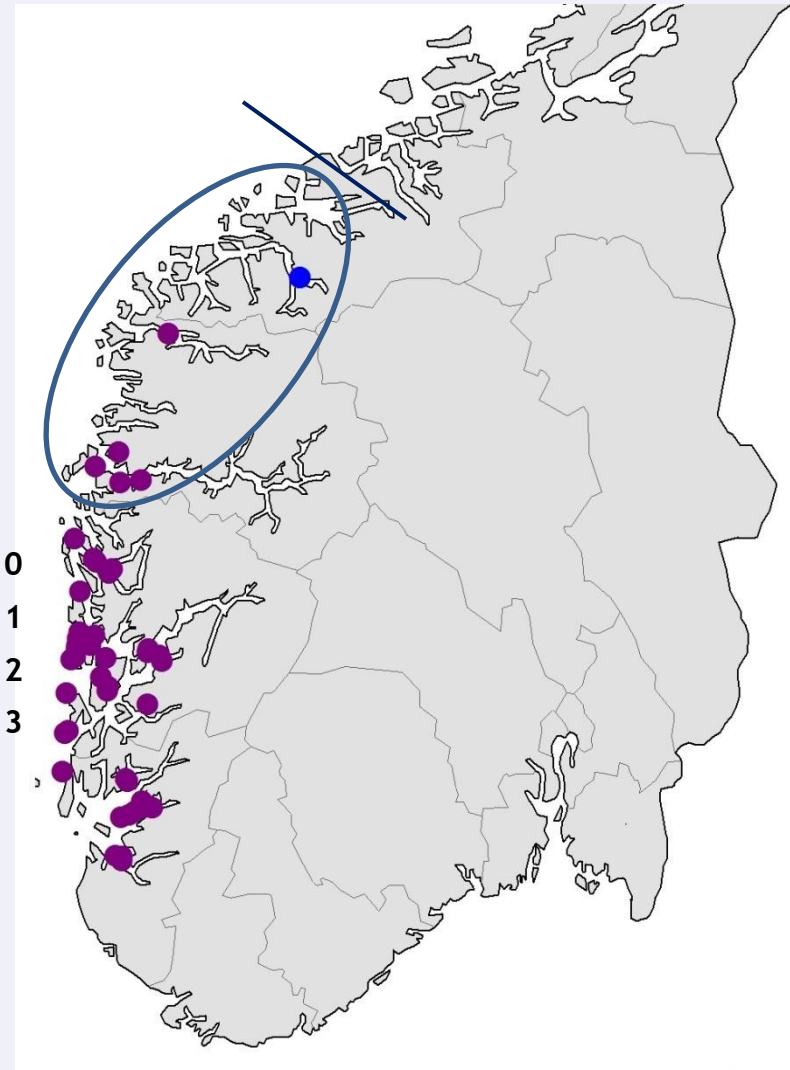
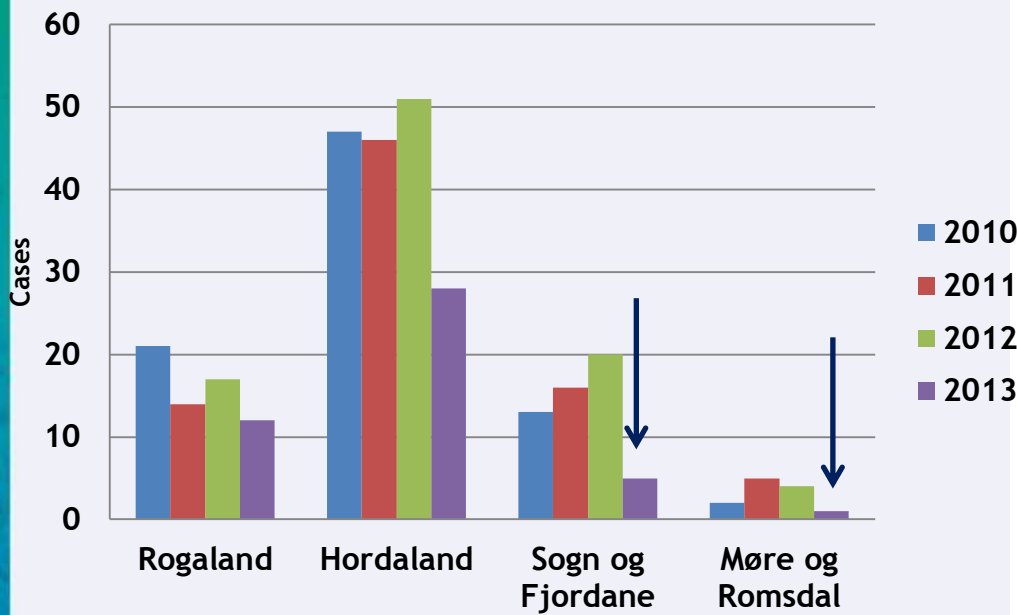


2013



# West Coast - cont.

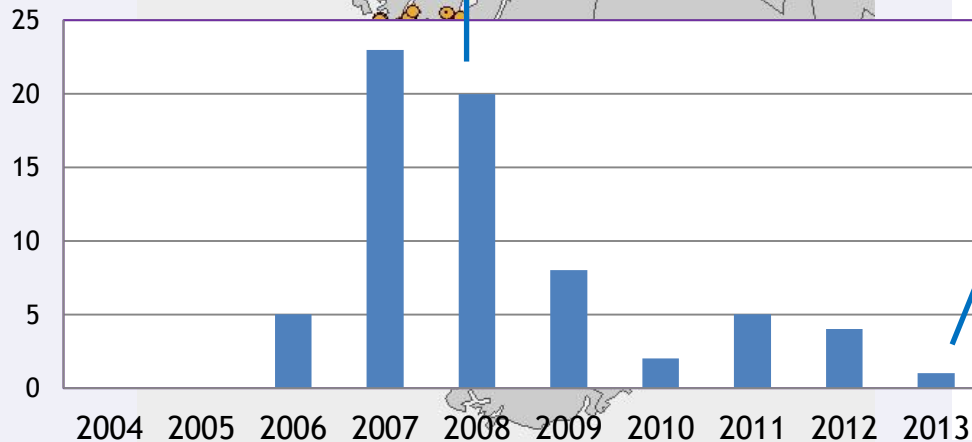
PD SAV3 cases per county  
2010-2013



# A successful SAV3-story

2008

Møre og Romsdal



2013

Soon PD-free?

# Soon PD free?

Tendency the last years:

- Fewer new clinical cases and
- Outbreaks in **older fish** (>12 months)



- Slaughter of fish in diseased cages
- Fewer runts



Reduced losses

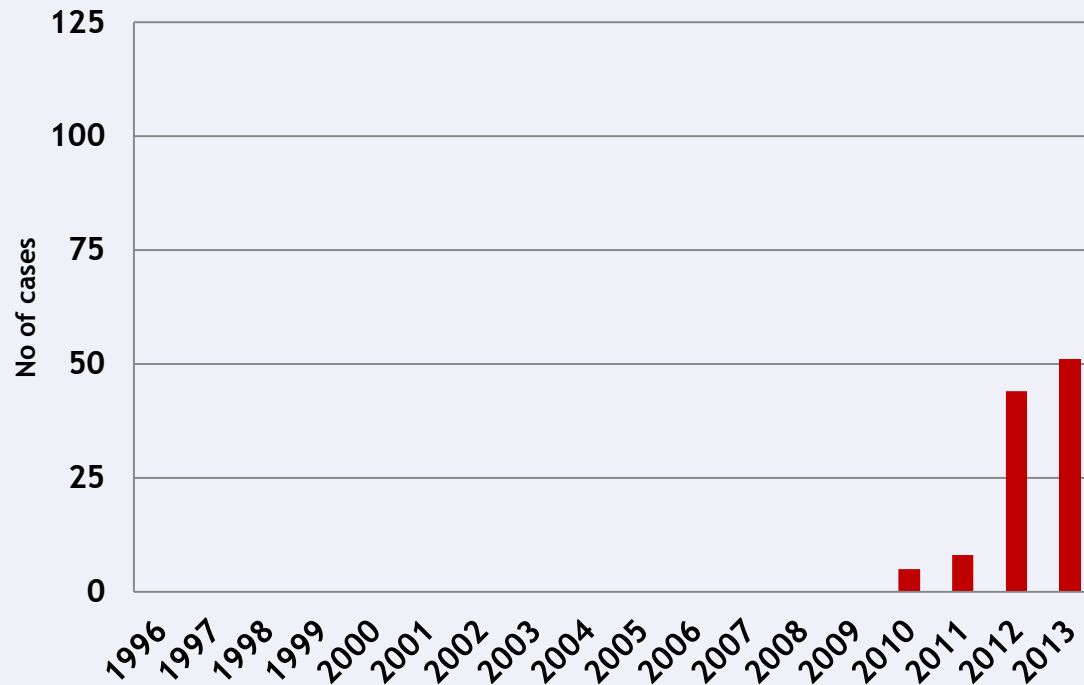
# Soon PD free? -cont.

May be due to the focus on

- Better sites / Better smolt quality
- Vaccination
- Transport
  - Separate boats for smolts and fish for slaughter
  - Restrictions on transport routes
  - Disinfection of well boats, closed wells, treatment of water
- Firebreaks
- Smolts are put into sites in fallowed areas
- Lowered densities of fish
- Dead fish removed daily
- Avoid stress

# The marine SAV2 PD epidemic

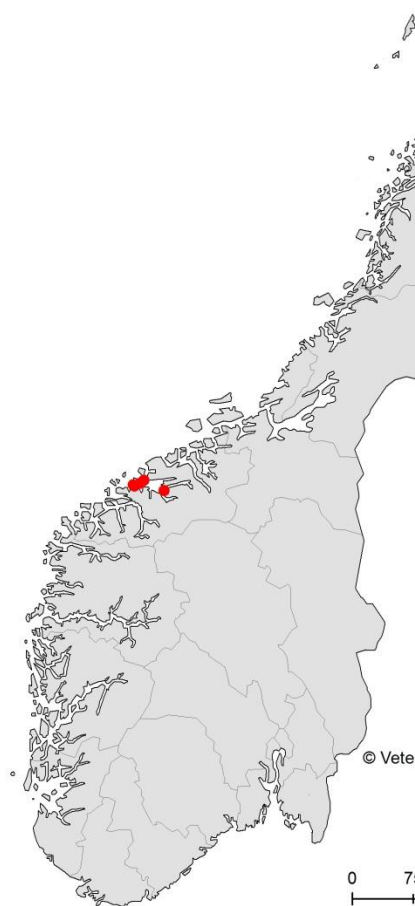
PD SAV2 1996-2013



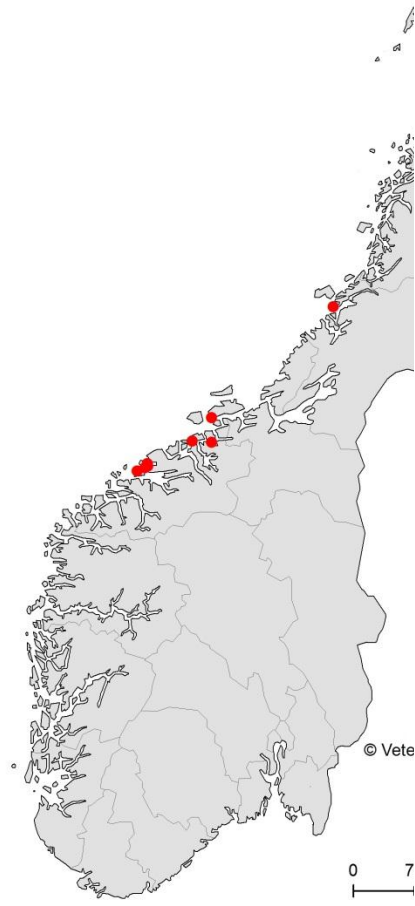
About 100 sites  
infected  
by SAV2 in  
two years



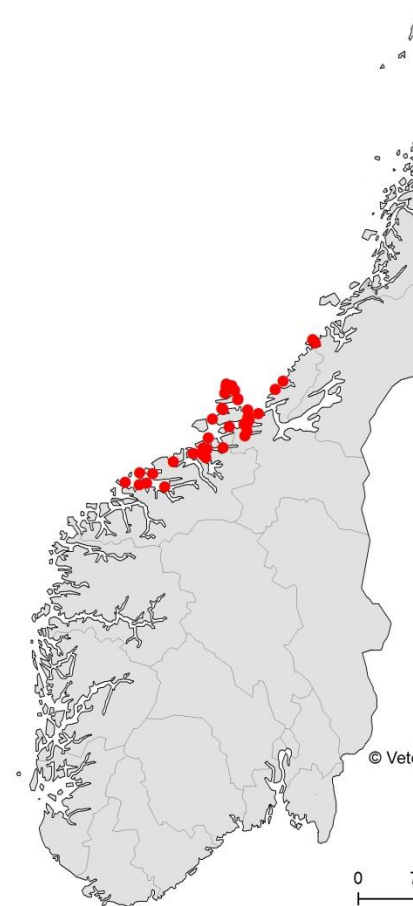
2010



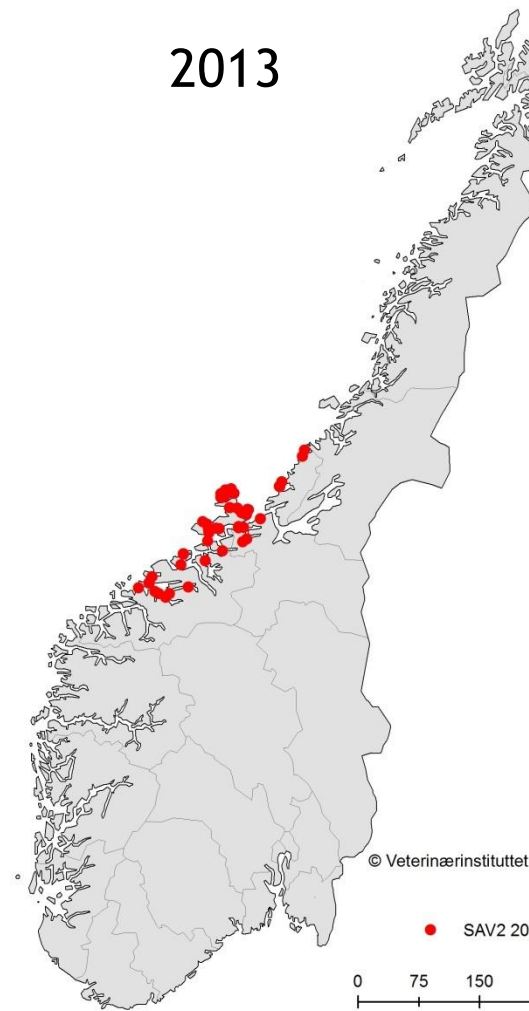
2011



2012



2013

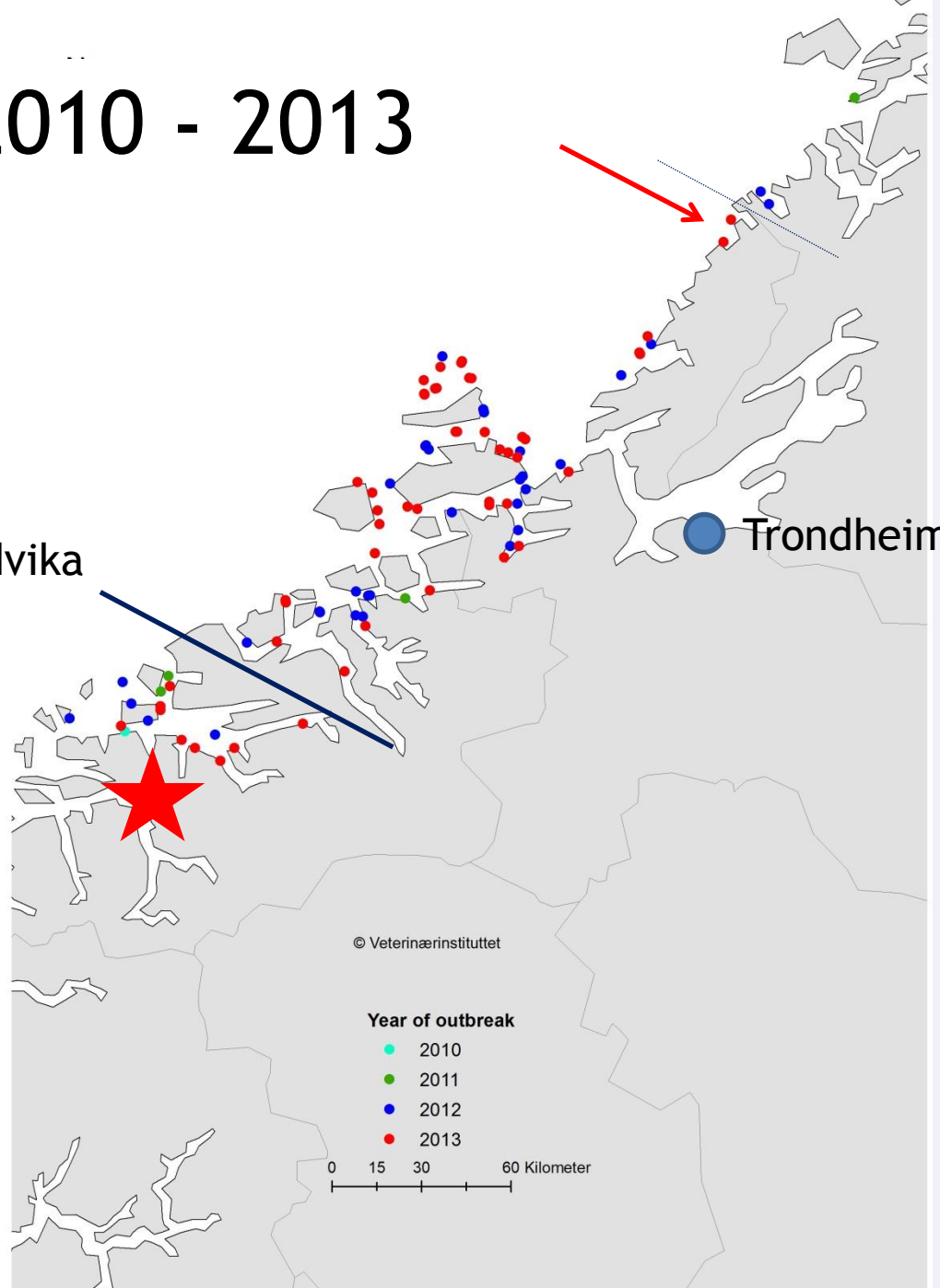




# SAV2 2010 - 2013

Hustadvika

Trondheim





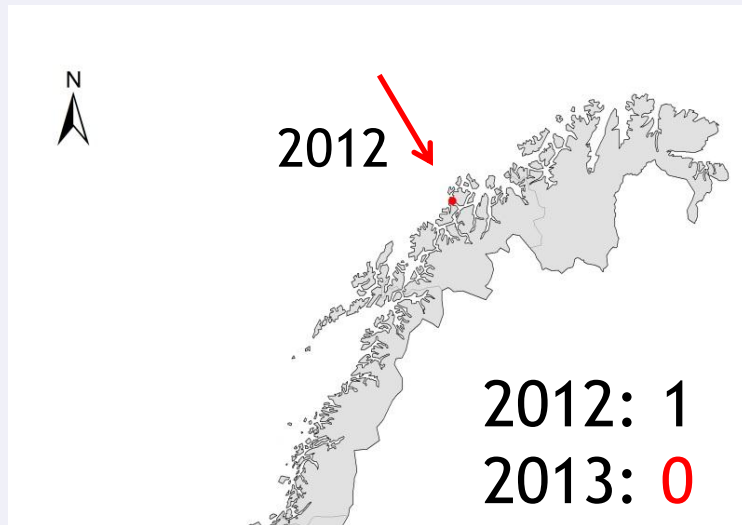
# SAV2

- Virus seems to spread very efficiently
- Most new cases in 2013 in smolts, Spring-13
- Most fish vaccinated
- Often concurrent diseases: Most often HSML, also CMS
- Clinical SAV2-PD in same population 4-6 weeks
- SAV2 positive fish in the same population for 6-8 months

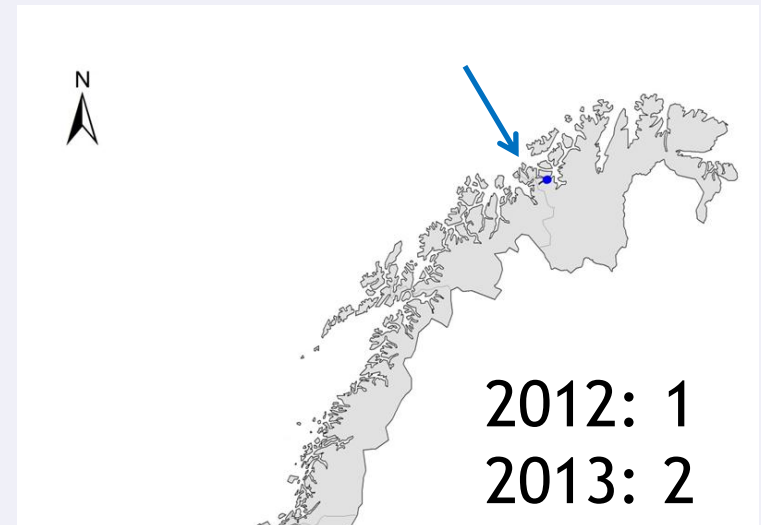


# PD in the North

SAV2



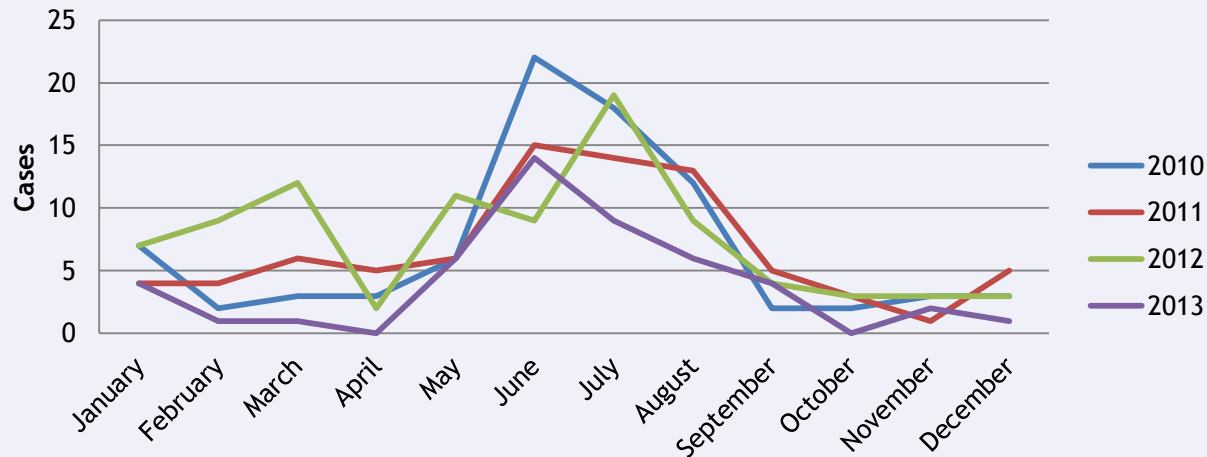
SAV3



Imported from the south

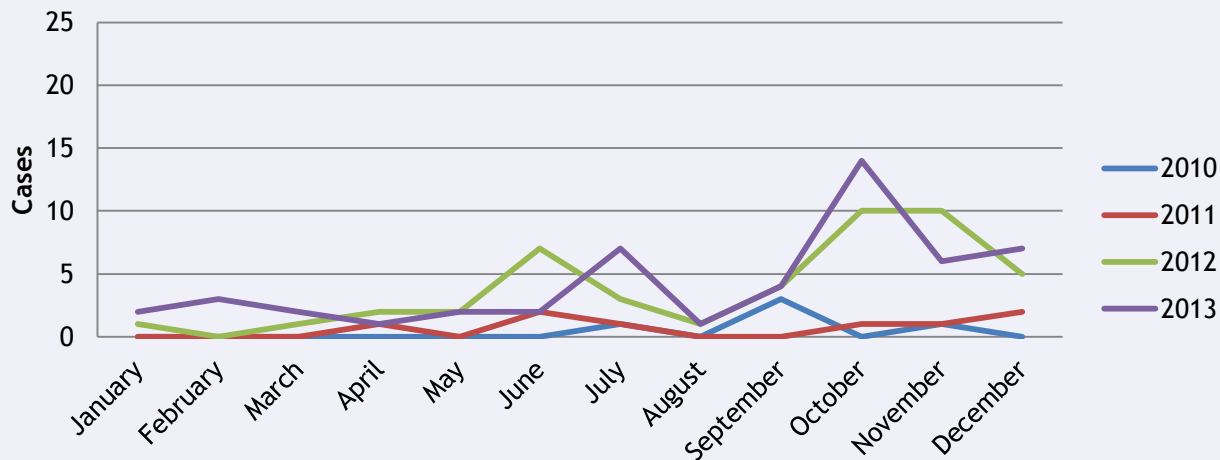
# Monthly incidence

## SAV3 monthly incidence 2010-2013



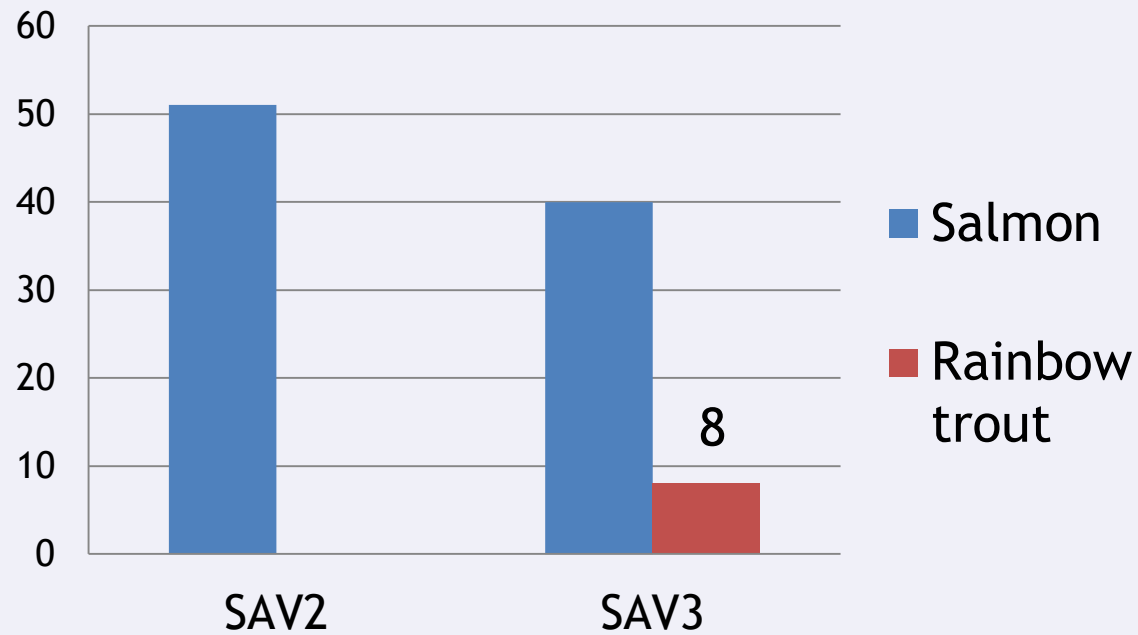
Most cases of SAV3 in fish from the year before

## SAV2 monthly incidence 2010-2013



Most SAV2 cases in 2013 in young fish (Spring-13)

# Species affected in 2013



# Mortalities / loss

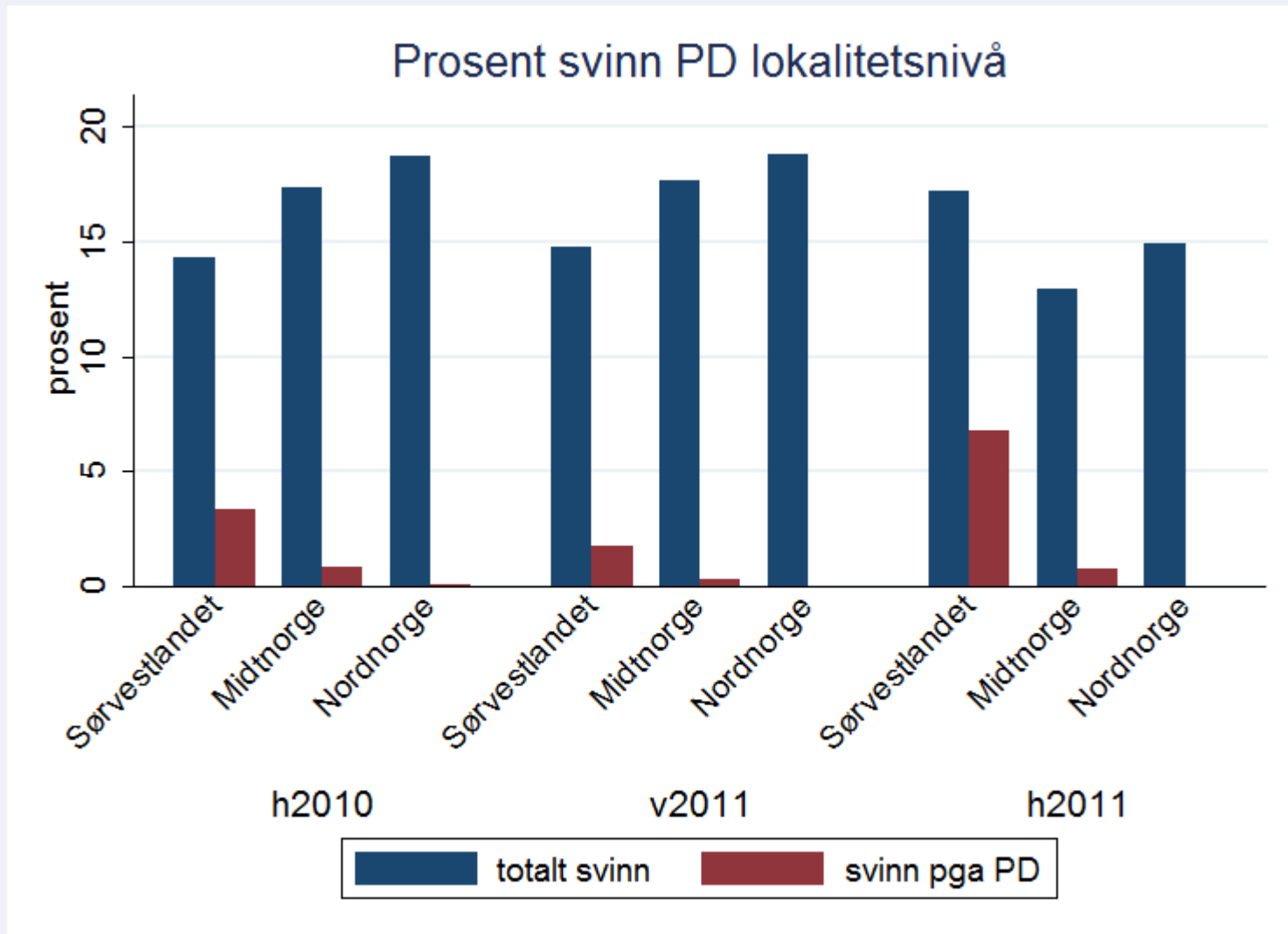
## SAV3

- Mortalities lower than previous years, but some farms with high mortalities (30 %) and many runts
- Mortalities 7-10 %, but more often 3-6 %
- Reduced quality at slaughter

## SAV2

- In general low mortalities, higher when concurrent diseases
- Reduced quality at slaughter

# Loss due to PD compared to loss in general at sea



# Summary

- Norway has two separate PD epidemics which do not overlap geographically
- Efforts to control PD SAV3 successful
- Number of new cases of PD SAV3 reduced by nearly 50 % since 2012
- Promising possibilities to limit the occurrence of PD SAV3 to the two southern counties of the SAV3 zone
- The spread of marine SAV2 within the SAV2 zone is continuing, about 100 sites infected in two years
- SAV2 is spreading south of the SAV2 zone and could be a threat to the industry on the West Coast
- Outbreaks through the whole year for both viruses, but SAV3 most often May-August and SAV2 in the Autumn
- SAV2 seems to affect younger fish than SAV3

Thanks to

- Fish health services and
- Representatives of the Food Safety Authorities at District Offices

for providing information about the PD situation







13 PD  
TriNation  
meetings  
and PD is  
still around!

Thank you!