Significance of marine SAV2 for Norwegian Fish Farming Industry

Virus characterisation, pathogenesis, and distribution

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Project details:

- One-year project
- Financed by FHF (FHF 900799)
- Project Partners:
  - Norwegian Veterinary Institute
    - Sections of Pathology, Epidemiology, Virology
  - Patogen AS (WP3)
  - MSD Norway (WP2)
  - Marine Harvest (WP2)
- Cooperation with AFBI (Dr. E. Fringuelli) on WP1

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Background:

- In Norway, PD was first described in the 1980s, and the causative agent was later characterised as Salmonid alphavirus subtype 3 (SAV3)
- The disease has over the years spread slowly to most of the Norwegian western coast, and has caused substantial losses to the fish farming industry.
- In the spring of 2011, the first case of PD caused by another subtype, marine SAV2, was discovered.
- The new variant has spread rapidly into an area previously free of PD.

Background (2):

- On-going process for revision of the regulatory zone set by the Norwegian Food Safety Authorities for the control and eradication of pancreas disease in aquaculture, where Hustadvika in Romsdal county has been considered a geographical barrier for the spread of PD in Norway.
- A revised plan for the control of PD has been proposed, where PD caused by the new subtype is considered a separate epidemic from the SAV3-epidemic, opening for a different control strategy.
- This new situation, calls for more knowledge on the significance of marine SAV2 in Norway.

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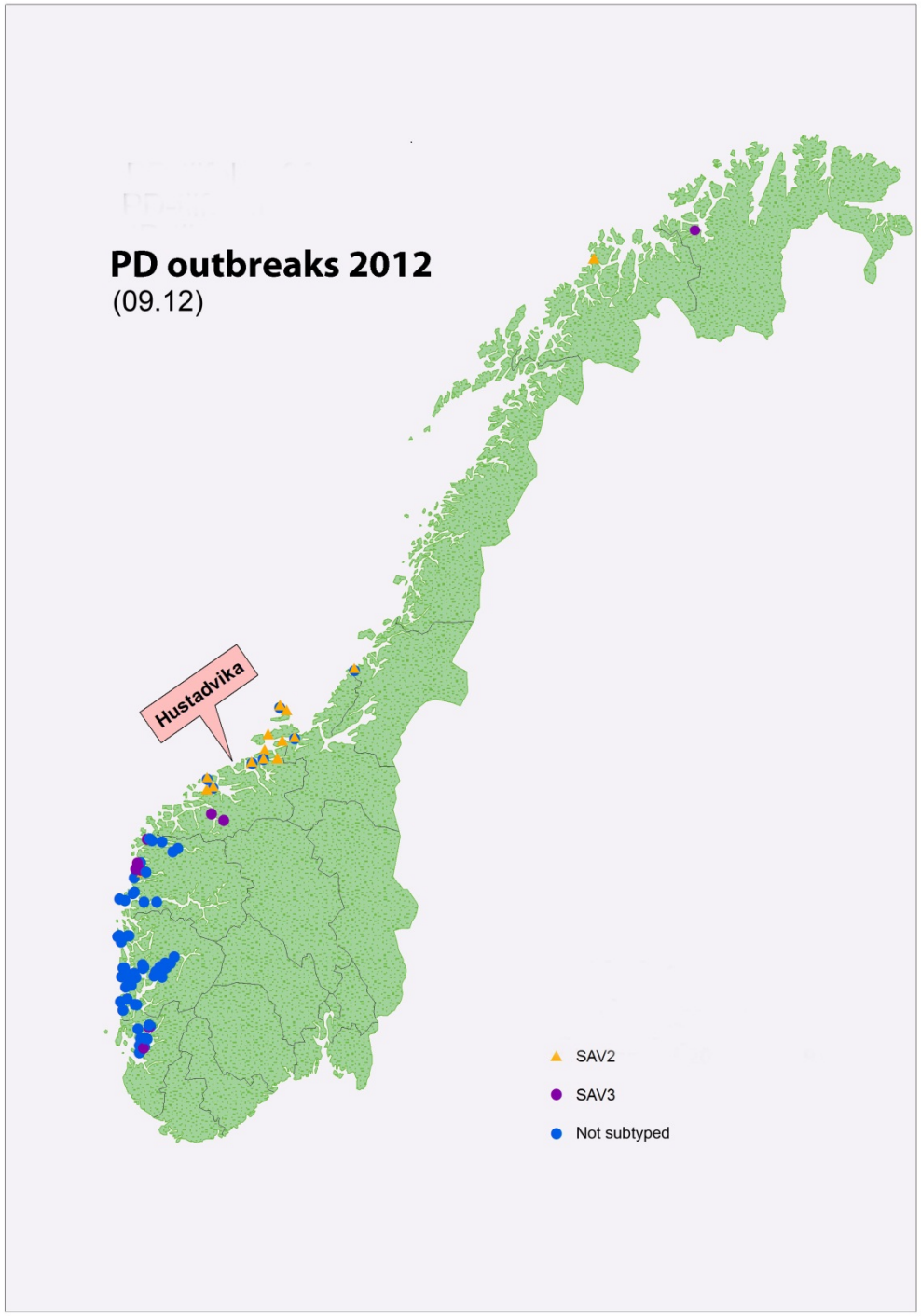

WPs:

- WP1: Virus characterisation
- WP2: Challenge trials
- WP3: Geographical distribution/reservoir
- WP4: Mortality and risk factors

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WP1:Virus characterisation

- Full-length sequencing of a selection of Norwegian marine SAV2 isolates
- Phylogenetic studies comparing Norwegian and Scottish SAV2-isolates
- Defining the genetic relationship between the Norwegian isolates, and also the relationship between the Norwegian and the Scottish isolates

WP2:Challenge trials

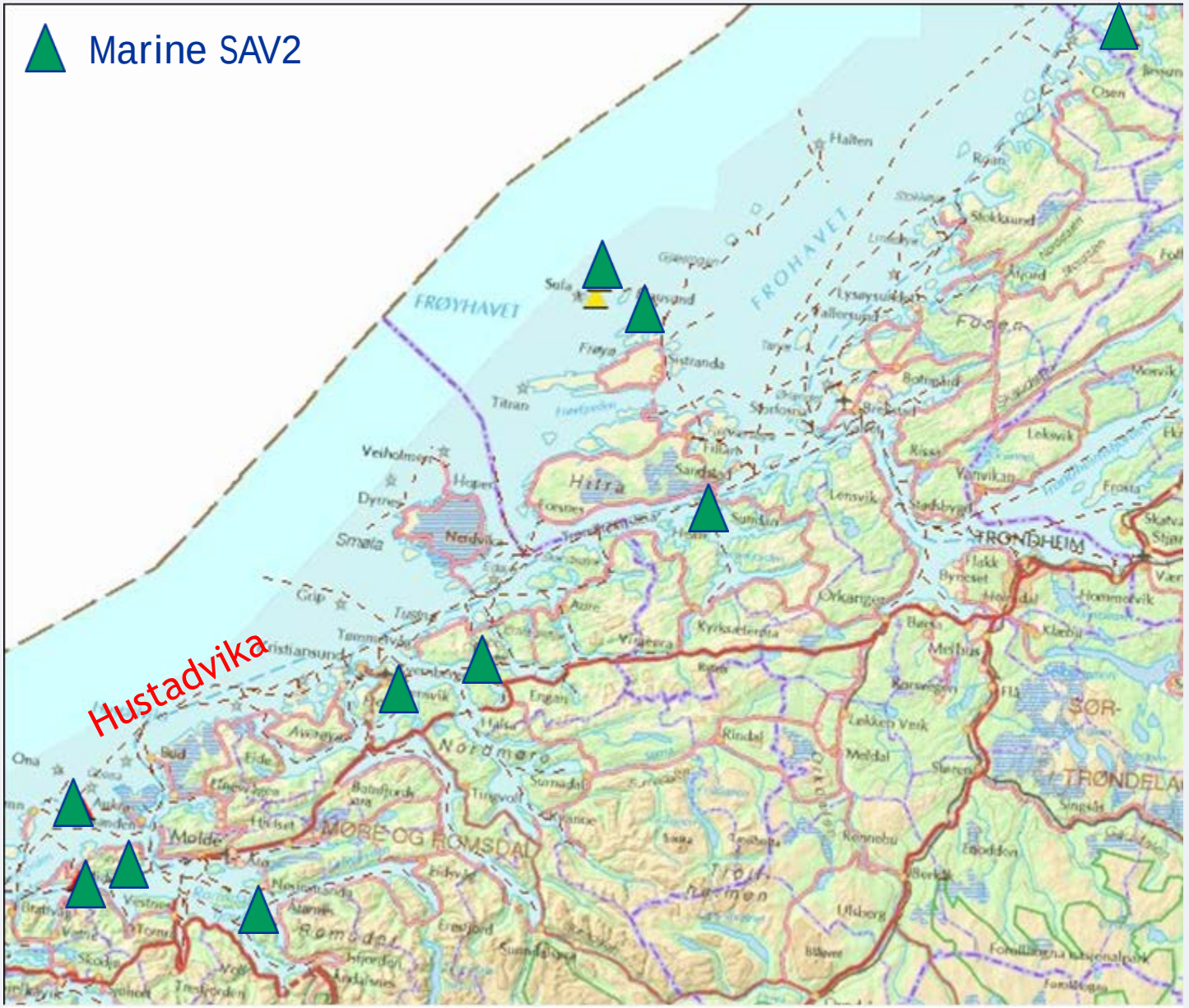
- **WP2a: Differences in virulence between SAV3 and marine SAV2**
  - Selected isolates of SAV3 and marine SAV2
  - Virus distribution, pathology, Ab production will be compared
  - Performed at VESO Vikan

- **WP2b: Wrasse as a vector for marine SAV2?**
  - Marine SAV2-virus has been detected in low amounts in wrasse
  - Supply of wrasse is limited, and is moved between sites
  - Can wrasse serve as an active vector for marine SAV2?

WP3: Geographical distribution/reservoir

- Screening of already collected material from PD outbreaks for the marine SAV2 subtype
- Subtyping of the virus variant for all PD outbreaks from the County of Møre og Romsdal and to the North.
- Random subtyping of a selection of new PD outbreaks within the endemic area for SAV3
- Directed subtyping in areas exposed for marine SAV2

PD 2012 Romsdal, Nordmøre, Trøndelag:



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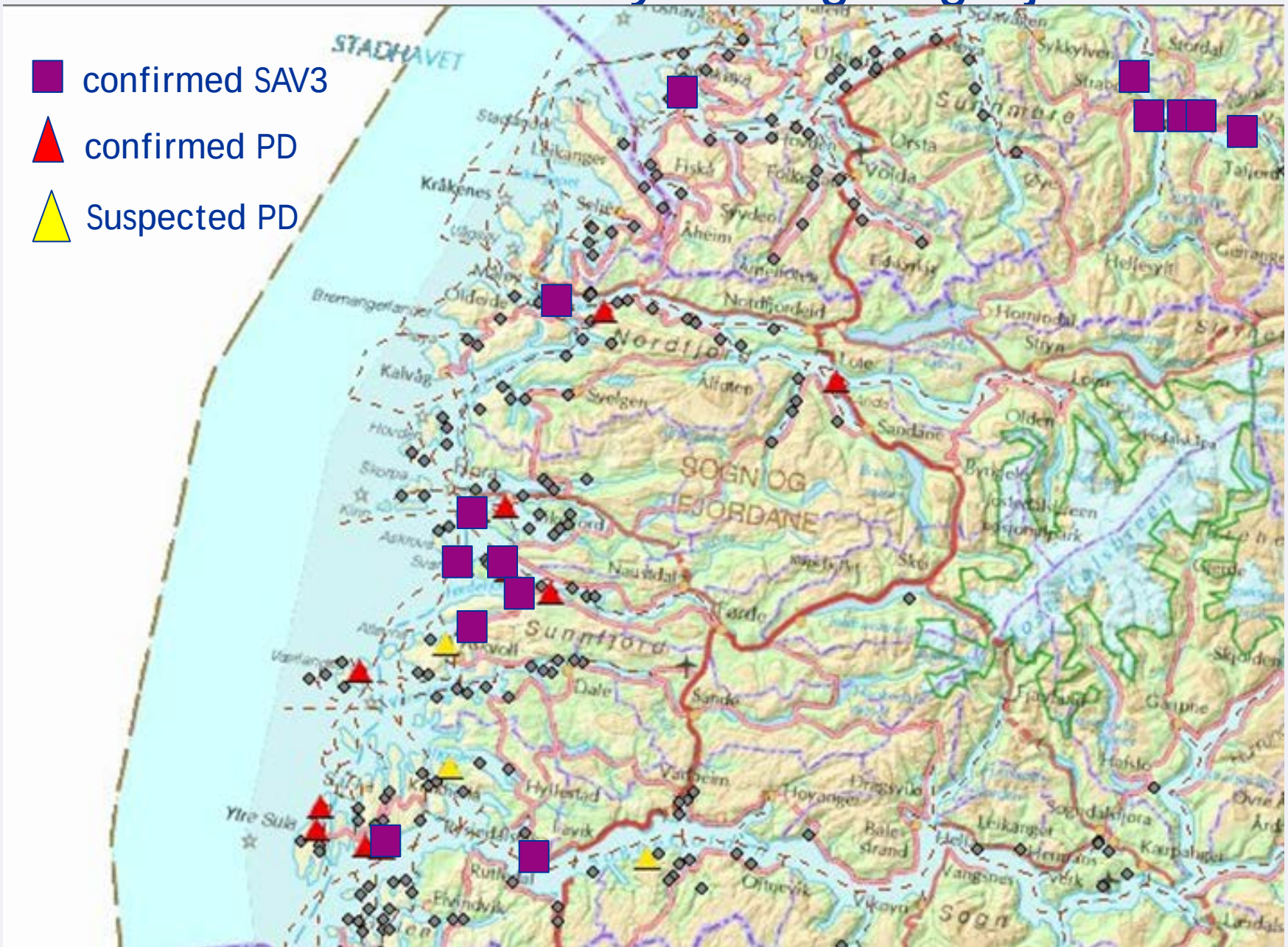
PD Outbreaks County of Sogn og Fjordane:



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WP4: Mortality and risk factors

- Descriptive study of the losses in connection to outbreaks of PD caused by marine SAV2 compared to SAV3
- A questionnaire will be sent out to all sites with confirmed PD caused by marine SAV2 and comparable sites with SAV3
- Similarities and differences between marine SAV2 and SAV3 sites will be identified

Summary:

- During the project period the genetic relationship between Norwegian and Scottish marine SAV2-isolates, differences in pathogenesis between SAV3 and marine SAV2, distribution of the two virus subtypes, and economic impact of marine SAV2 compared to SAV3 will be studied
- Together, the four WPs will add important knowledge on the impact of marine SAV2 for the Norwegian fish farming industry