

Wind energy and wildlife impacts – lessons learned from Smøla

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The CWW2011 sessions

- ▶ **EIAs and site selection**
- ▶ **Pre- and post-construction monitoring**
- ▶ **Tools and technology**
- ▶ **Fatality studies**
- ▶ **Species-specific vulnerabilities and population effects**
- ▶ **Behavioural and spatial responses**
- ▶ **Collision risk modelling**
- ▶ **Methods and statistics**
- ▶ **Cumulative effects**
- ▶ **Mitigation and compensation**
- ▶ **Future challenges: offshore and onshore**

SSS-S

(**S**ite-, **S**pecies-, **S**easonal-**S**pecific challenges/problems)

A site-specific challenge; should be met by high quality EIA, pre- and post-construction monitoring



A bird species-specific problem

Aerodynamics



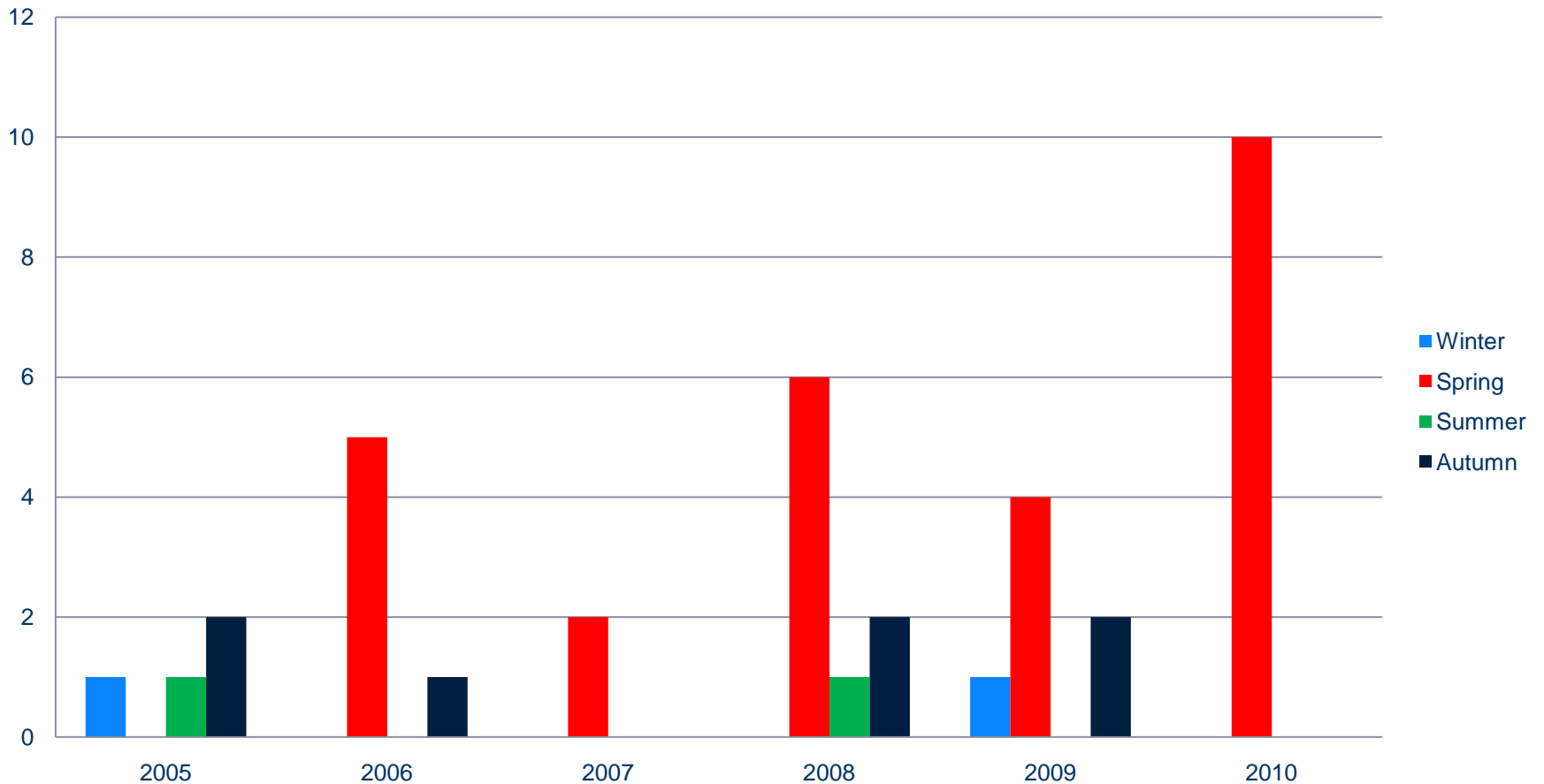
Vision



Behaviour



White-tailed eagle fatalities on Smøla by season; a seasonal specific challenge/phenomenon



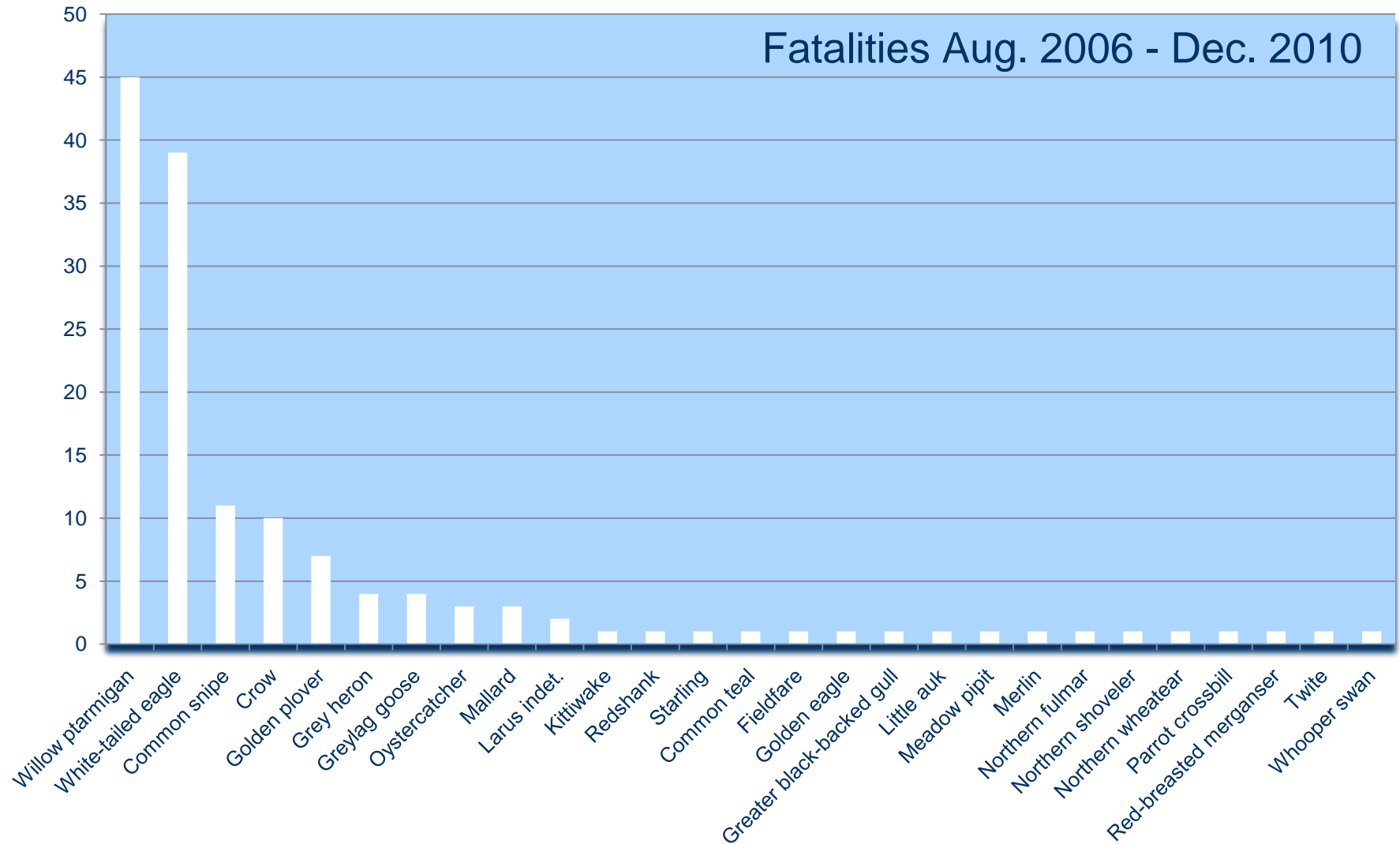
Tools and technology



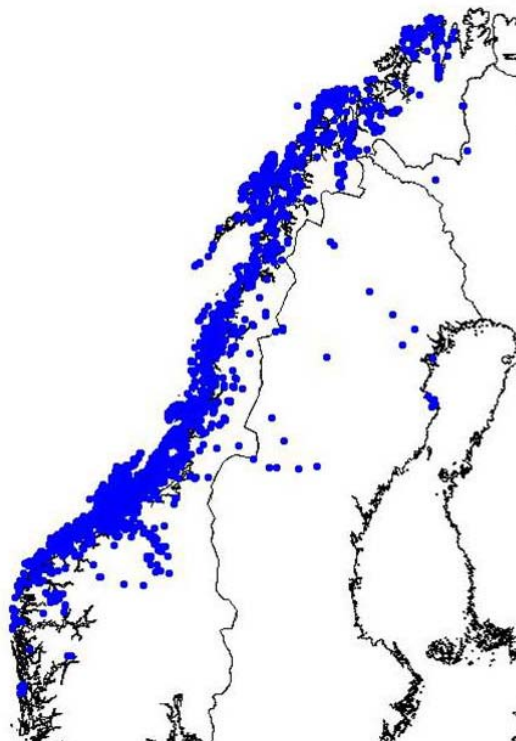
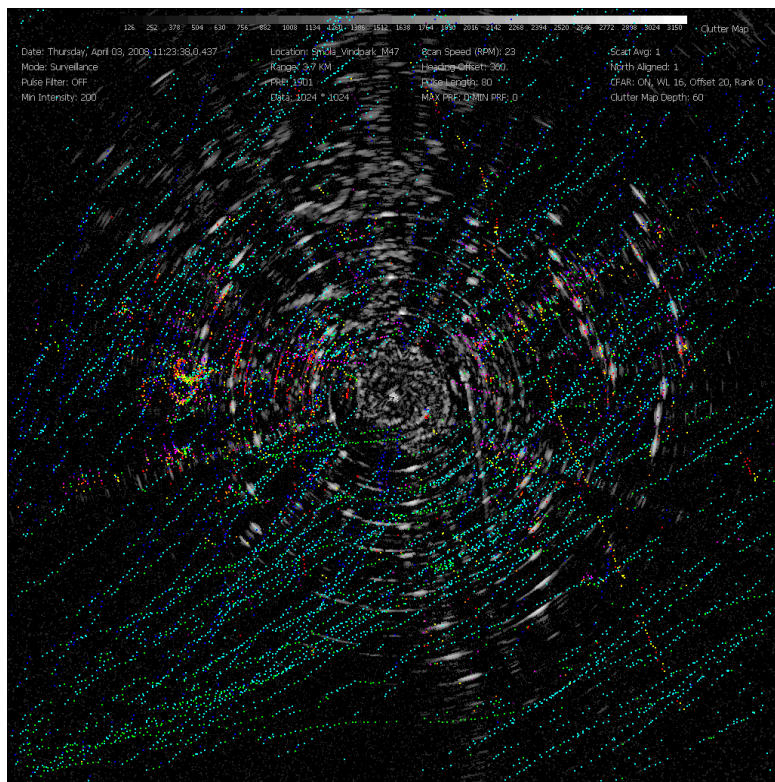
Species-specific vulnerabilities and population effects



The Smøla bird-fatality pattern



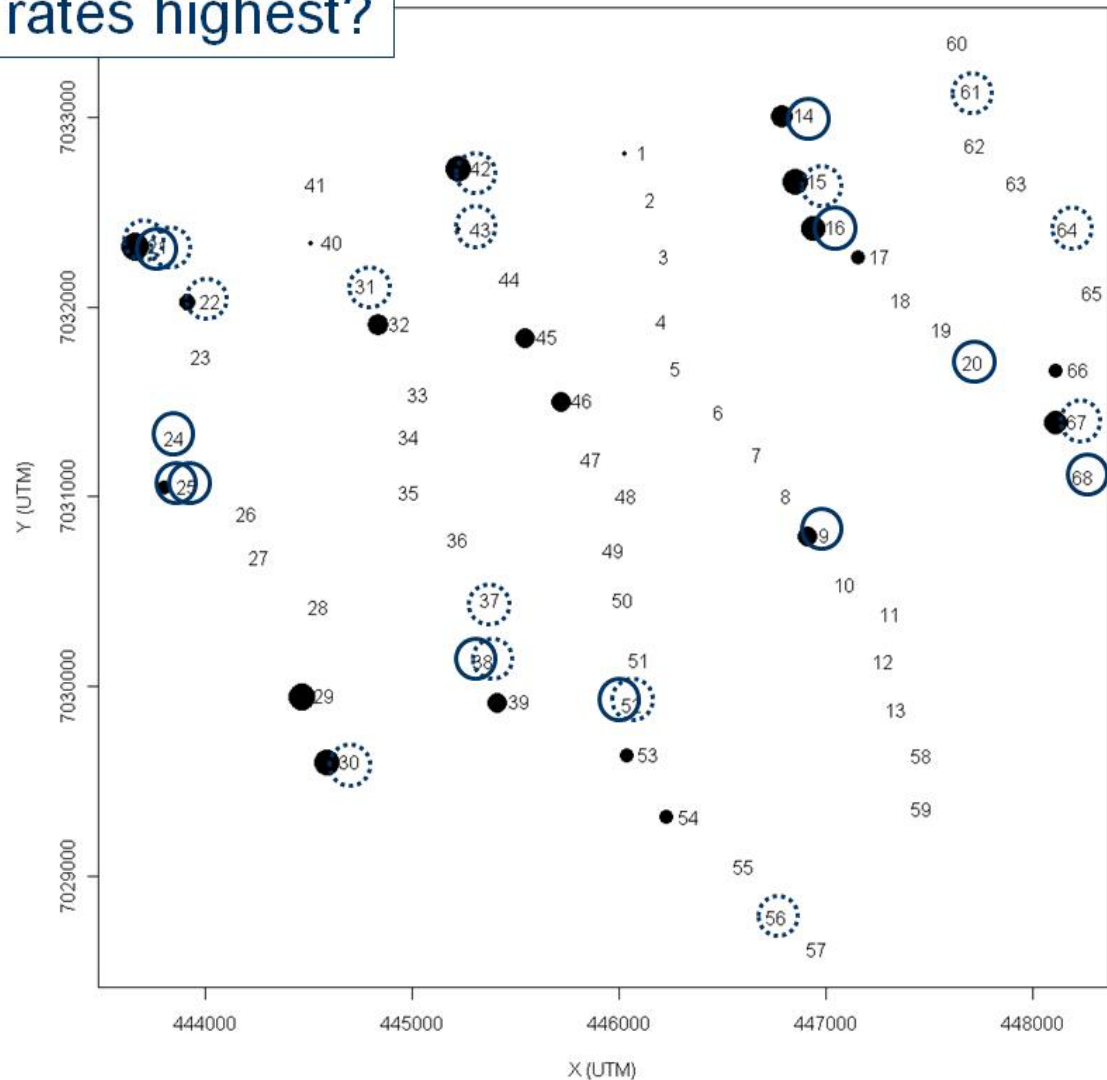
How to identify and monitor behavioural and spatial responses and risks (a matter of scale) ?



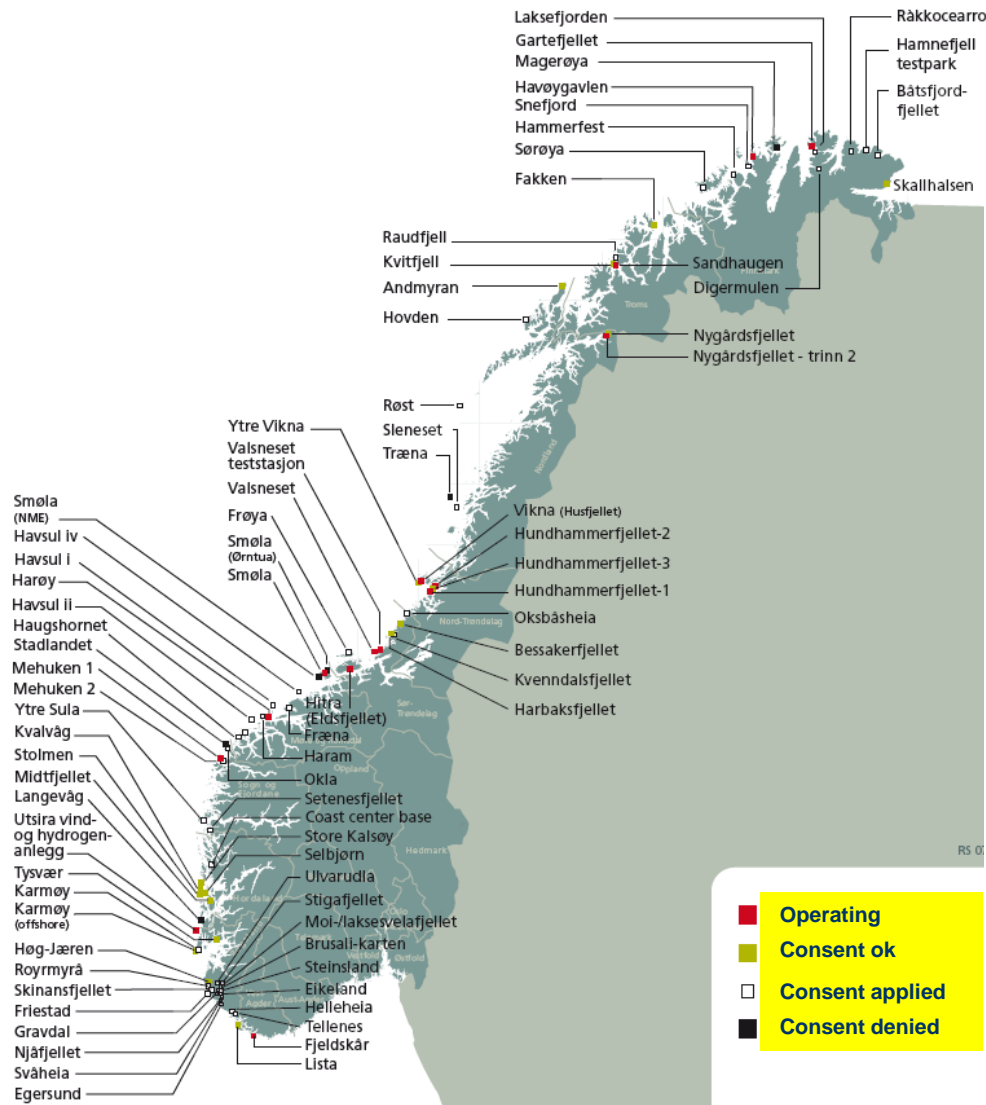
Collision risk modelling

Where are the risk rates highest?

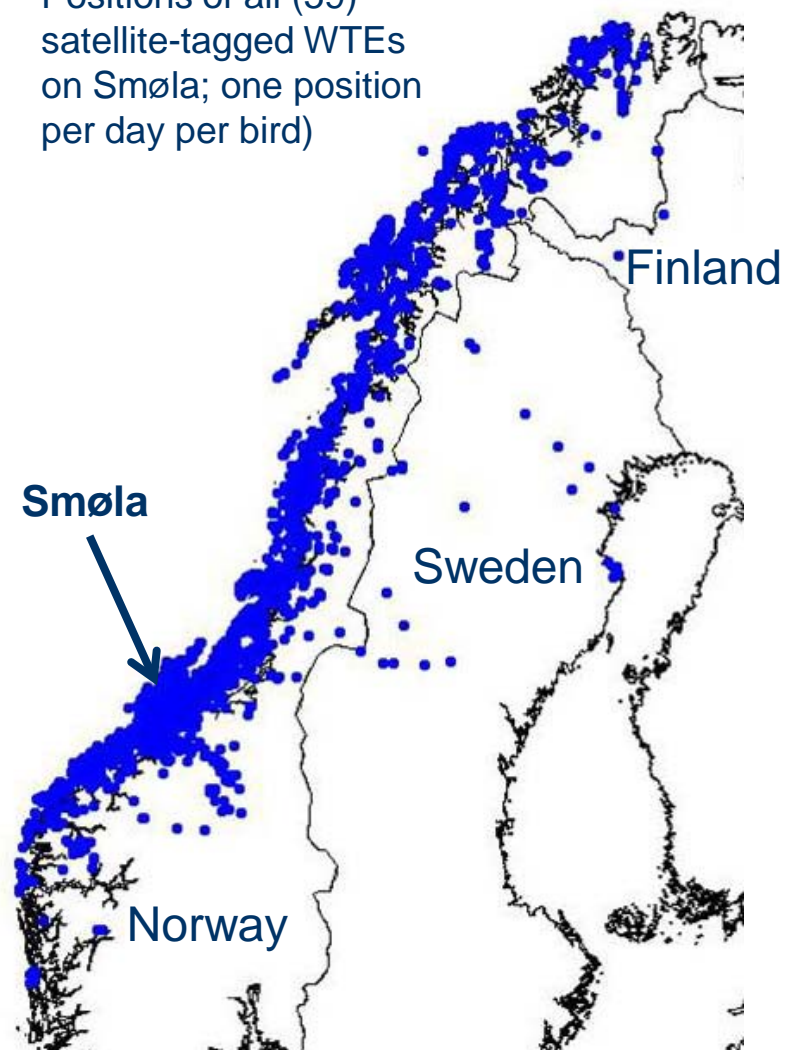
- subadults (1K-6K)
- adults (7K+)



Wind power in Norway - cumulative impacts?



Positions of all (59) satellite-tagged WTEs on Smøla; one position per day per bird)



Source: www.nve.no

Important lessons learned

- ▶ Use the best accessible tools and sufficient resources for effective data sampling and high quality EIA/pre-construction studies to predict unfavourable power-plant siting
 - Identify bird migrating routes (local, regional, national – radar data)
 - Identify bird species, their seasonal occurrence and key areas (breeding, feeding, wintering, night roosts etc.)
- ▶ Assess biomechanics, vision and life history strategies of target species to identify species-specific vulnerability to man-made obstacles. *Mitigation must be based on firm knowledge of the target species*
 - If vision is a problem – increase turbine/rotor-blade visibility?
 - If vision and biomechanics are problems (e.g. ptarmigan) – no cure – or audio scaring devices?
- ▶ Compensation – identify and remove other mortality sources – e.g. power lines and electrocuting traps

Concluding remarks

The Smøla fallacy has two main components:

- ▶ lack of solid data for a species-specific risk assessment and insight into the species-specific vulnerability to wind turbines
- ▶ and a poor EIA and pre-construction study

The consenting authorities are reluctant to see escalating EIA studies in connection to wind power-plant construction, making the project economy poorer than it already is. However, a main lesson learned from the Smøla case is that one should never be penny-pinching regarding the EIA and pre-construction study.