

An update on the surveillance of CWD in Norway

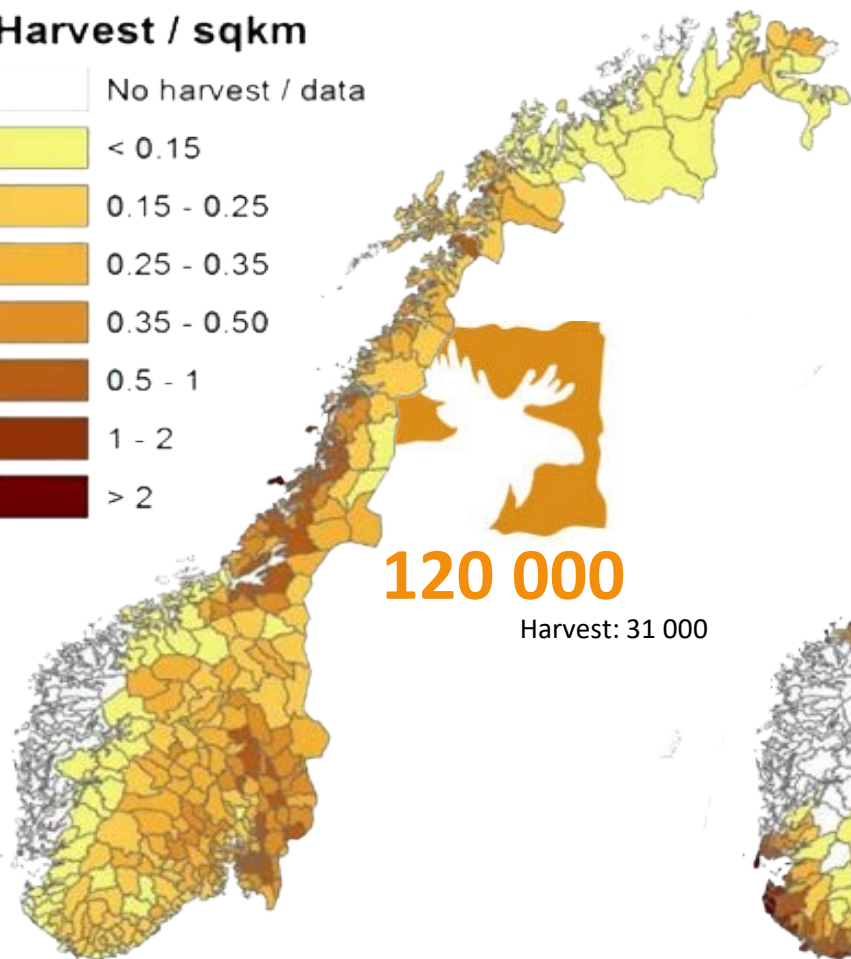
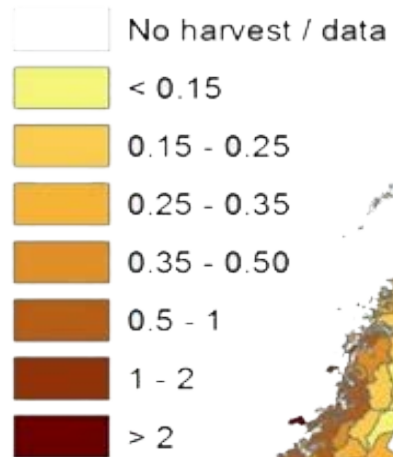
EURL-meeting, Turin, September 13th 2019
Torfinn Moldal (torfinn.moldal@vetinst.no)



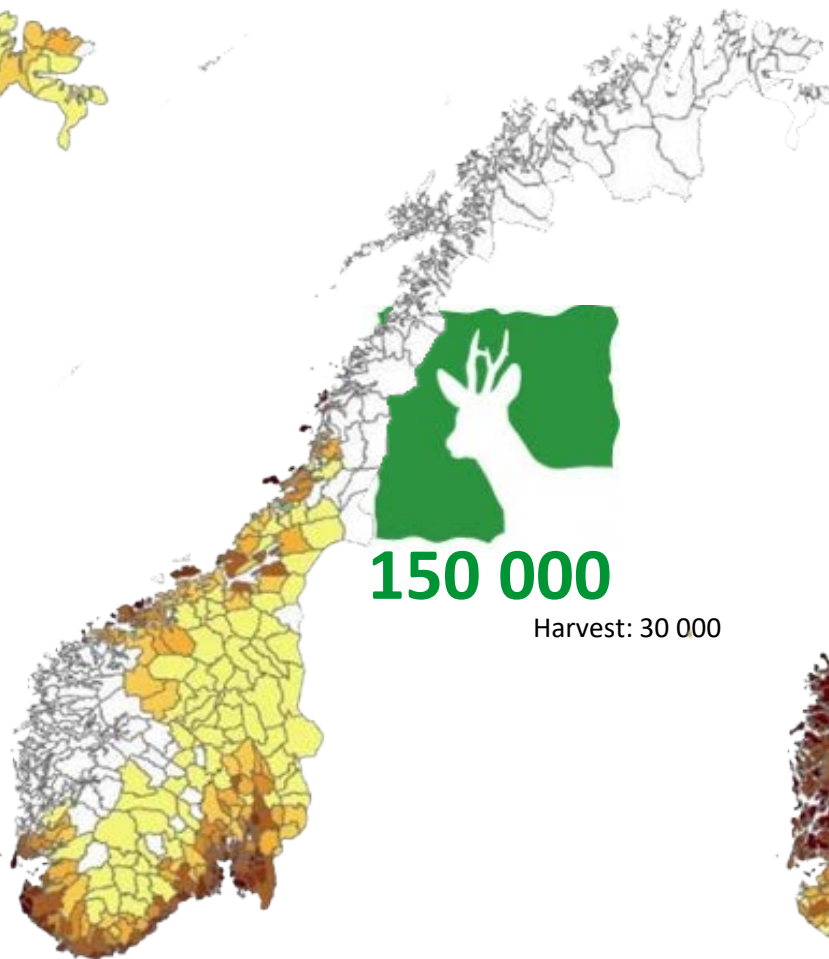
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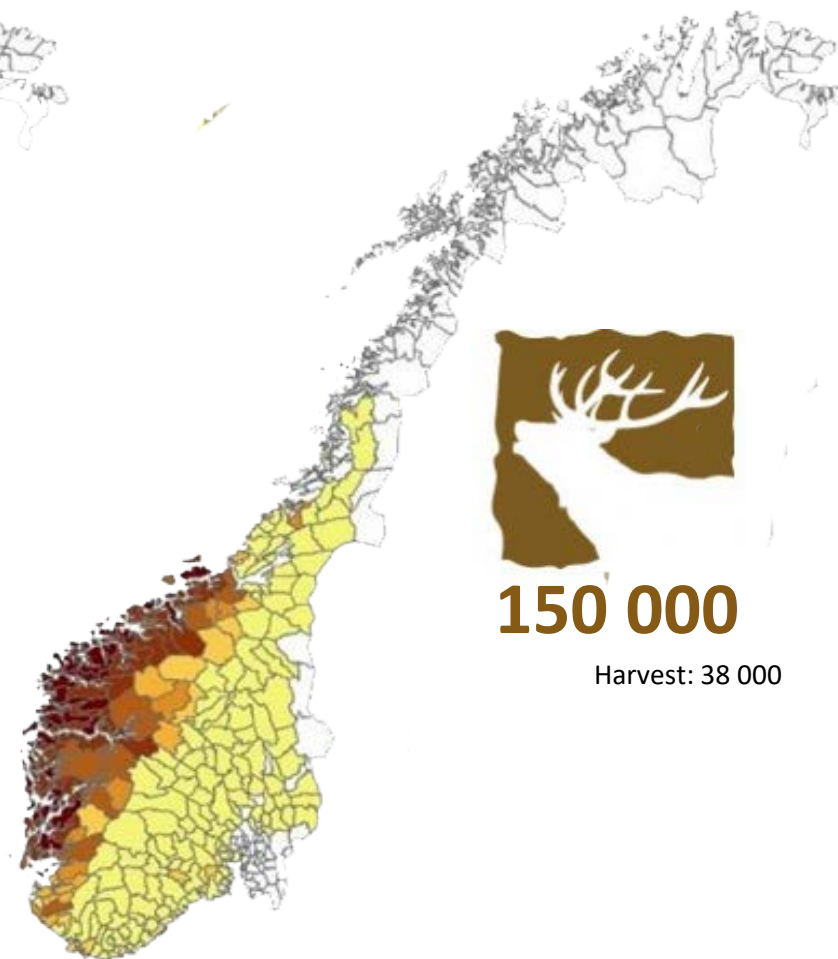
Harvest / sqkm



Moose

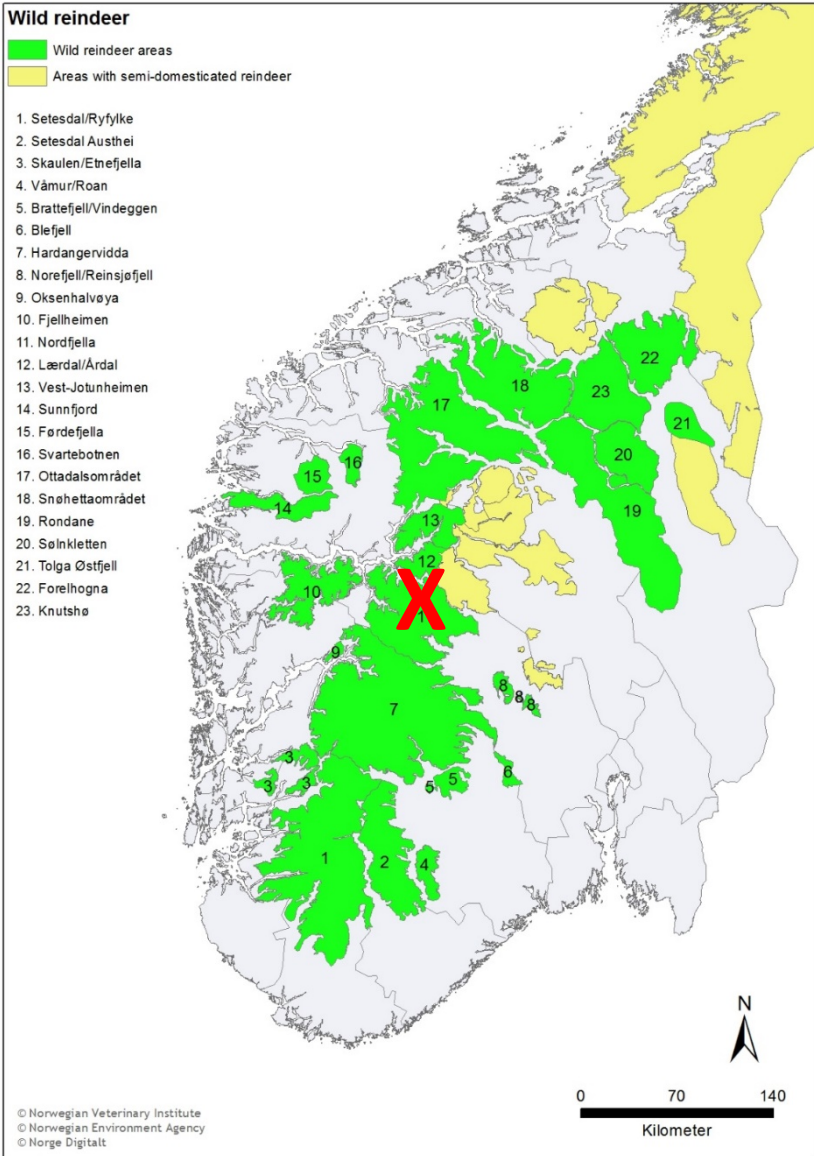


Roe deer



Red deer





Reindeer



Semi-domesticated

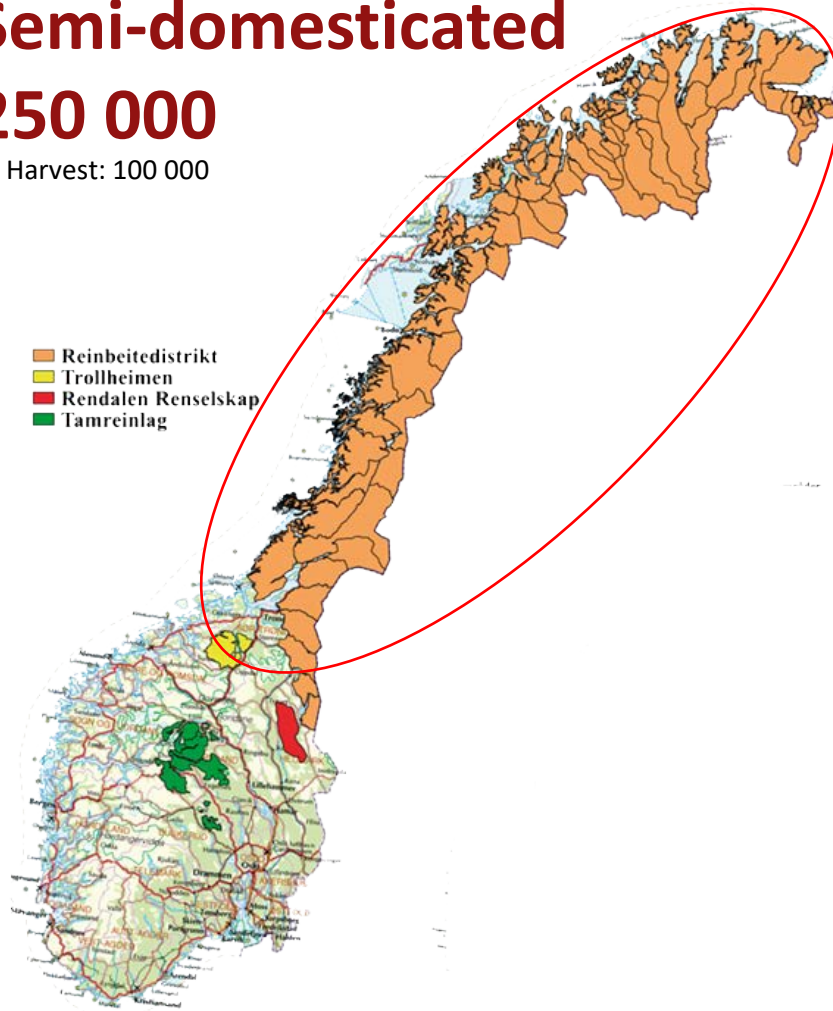
250 000

Harvest: 100 000

Wild

25 000

Harvest: 5500



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CWD in Norway

Benestad et al. *Vet Res* (2016) 47:88
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SHORT REPORT

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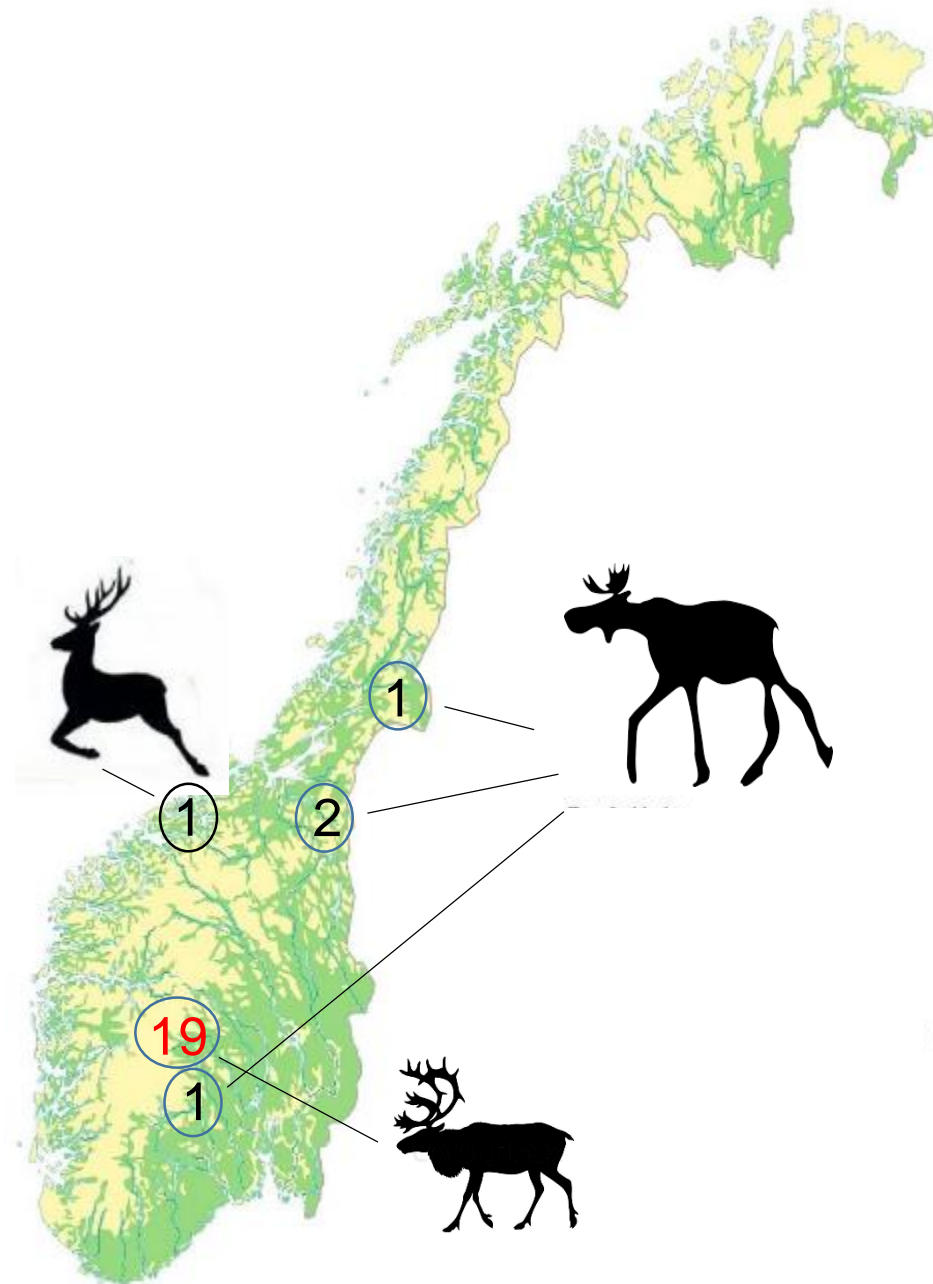


First case of chronic wasting disease in Europe in a Norwegian free-ranging reindeer

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Abstract

Chronic wasting disease (CWD) is a fatal contagious prion disease in cervids that is enzootic in some areas in North America. The disease has been found in deer, elk and moose in the USA and Canada, and in South Korea following the importation of infected animals. Here we report the first case of CWD in Europe, in a Norwegian free-ranging reindeer in Southern Norway. The origin of the disease is unknown. Until now a low number of cervids, and among them a few reindeer, have been tested for CWD in Norway. Therefore the prevalence of CWD is unknown.



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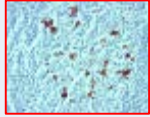

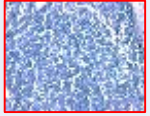
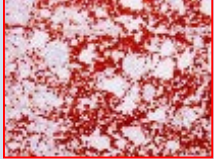
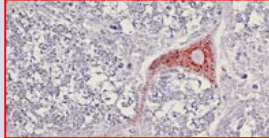

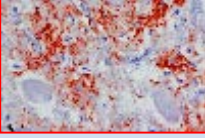
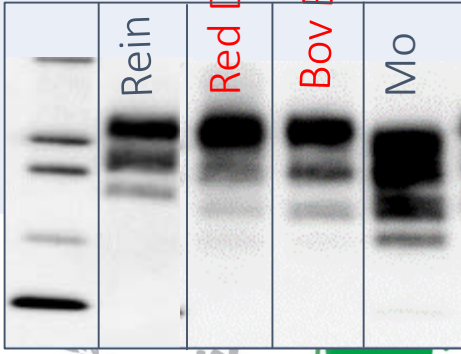




- Age 1,5 y – 8 years
- All Inn. positive
- 13/19 males (68%)
- 9/19 neg. brain (47%)



- Age 13-16 years
- Neg Inn.
- All females

	Reindeer (19)	Moose (4)	Red deer (1)
Age	Young/adult (mid age)	High	High
Distribution of prions	Lymph nodes alone or also brain 	In brain but not in lymph nodes 	In brain but not in lymph nodes 
Distribution in brain	Disseminated, mostly brainstem 	Mostly in neurones, whole brain 	Intra, extraneuronal, star-like etc  
Western blot	Indistinguishable from findings in USA	Lower MW, N-terminal truncated 	Intermediate MW, N-terminal truncated, BSE-like profile



Sampling in 2019

- All fallen stock of any species > 1 year
- All hunted reindeer > 1 year
- Hunted moose and red deer > 2 years in selected areas
- Semi-domesticated reindeer

In total ~30000



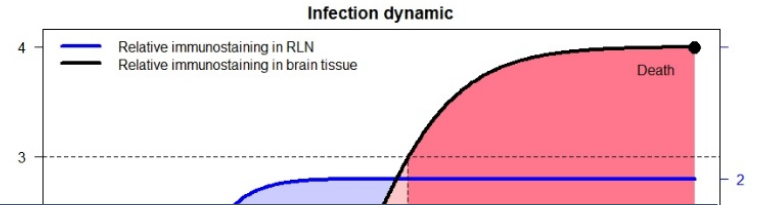
Number of samples by September 11th

Species	2004 - 2015	2016	2017	2018	2019	2016 - 2019
Moose	130	4403	5 468	6 705	621	17 193
Red deer	820	2582	4 082	8 428	1382	16 474
<i>Wild</i>		2453	3 638	7 785	1144	15 020
<i>Farmed</i>		129	444	643	238	1 454
Reindeer	976	2581	13 863	15 696	6861	38 527
<i>Wild</i>	10	833	2 923	3 650	2076	9 473
<i>Semi-domesticated</i>	966	1748	10 940	12 046	4785	29 054
Roe deer	183	484	1 955	2 124	1253	5 816
Fallow deer	12	15	20	48	2	85
Unknown		87	271	655	331	1 344
Sum	2121	10152	25 659	33 656	10 450	79 895



A model to predict freedom of disease

Requirements from the authorities



RESEARCH ARTICLE



Methods in Ecology and Evolution
BRITISH ECOLOGICAL SOCIETY

Number

Vokser
Ungdy
Sum u

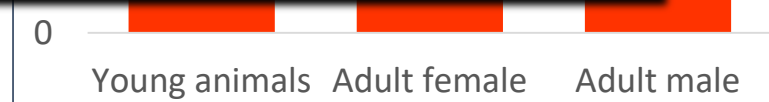
A method that accounts for differential detectability in mixed samples of long-term infections with applications to the case of chronic wasting disease in cervids

Popu

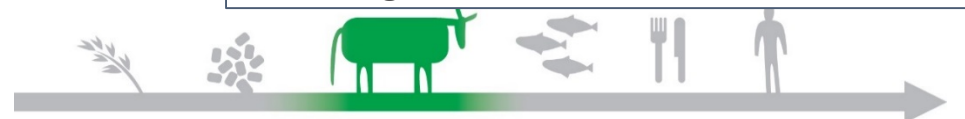
Hildegunn Viljugrein¹ | Petter Hopp¹ | Sylvie L. Benestad¹ | Erlend B. Nilsen²  |
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test

and age



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In vivo diagnostic tests

Lymphatic tissue biopsy from rectum (RAMALT)

- Sale of live animals
- Movement of animals
- Reestablishment



Photo: Jon Martin Arnemo



Photo: Jon Martin Arnemo



Thank you for the attention!



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