

Chronic Wasting Disease - an emergent health threat to European cervids

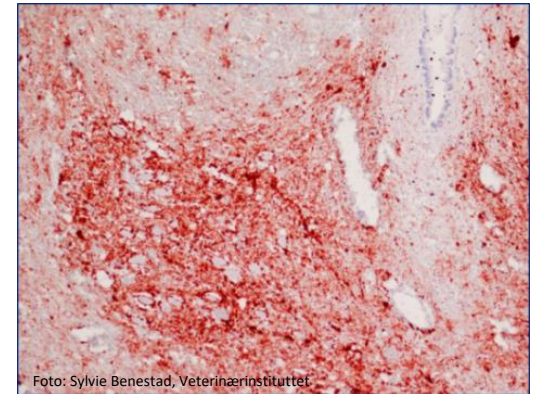


Workshop for WOA National Focal Points for wildlife in Europe (6th cycle)
27 - 29 June 2023, Warsaw, Poland

Jørn Våge, Petter Hopp, Knut Madslie, Attila Tarpai, Hildegunn Viljugrein and Sylvie L. Benestad
Norwegian Veterinary Institute

Chronic wasting disease (CWD)

- a member of the transmissible **spongiform** encephalopathies



Chronic Wasting Disease – a prion disease in cervids

- Transmissible spongiform encephalopathies (TSE) are chronic neurodegenerative diseases, invariably fatal.
- No bacteria, virus or fungi
- Scrapie - symptoms in the 18th century
- CJD - described 1920
- Stanley Prusiner - called this proteinaceous infectious pathogen a **prion**.

1982). Stanley Prusiner, however, pushed the "protein only" hypothesis to a rebel
er (1982) for which Prusiner SB Science. 1982 Apr 9; 216(4542):136-44.
ng an infe Prusiner e to inactivate prions

Novel proteinaceous infectious particles cause scrapie.

Prusiner SB

Science. 1982 Apr 9; 216(4542):136-44.

[PubMed] [Ref list]

Journal List > Pathog Dis > PMC4626585



Pathog Dis. 2015 Dec; 73(9): ftv087.

Published online 2015 Oct 7. doi: [10.1093/femspd/ftv087](https://doi.org/10.1093/femspd/ftv087)

PMCID: PMC4626585

A brief history of prions

[Mark D. Zabel](#) and [Crystal Reid](#)

Monitoring Editor: Patrik Bavoil

[Author information](#) ▶ [Article notes](#) ▶ [Copyright and License information](#) ▶

This article has been [cited by](#) other articles in PMC.

Abstract

Go to:

Proteins were described as distinct biological molecules and their significance in cellular processes was recognized as early as the 18th century. At the same time, Spanish shepherds observed a disease that compelled their Merino sheep to pathologically scrape against fences, a defining clinical sign that led to the disease being named scrapie. In the late 19th century, Robert Koch published his postulates for defining causative agents of disease. In the early 20th century, pathologists Creutzfeldt and Jakob described a neurodegenerative disease that would later be included with scrapie into a group of diseases known as transmissible spongiform encephalopathies (TSEs). Later that century, mounting evidence compelled a handful of scientists to betray the prevailing biological dogma governing pathogen replication that Watson and Crick so convincingly explained by cracking the genetic code just two decades earlier. Because TSEs



Creutzfeldt-Jakob Disease (CJD)



Fore child with advanced kuru....
Liderski PP - <https://openi.nlm.nih.gov/>

Photo: CDC Centers for Disease Control and Prevention

CWD - host species in North America

Mule deer
(*Odocoileus hemionius*)



White tailed deer
(*Odocoileus virginianus*)

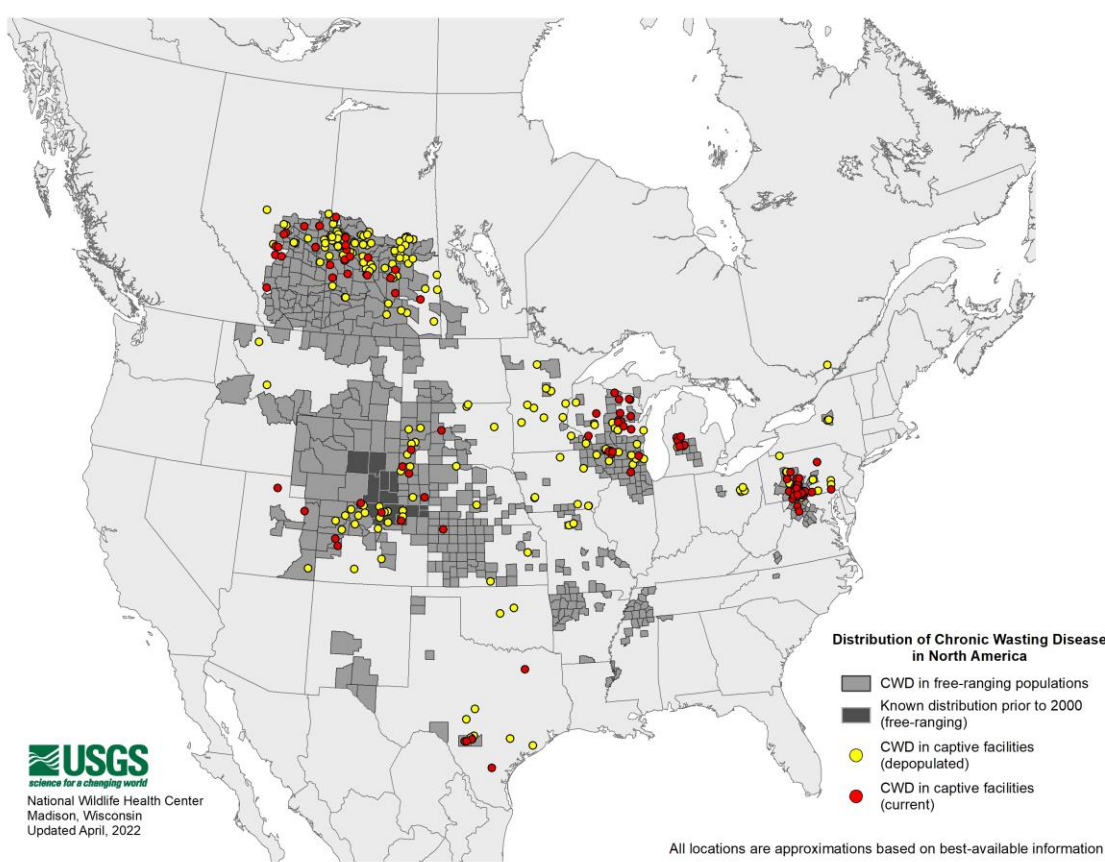
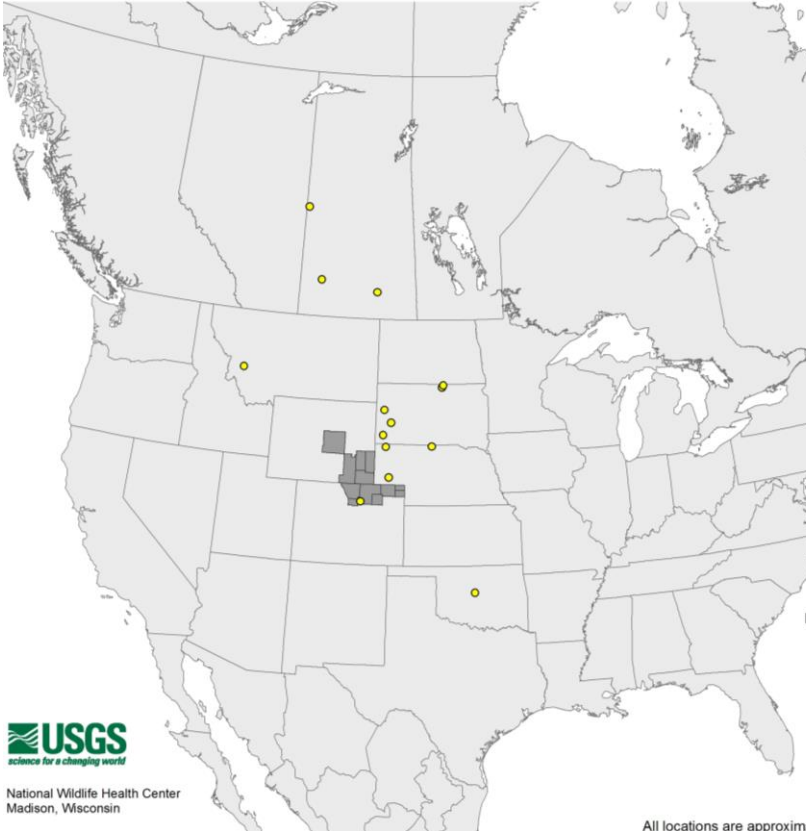


Elk / "wapiti" (*Cervus elaphus nelsoni/canadensis*)



Moose (*Alces alces*)

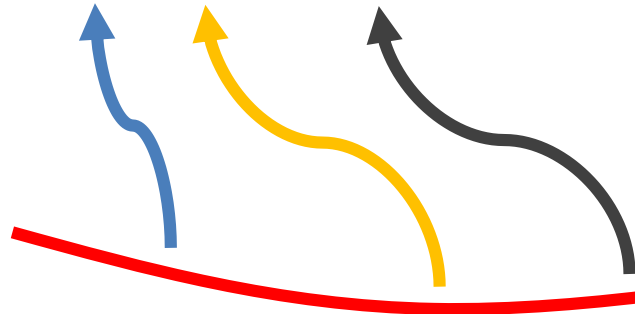
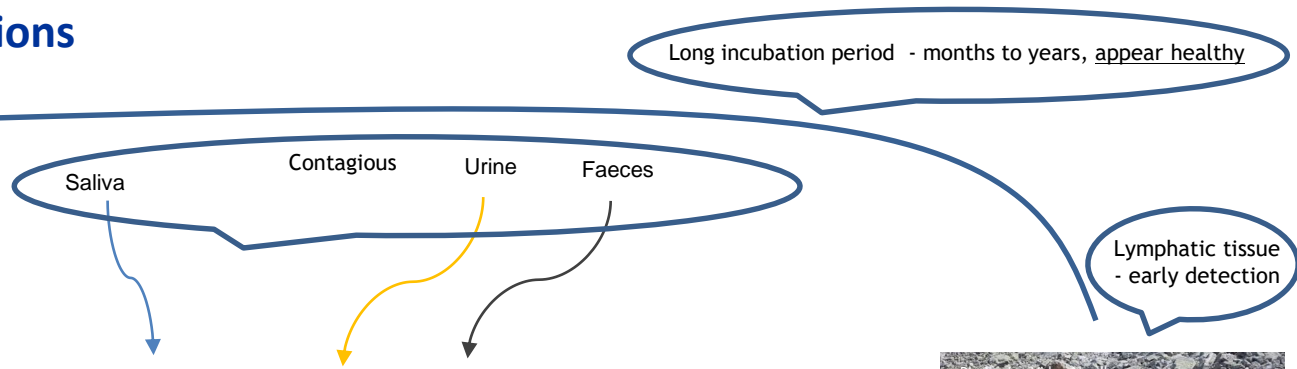




Credit: Bryan Richards, USGS National Wildlife Health Center. Public domain.

Last 2 decades development

CWD – circle of contagious prions



The surveillance programme for Chronic Wasting Disease (CWD) in free ranging and captive cervids in Norway 2021



Benestad et al. *Vet Res* (2016) 47:88
DOI 10.1186/s13567-016-0375-4

SHORT REPORT

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

Sylvie L. Benestad^{1*}, Gordon Mitchell², Marlon Simmons³, Bjørnar Ytrehus⁴ and Turid Vikøren¹

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.

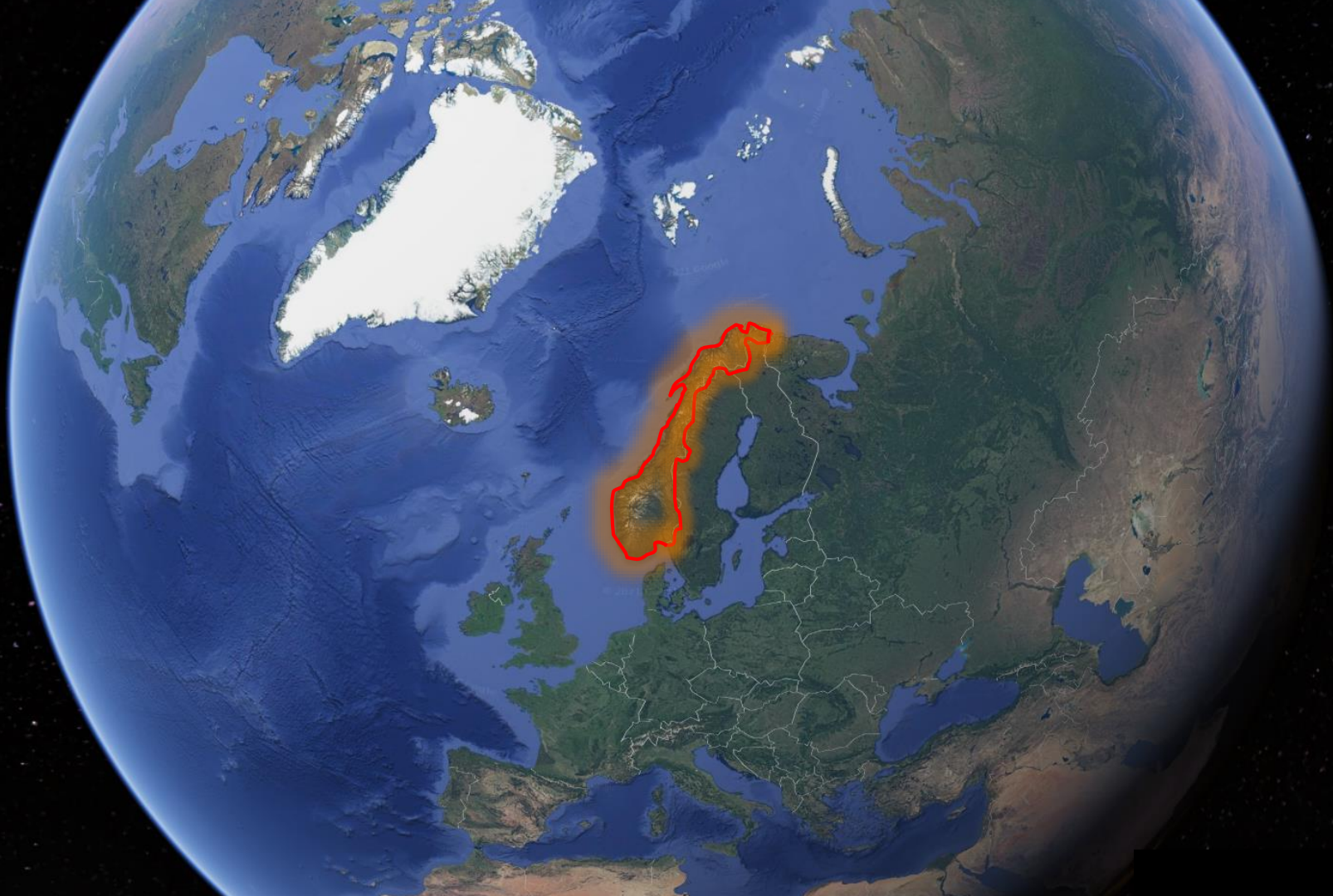


VETERINARY RESEARCH

Open Access



CrossMark



- CWD in reindeer
- Atypical CWD in moose
- ▲ Atypical CWD in red deer

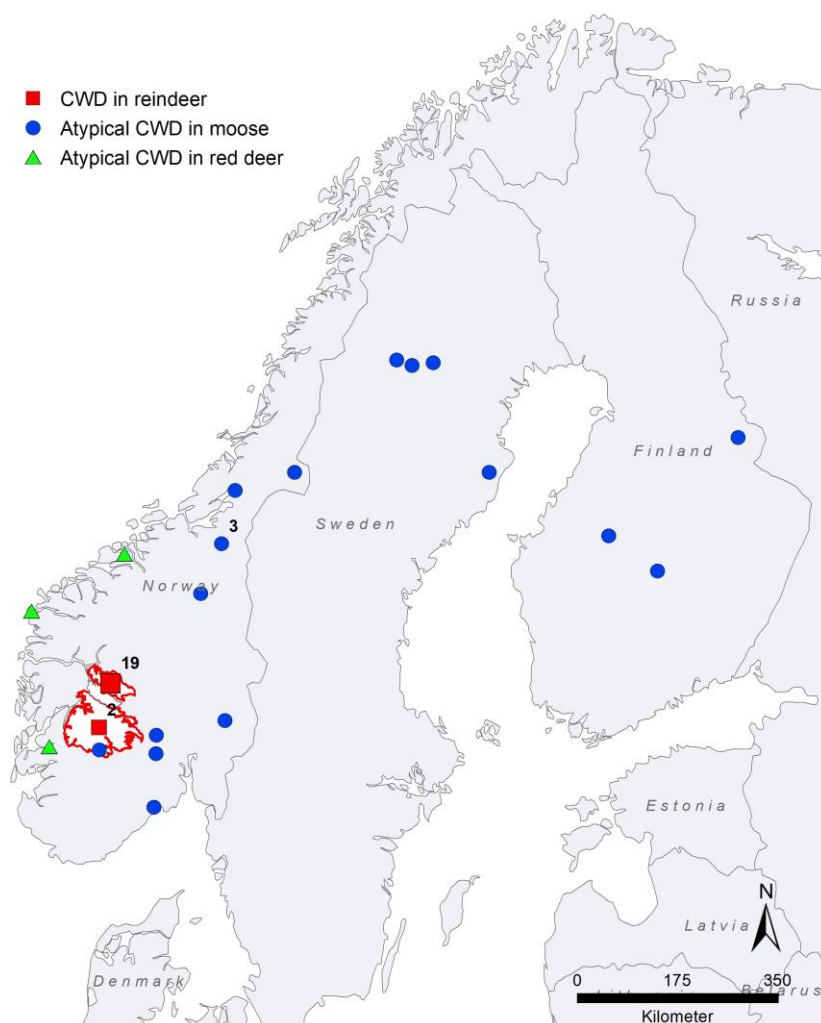
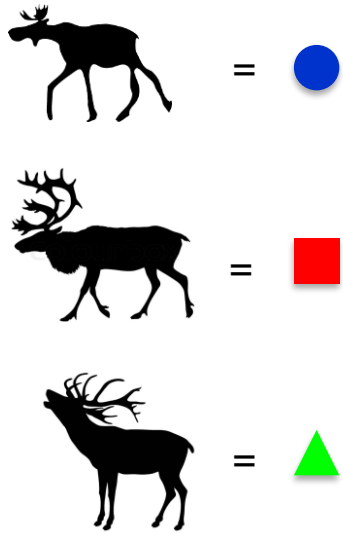




Photo: Jarle Fuglem

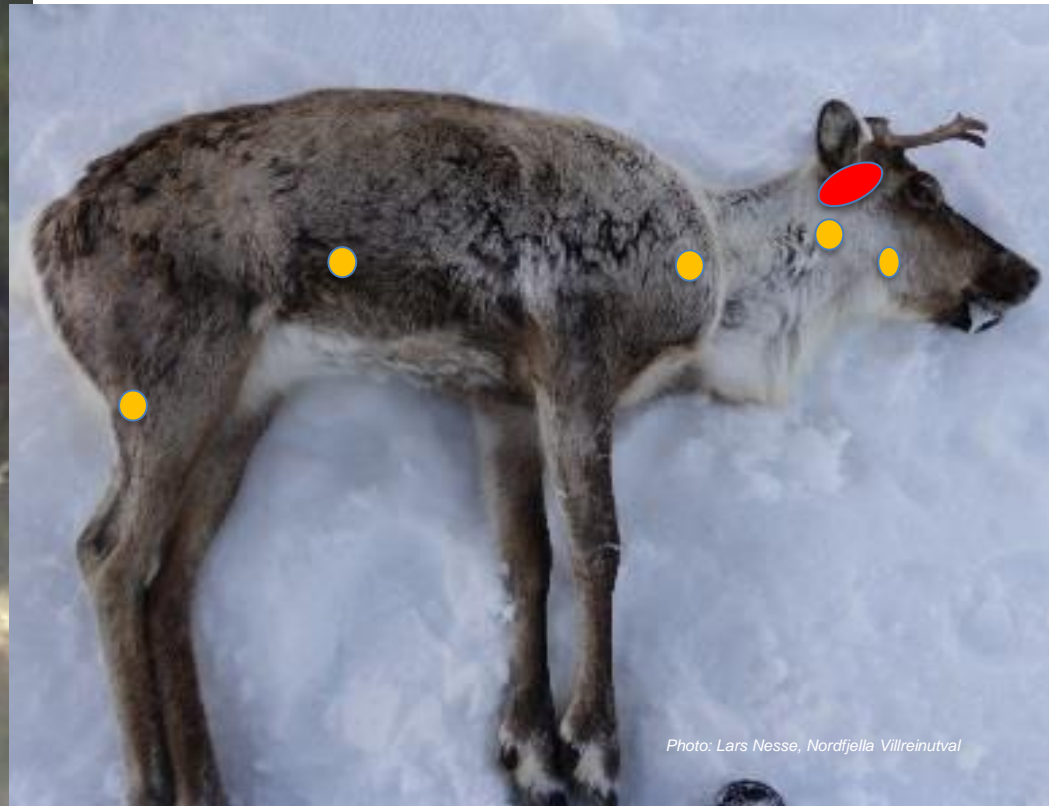


Photo: Lars Nesse, Nordfjella Villreinutval



Photo: Jarle Fuglem



Photo: Lars Nesse, Nordfjella Villreinutval

Inoculation / typing of prion strains





- Contagiousness - an important differentiation
- Sporadic prion disease - most probably old

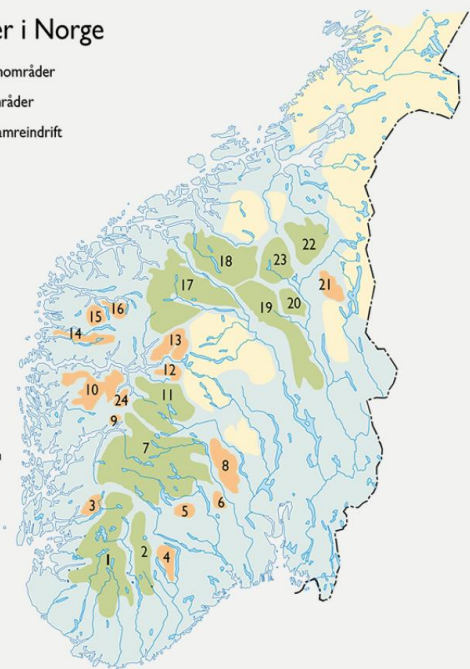
Scientific advise - political decision to cull of affected herd



Villreinområder i Norge

- Nasjonale villreinområder
- Andre villreinområder
- Områder med tamreindrift

- 1 Setesdal Ryfylke
- 2 Setesdal Austhei
- 3 Skaulen Etnesfjell
- 4 Våmur - Roan
- 5 Brattefjell - Vindeggen
- 6 Blefjell
- 7 Hardangervidda
- 8 Norefjell - Reinsjøfjell
- 9 Oksenhalvøya
- 10 Fjellheimen
- 11 Nordfjella
- 12 Lærdal - Årdal
- 13 Vest - Jotunheimen
- 14 Sunnfjord
- 15 Fordefjella
- 16 Svartebotnen
- 17 Reinheimen - Breheimen
- 18 Snøhetta
- 19 Rondane
- 20 Sølknkletten
- 21 Tolga Østfjell
- 22 Forollhogna
- 23 Knutshø
- 24 Raudafjell



Reindeer

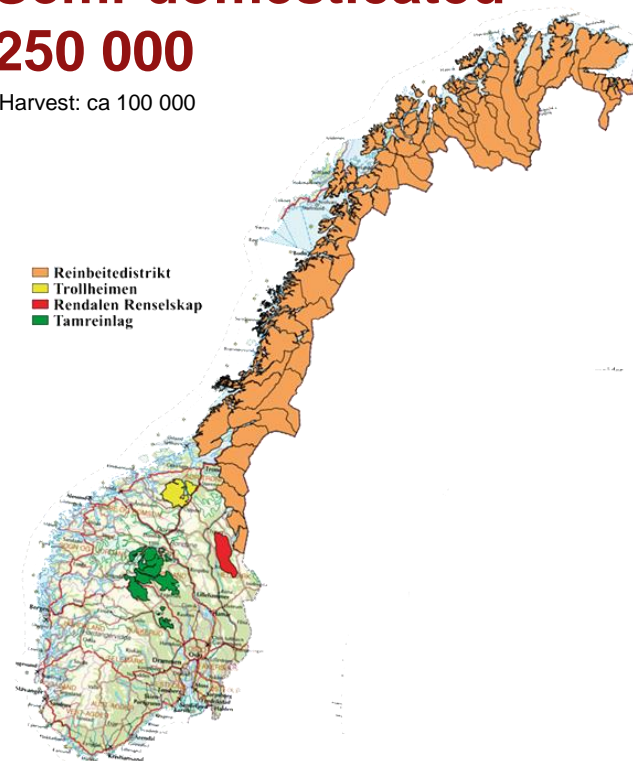


Semi-domesticated 250 000

Harvest: ca 100 000

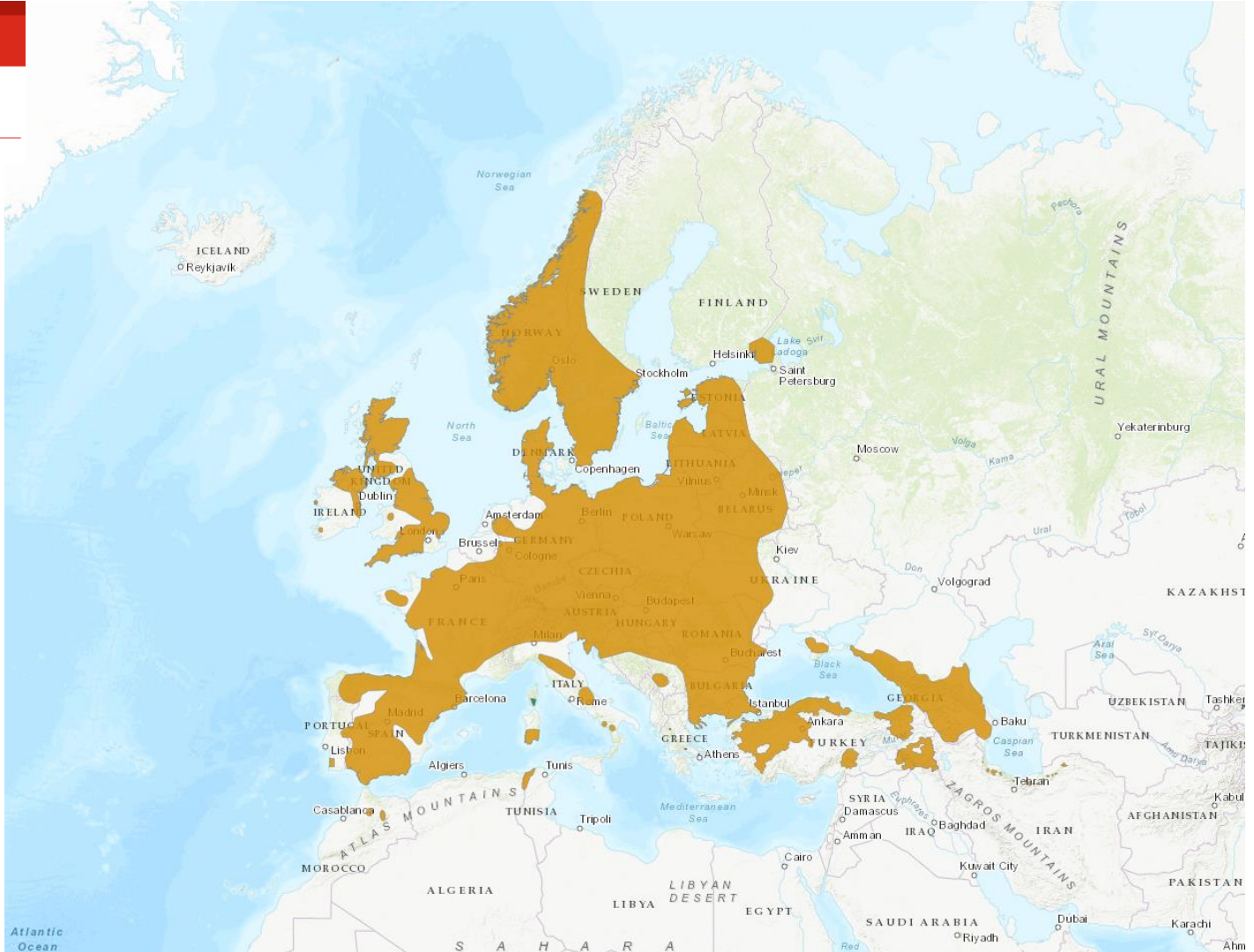
Wild 25 000

Harvest: ca 5000



Red Deer

Cervus elaphus

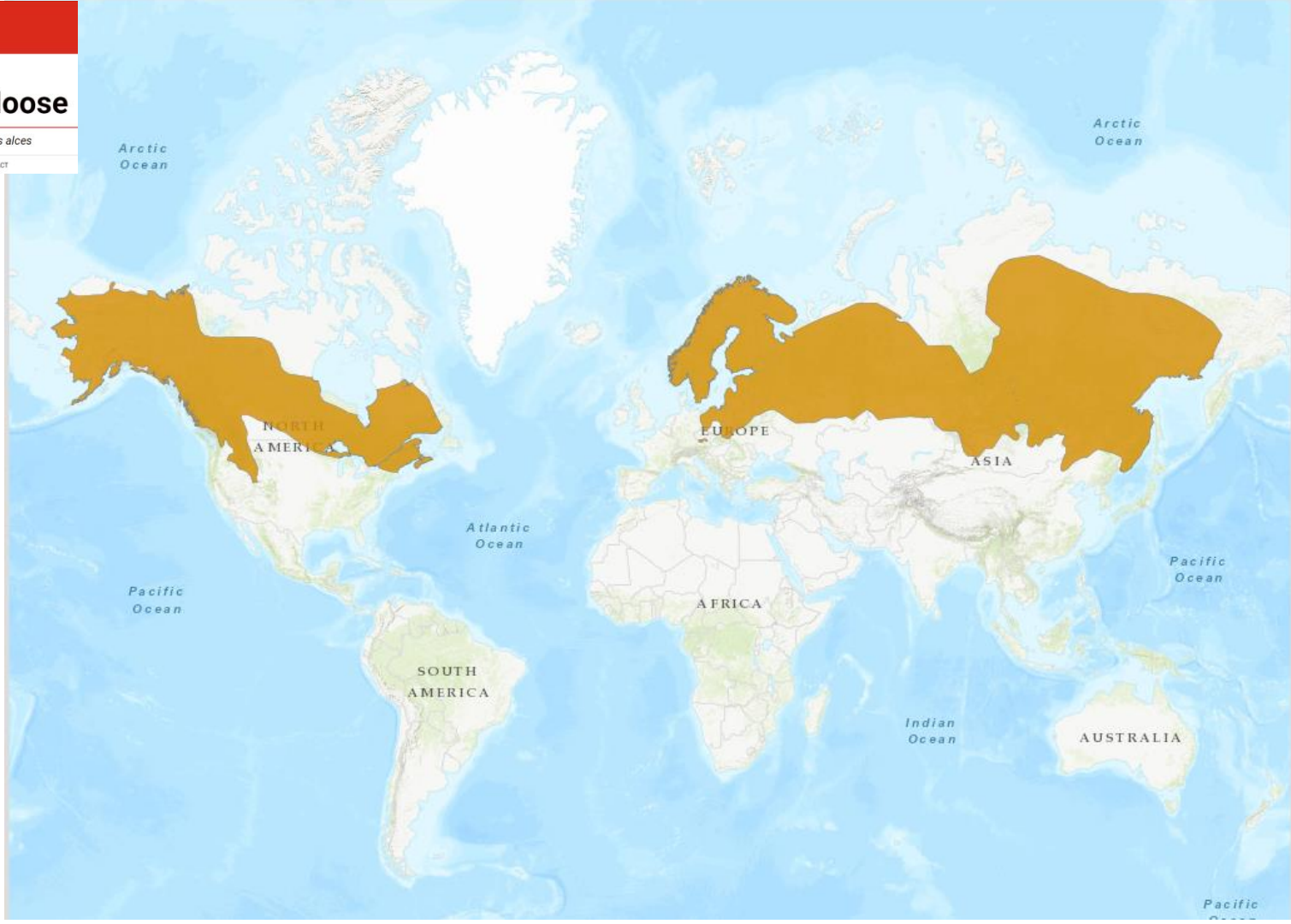




Moose

Alces alces

ABSTRACT





European Roe Deer

Capreolus capreolus

ABSTRACT

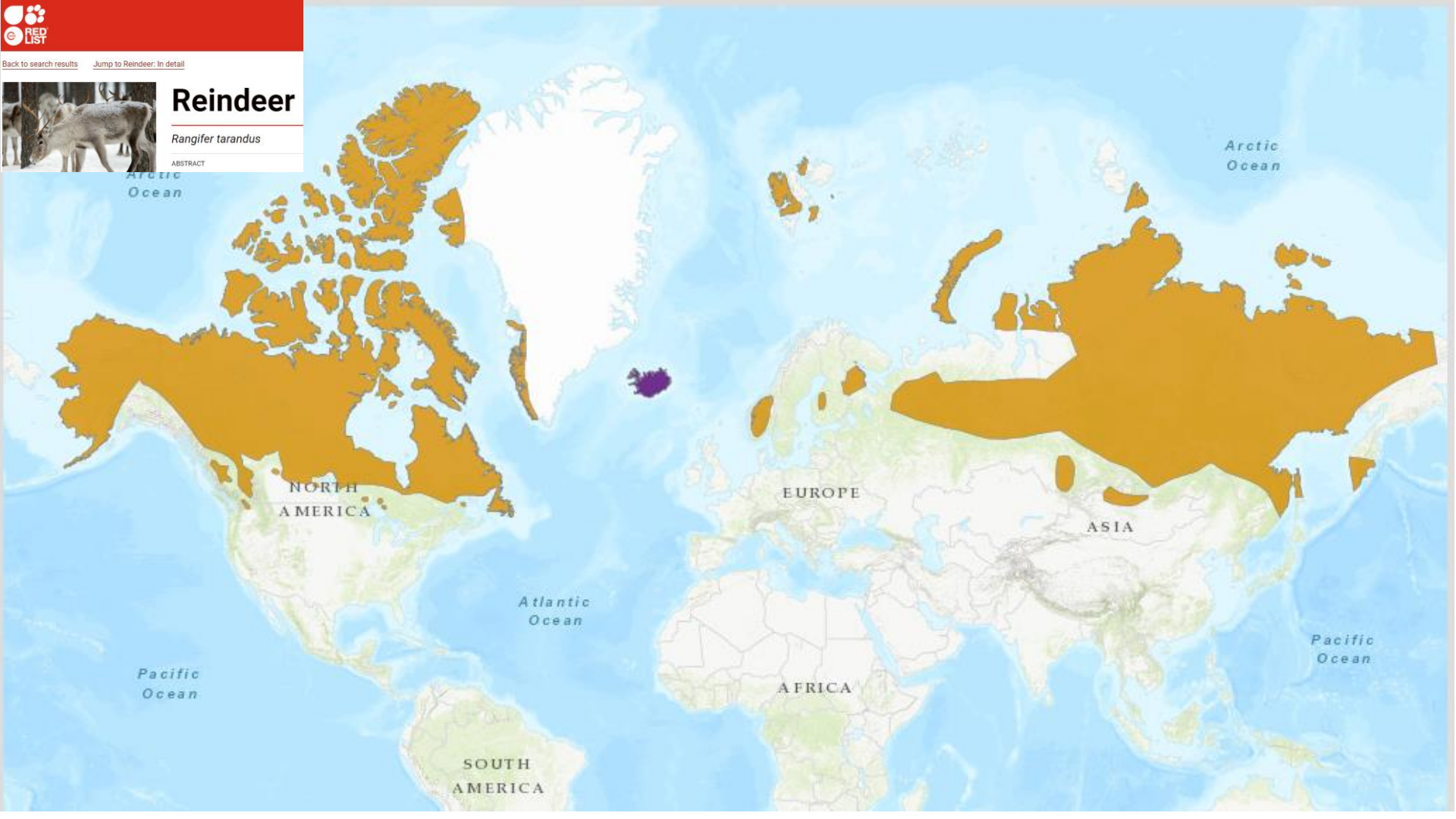




Reindeer

Rangifer tarandus

ABSTRACT





White-tailed Deer

Odocoileus virginianus

ABSTRACT



Antall prøver undersøkt for skrantesyke

Oversikt over undersøkte prøver fra hjortedyr i Norge i 2016-2023. Antallet er gruppert på utvalgte områder og art/produksjonsform.

Art og produksjonsform	Antall negative	Antall positive
Villrein	20572	21
Nordfjella 1	2085	15
Nordfjella 2	277	0
Nordfjella	501	4
Hardangervidda	6917	2
Andre områder	10602	0
Ukjent	149	0
Svalbard	41	0
Tamrein	59063	0
Rein i dyrepark o.l.	8	0
Vill hjort	29762	3
Gjemnes	698	1
Andre områder	28653	2
Ukjent	411	0
Oppdrettshjort	3295	0
Elg	36895	11
Selbu-sonen	5969	3
Lierne	804	1
Andre områder	29527	7
Ukjent	595	0
Elg i dyrepark o.l.	8	0
Rådyr	12886	0
Dåhjort (dådyr)	261	0
Ukjent art	2742	0
Totalt	165492	35

<http://apps.vetinst.no/skrantesykestatistikk/NO/#omrade>

Who manages what?



Mattilsynet
Norwegian Food Safety Authority

Chronic Wasting Disease in Norway

Published 13.07.2016 | Modified 15.09.2016

Chronic wasting disease (CWD) is an animal disease that has a very low risk of infecting people. Even so, to be on the safe side, meat from animals that have tested positive will not enter the food chain.

CWD is a prion disease (a type of protein that is not broken down in the body) for cervids.

Read more:
Information for hunters about chronic wasting disease (CWD)
Chronic wasting disease found in a wild reindeer in Norway
Risk assessment on Chronic Wasting Disease in Norway
Additional legal measures to limit the spread of Chronic Wasting Disease (CWD) in

Extensive review in 2016
The Norwegian Food Safety Authority and the Norwegian Environment Agency plan to test around 15,000 cervids (moose, red deer, reindeer and roe deer). This means testing all cervids that have died or are killed as a result of illness or injury, including road kill, all over the country. In addition, tests are to be carried out on cervids killed during hunting in specified areas.

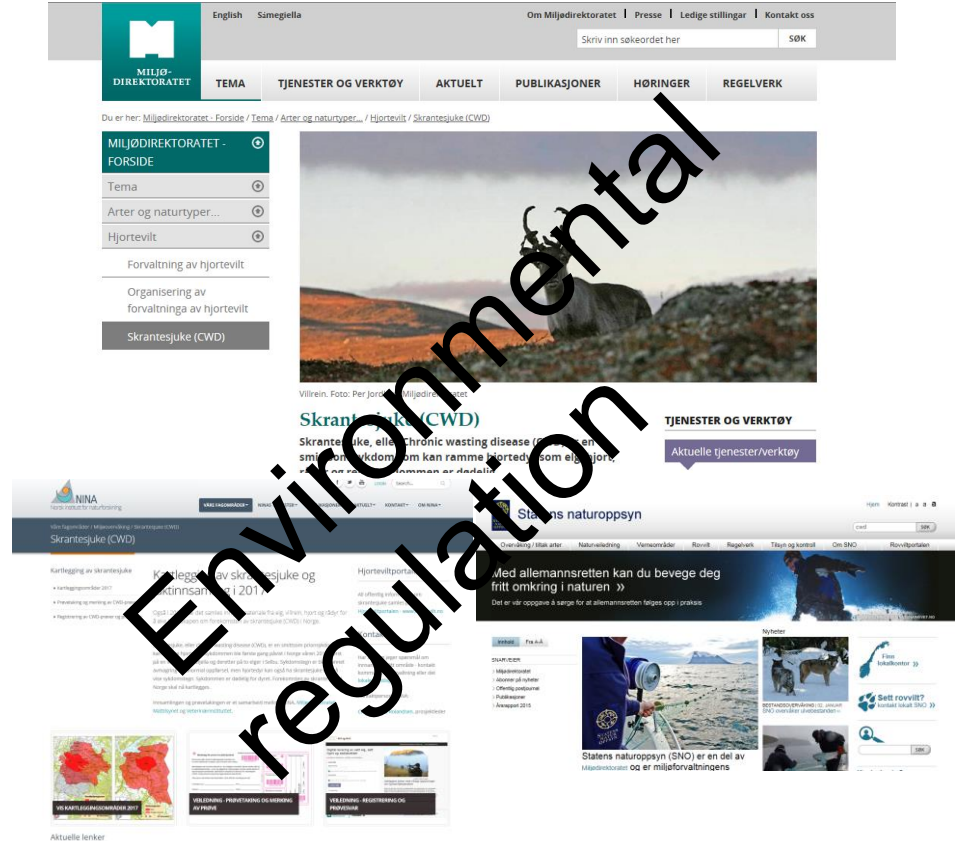
Tests will also be made at all game treatment stations and approved cut locations (places where the Norwegian Food Safety Authority (the slaughter), as well as the slaughter for hunted reindeer or caribou (see here)).



Chronic Wasting Disease (CWD) - skrantesjuka

Chronic Wasting Disease (CWD) er en prionsykdom som i flere tiår har vært kjent hos ulike hjortedyr i Nord-Amerika. Sykdommen er påvist hos villrein og elg i Norge.

CWD kjennetegnes ved gradvis tap av nerveceller i hjernen, neurologiske symptomer og avmagring, og ender alltid med



Miljødirektoratet

English | Simegiella

Om Miljødirektoratet | Presse | Ledige stillinger | Kontakt oss

Skriv inn søkeordet her

MILJØDIREKTORATET

TEMA

TJENESTER OG VERKTØY

AKTUELT

PUBLIKASJONER

HØRINGER

REGELVERK

Du er her: Miljødirektoratet - Forside / Tema / Arter og naturtyper... / Hjortevilt / Skrantesjuka (CWD)

MILJØDIREKTORATET - FORSIDE

Tema

Arter og naturtyper...

Hjortevilt

Forvaltning av hjortevilt

Organisering av forvaltninga av hjortevilt

Skrantesjuka (CWD)

Villrein. Foto: Per Jorvik / Miljøfoto.no

Skrantesjuka (CWD)

Skrantesjuka, eller chronic wasting disease (CWD), er en smittesykdom som kan ramme hjortedyr som elg, hjort og villrein. Sykdommen er dødelig.

TJENESTER OG VERKTØY

Aktuelle tjenester/verktøy

Statens naturoppsyn

Med allemansretten kan du beuge deg frit omkring i naturen »

Det er vår oppgave å sørge for at allemansretten følges opp i praksis.

Statens naturoppsyn (SNO) er en del av Miljødirektoratet og er miljøforvaltningens

Risk animals !!!!



Fla feltet i Jepsaluokta (Hjemmeluft) i Alta
Berglund 1982
Av Erling Anne Stygge
Lisens: CC BY SA 3.0



NJFF Møre og Romsdal

Samisk reindrif

Tekst: Mort Møller
Publisert 1.09. 2009



kronikk

Er sau viktigere enn føre var-prinsippet?

Laboratorieforsk viser at CWD kan smitte mellom arter. Er det lurt å la sau belte i CWD-området Nordfella?



Betling Utøstet tas for mang endelåse, somer nordkarene. Foto: Inger Kristiansen/NTNU



shutterstock.com · 1395498188





**Thank you for your
attention!**