Surveillance and control programmes for terrestrial and aquatic animals in Norway
National Veterinary Institute

Annual Reports · 2008

The surveillance and control programme for Chronic Wasting Disease (CWD) in wild and captive cervids in Norway

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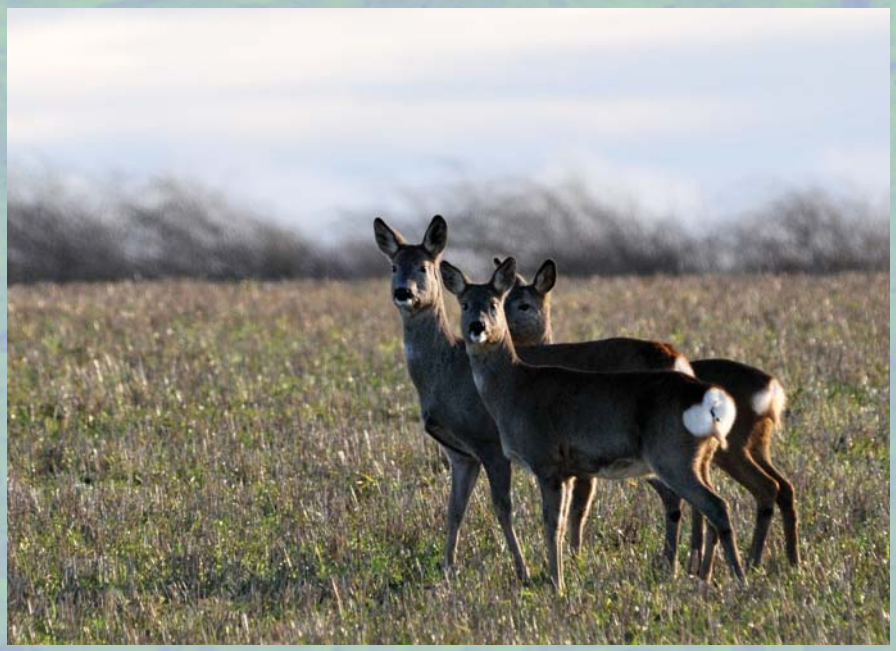

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Chronic wasting disease (CWD) was not detected in any of the animals tested in 2008.

Introduction

CWD is a transmissible spongiform encephalopathy (TSE) of cervids (1, 2, 3). A few species of the family *Cervidae* are known to be naturally susceptible to the disease: mule deer (*Odocoileus hemionus*), white-tailed deer (*O. virginianus*), elk (*Cervus elaphus*), and moose (*Alces alces*). CWD was first described as a clinical syndrome termed "chronic wasting disease" in captive mule deer in Colorado, USA in the late 1960s and subsequently identified as a TSE in 1978 (1). Chronic wasting disease is so far only diagnosed in free-ranging and captive cervids in North America, and is yet to be diagnosed in cervids in Europe.

Four cervid species are prevalent in natural populations in Norway: moose (*Alces alces*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), and reindeer (*Rangifer tarandus*). Red deer predominate along the west coast, whereas moose and roe deer mainly inhabit other areas of the country. The wild reindeer live in dispersed populations in separate high mountain areas in southern Norway. The number officially hunted in 2008 was: 35,600 moose, 35,700 red deer, 29,800 roe deer, and 5,200 wild reindeer. Additionally, Norway has a semi-domestic reindeer population, mainly kept in the northern parts of the country, presently counting about 200,000 animals.

There are 75 deer farms in Norway. Most of the farms keep red deer, and only a few keep fallow deer (*Dama dama*).

Based on the fact that Norway has large free-ranging populations of various cervids, a number of them grazing in regions where scrapie is detected, a passive surveillance programme for CWD in Norwegian wild and captive cervids has been running from 2003. In addition, samples from slaughtered semi-domestic reindeer from several regions in the country have been tested for CWD.
Norway performed an EC survey for CWD in cervids in 2006 and 2007 according to Commission decision 2007/182/EC. The target species relevant for Norway was wild red deer and the survey implied sampling of a) clinical/sick, euthanized animals, b) traffic killed animals, c) animals found dead, and d) healthy animals shot during hunting. Additionally, for moose, roe deer, reindeer, and farmed deer the categories a) – c) were sampled. All samples were negative for CWD.

A small population of approximately 200 free-ranging musk ox (*Ovibus moschatus*, belonging to the *Bovidae*), inhabits the Dovre high mountain plateau in Mid-Norway. TSE has not been diagnosed in the musk ox, but the species has been included in the programme from 2004.

Aim

The aim of the programme is to detect the possible occurrence of CWD in the Norwegian cervid population.

Material and methods

Material

Tested animals included captive deer and wild cervids older than 18 months that died or were euthanized due to disease or injuries. Additionally, cervids older than 18 months necropsied at the National Veterinary Institute were examined for CWD. Twelve ordinary hunted roe deer from Vestby in the county of Akershus and one musk ox found dead were also tested. The number and species analysed for CWD in 2008 are given in Table 1.

Methods

A rapid test (either TeSeE ® Bio-Rad or TeSeE Sheep & Goat ® ELISA, Bio-Rad) was used to screen brain samples for detection of the PrP^{CWD}. All the samples were analysed at the National Veterinary Institute, which is the National Reference Laboratory for TSEs in Norway.

Results

None of the 47 samples analysed tested positive for CWD in the rapid test (Table 1).

Totally 25 of the tested animals were exclusively examined for CWD, and the majority was healthy hunted and traffic killed roe deer (Table 1). The remaining 22 animals represent cases received at the National Veterinary Institute for routine necropsy.

A total of two of the tested animals were captive red deer. One semi-domestic reindeer was sampled because of showing clinical signs before it dropped dead.

Table 1. The number of cervids tested in the Norwegian surveillance and control programme for Chronic wasting disease (CWD) 2008, distributed by reason for submission.

Species	Routine necropsy		TSE surveillance programme				Total
	Captive	Wild	Hunted	Traffic killed, found dead or euthanized Wild	Found dead or culled Captive	Unspecified	
Moose	-	7	-	2	-	-	9
Fallow deer	-	-	-	-	-	-	
Red deer	-	6	-	-	2	1	9
Musk ox	-	-	-	1	-	-	1
Reindeer	1	1	-	-	-	-	2
Roe deer	-	7	12	7	-	-	26
Total	**1**	**21**	**12**	**10**	**2**	**1**	**47**

Discussion

No animals were positive for CWD in 2008. A large part of the tested animals in 2008 was roe deer collected in Vestby, comprising hunted and traffic killed animals. Very few captive red deer were tested.

Among the Norwegian cervid species, a higher risk for CWD can be assumed for red deer and moose since these species are among those known to be naturally susceptible to the disease (1, 2, 3). Regarding moose, so far, only a few positive CWD cases has been diagnosed in hunted animals in CWD-endemic areas in Colorado, USA (3), thus they probably represent preclinical CWD. Also, the disease has been transmitted experimentally to moose by oral inoculation of brain tissue from a CWD affected mule deer (4). Roe deer, reindeer and musk ox has so far not been found naturally infected with CWD.

References

1. Williams ES, Young S. Spongiform encephalopathies in Cervidae. Rev sci tech Off int Epiz 1992; 11: 551-567.

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3. Baeten LA, Powers BE, Jewell JE, Spraker TR, Miller MW. A natural case of Chronic Wasting Disease in a free-ranging moose (*Alces alces shirasi*). J Wildl Dis 2007; 43: 309-314.

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