Veterinærinstituttet
Norwegian Veterinary Institute

Rapport 34- 2022

The surveillance programme for bovine tuberculosis in Norway 2021

REPORT 34/2022

The surveillance programme for bovine tuberculosis in Norway 2021

Authors

Ståle Sviland, Chiek Er, Girum Tadesse Tessema

Suggested citation

Sviland, Ståle, Er, Chiek, Tessema, Girum Tadesse. The surveillance programme for bovine tuberculosis in Norway 2021. Surveillance program report. Veterinærinstituttet 2022. © Norwegian Veterinary Institute, copy permitted with citation

Quality controlled by

Merete Hofshagen, Director of Animal Health, Animal Welfare and Food Safety, Norwegian Veterinary Institute

Published

2022 on www.vetinst.no

ISSN 1890-3290 (electronic edition)

Commissioned by / In collaboration with

Norwegian Food Safety Authority

Mattilsynet

Colophon

Cover design: Reine Linjer

Cover photo: Colourbox

www.vetinst.no

Content

Summary

In 2021, organ samples from five bovine, one red deer and two alpacas suspected of bovine tuberculosis were submitted to the Norwegian Veterinary Institute for examination. *Mycobacterium tuberculosis* complex (*M. bovis, M. caprae, M. tuberculosis*) was not detected in any of the samples.

Introduction

Apart from two single-herd outbreaks in Sogn og Fjordane county in 1984 and 1986, Norway has been considered free from bovine tuberculosis since 1963 (1). Since 1994, the EFTA (The European Free Trade Association) Surveillance Authority (ESA) has recognised Norway as officially free from bovine tuberculosis, as described in ESA Decision 225/96/COL replacing ESA Decision 67/94/COL.

In 2000, a surveillance programme for bovine tuberculosis in cattle was launched. Today the programme includes investigation of suspicious material from cattle, llamas, alpacas and farmed deer.

Aim

The aim of the surveillance programme is to document absence of bovine tuberculosis, according to Directive 64/432/EEC with amendments, and to contribute to the maintenance of this favourable situation.

Materials and methods

Submission of tissue samples from slaughterhouses and post mortem examinations

The Norwegian Food Safety Authority (NFSA) select material (lung tissue, lymph nodes and other organs with pathological lesions compatible with tuberculosis) during compulsory veterinary inspection of bovine carcasses at slaughter. Suspicious material is submitted to the Norwegian Veterinary Institute for further examination.

Farmed deer, llamas and alpacas are selected when NFSA receive reports of dead or euthanized sick animals. The Norwegian Veterinary Institute performs most of the post mortem examinations of the farmed deer, llamas and alpacas. Some necropsies are performed in the field. If the result does not demonstrate any pathological lesions consistent with tuberculosis, no further examination is performed.

Histopathological examination

Tissues are fixed in 10% neutral phosphate-buffered formalin for more than 24 hours, processed according to a standard routine protocol, embedded in paraffin, sectioned at 5 µm and stained with haematoxylin and eosin and Ziehl-Neelsen.

Bacteriological examination

Samples are examined as described in the OIE manual (2). Samples are homogenised, decontaminated with 5% oxalic acid and centrifuged. The sediment is used for culturing and for microscopic examination for acid-fast bacilli after staining with Ziehl-Neelsen. The sediment is inoculated onto slopes of Löwenstein Jensen medium, Stonebrink's medium, Middelbrook 7H10 medium with and without antibiotics supplement, and Dubos medium. The slopes are incubated under aerobic conditions at 37°C for two months and checked every week for growth of acid-fast bacilli, determined by the Ziehl-Neelsen method. If colonies of acid-fast bacilli are detected, molecular methods are used for species identification.

Results and discussion

Table 1 shows the number of samples submitted and the number of positive samples since the programme started in 2000. In 2021, samples from five bovine, one red deer and two alpacas were submitted. Histopathological examination was performed on all of the suspected cases; however, three tissue samples were further investigated by bacteriological culturing for the detection of *Mycobacteria*. The examinations confirmed that none of the suspected cases were due to mycobacterial infection.

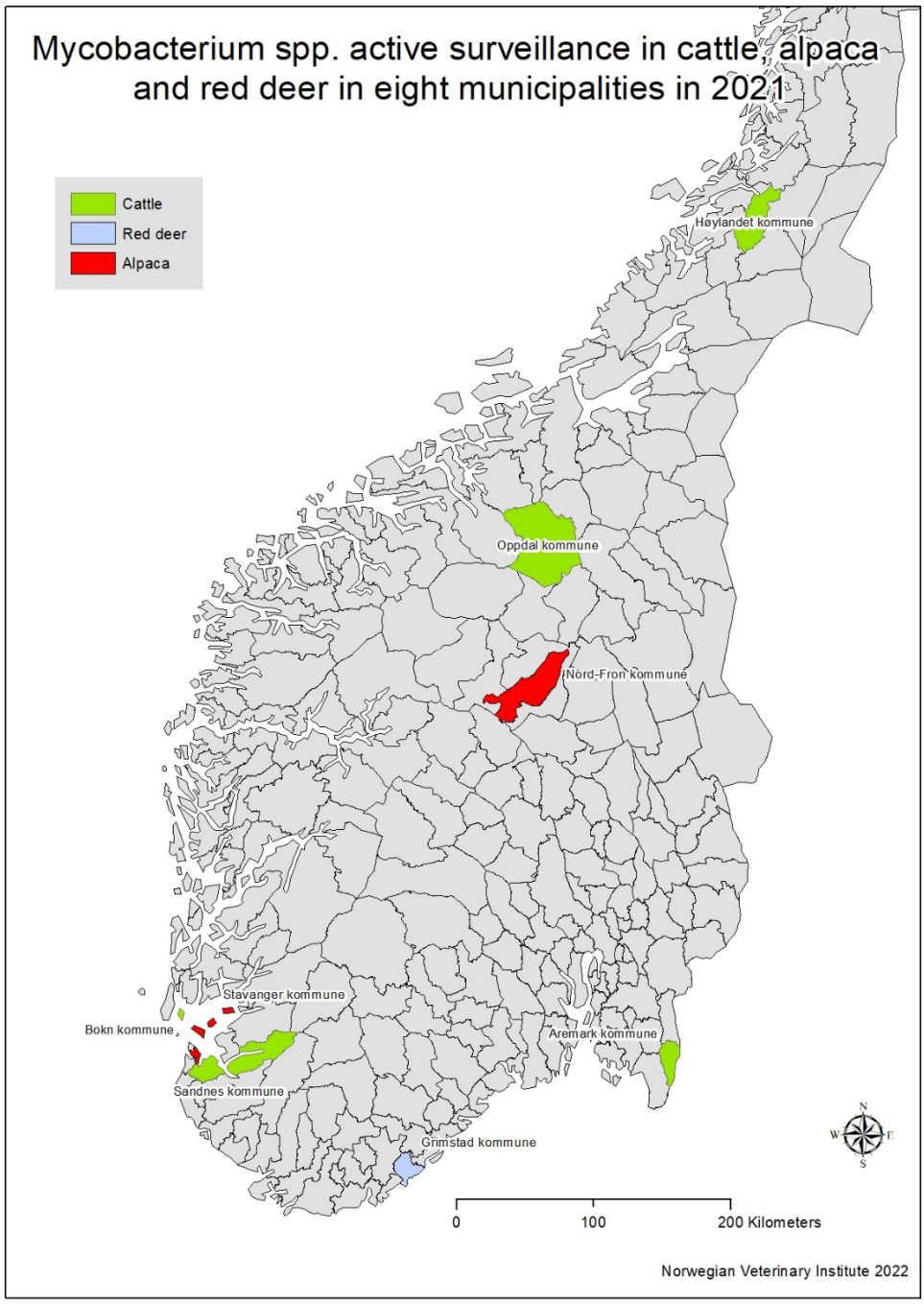
The low number of submitted samples indicates a low prevalence of suspicious pathological lesions. Continuous surveillance by veterinary meat inspection, early and effective eradication campaigns, combined with restricted import of live cattle, have contributed significantly to this situation.

Table 1: Samples submitted for testing of bovine tuberculosis from 2000 to 2021, and number of positive samples.

Year*	No. of cattle samples	No. of cattle herds	No. of positive cattle samples	No. of camelid samples	No. of camelid herds	No. of positive camelid samples	No. of red deer samples	No. red deer herds	No. of positive red deer samples
2000	0	0	0						
2001	3	3	0						
2002	0	0	0						
2003	1	1	0						
2004	4	4	0						
2005	1	1	0						
2006	3	3	0						
2007	0	0	0						
2008	4	2	0						
2009	1	1	0						
2010	1	1	0						
2011	1	1	0						
2012	0	0	0						
2013	5	4	0						
2014	1	1	0	1	1	0			
2015	2	2	0	15	14	0			
2016	3	3	0	11	10	0			
2017	1	1	0	14	12	0			
2018	1	1	0	9	9	0			
2019	2	2	0	5	5	0			
2020	2	2	0	5	5	0			
2021	**5**	**4**	**0**	**2**	**2**	**0**	**1**	**1**	**0**

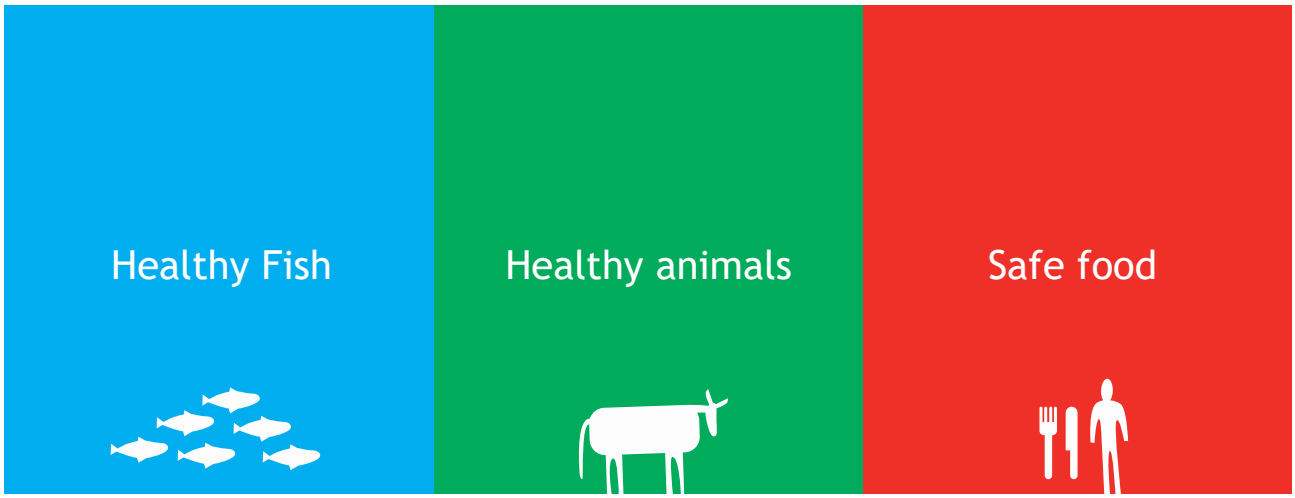
Acknowledgement

The authors would like to thank the technical staff for performing the analyses with excellence.



References

1. Sandvik O. Animal Health Standards in Norway. Næss B (editor). Oslo: The Royal Ministry of Agriculture; 1994.
2. Office International des Epizooties (OIE). Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. Bovine tuberculosis, https://www.oie.int/app/uploads/2021/03/3-04-06-bovine-tb.pdf (Last Accessed 3 May 2021).



Scientifically ambitious, forward-looking and collaborative- for one health!

Veterinærinstituttet
Norwegian Veterinary Institute

Ås Trondheim Sandnes Bergen Harstad Tromsø

postmottak@vetinst.no
www.vetinst.no