

## The surveillance programme for viral haemorrhagic septicaemia (VHS) and infectious haematopoietic necrosis (IHN) in Norway 2014

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# Surveillance programmes for terrestrial and aquatic animals in Norway

Annual report 2014

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## **Publisher**

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ISSN 1894-5678

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**Date:** 2015-03-12

**Front page photo:** Anne-Mette Kirkemo

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## **Example of citation:**

Gjevre AG, Ørpetveit I, Tavoranpanich S, Lyngstad TM. The surveillance programme for viral haemorrhagic septicaemia (VHS) and infectious haematopoietic necrosis (IHN) in Norway 2014. *Surveillance programmes for terrestrial and aquatic animals in Norway. Annual report 2014*. Oslo: Norwegian Veterinary Institute 2015.

# The surveillance programme for viral haemorrhagic septicaemia (VHS) and infectious haematopoietic necrosis (IHN) in Norway 2014

Anne-Gerd Gjevre, Irene Ørpetveit, Saraya Tavoranpanich, Trude M Lyngstad

***The surveillance programme was evaluated in 2010 and as a result, amended from 2011 to 2014 towards a risk-based approach. Viral haemorrhagic septicaemia virus and infectious haematopoietic necrosis virus was not detected at any of the sites tested in the 2014 surveillance.***

## Introduction

Viral haemorrhagic septicaemia (VHS) and infectious haematopoietic necrosis (IHN) are two important diseases in salmonid fish caused by rhabdovirus infections (1).

VHS has most frequently been recorded in farmed rainbow trout, but may also cause losses in other wild and farmed fish species, both marine and freshwater (2, 3). Norway obtained disease free status for VHS and IHN in 1994 (4). VHS was diagnosed in farmed rainbow trout in Norway in 2007 and disease free status was temporarily suspended (5, 6). Measures to eliminate the disease and prevent its spread were immediately taken by the Norwegian Food Safety Authority (NFSA). In 2011 Norway regained its VHS free status.

Outbreaks of IHN have resulted in significant economic losses in farmed rainbow trout and salmon in North America and Europe, and the disease has also had an impact on wild populations of Pacific salmon. IHN has never been diagnosed in Norway.

The Norwegian Veterinary Institute (NVI) coordinates the surveillance programme and publishes the overall results in monthly and annual reports available on the NVI website ([www.vetinst.no](http://www.vetinst.no)). In 2014 all fish samples were analysed at the NVI.

## Aim

The aim of the programme is to document the absence of VHS virus (VHSV) and IHN virus (IHNV) in fish farms in order to maintain Norway's VHS and IHN free status.

## Materials and methods

The strategy for the surveillance programme for VHS and IHN is risk-based, i.e. targeting fish with disease signs, and with a primary focus on sites with rainbow trout (7).

In 2014 the surveillance programme included investigation of relevant samples from active sites with rainbow trout and salmon. The samples were submitted by the fish health services in conjunction with disease investigation, or the NFSA in connection with inspections targeting moribund or newly dead fish. An active site was defined as having stocked fish for at least three months of the year. In 2014, 64 marine sites with rainbow trout and 699 marine sites with sites with Atlantic salmon were registered as active. These numbers are based on monthly reports on production statistics to the Norwegian Authorities, biomass data obtained as described in Kristoffersen et al 2009 (8). Active freshwater sites are not included in these numbers (data not available).

Samples on RNAlater™ submitted to the NVI were processed and analysed for VHSV and IHNV by real-time RT-PCR with VHSV primers and probe from Jonstrup et al. 2013 and IHNV primers and probe from Liu *et al.* 2008 (9, 10).

## Results

In total, 1490 fish samples from 64 % (41/64) of the active sites with rainbow trout and 22 % (156/699) of the active sites with Atlantic salmon were tested for VHSV and IHNV in 2014. All samples were negative (Figure 1, 2).

Of the fish samples included in the surveillance programme, 368 were from the rainbow trout sites and 1122 were from the Atlantic salmon sites (Figure 1, 2). The mean number of samples per site was 7.

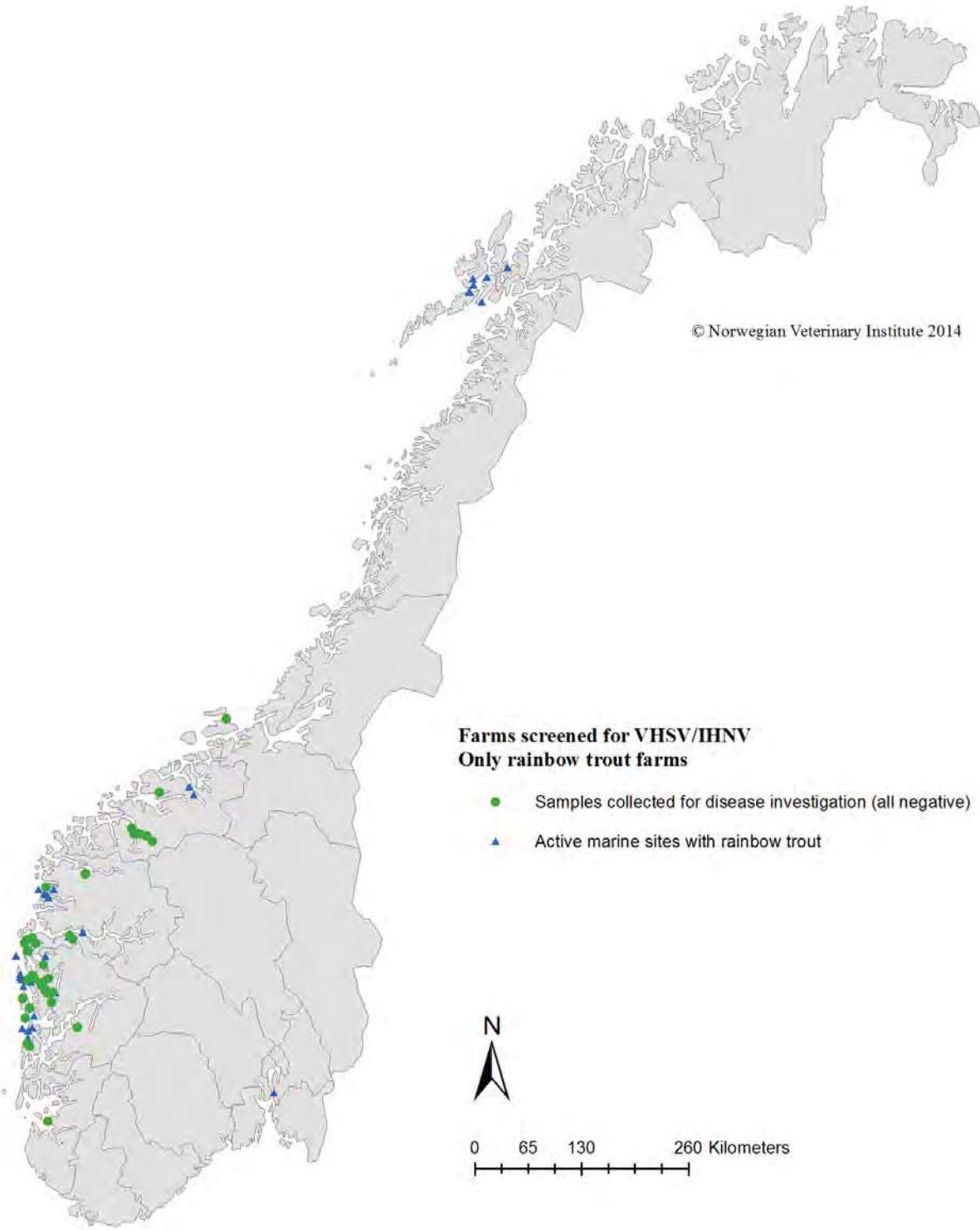


Figure 1. Map of active marine sites with rainbow trout in 2014. Active freshwater sites are not shown (data not available). Green symbols indicate sites included in the 2014 surveillance programme.

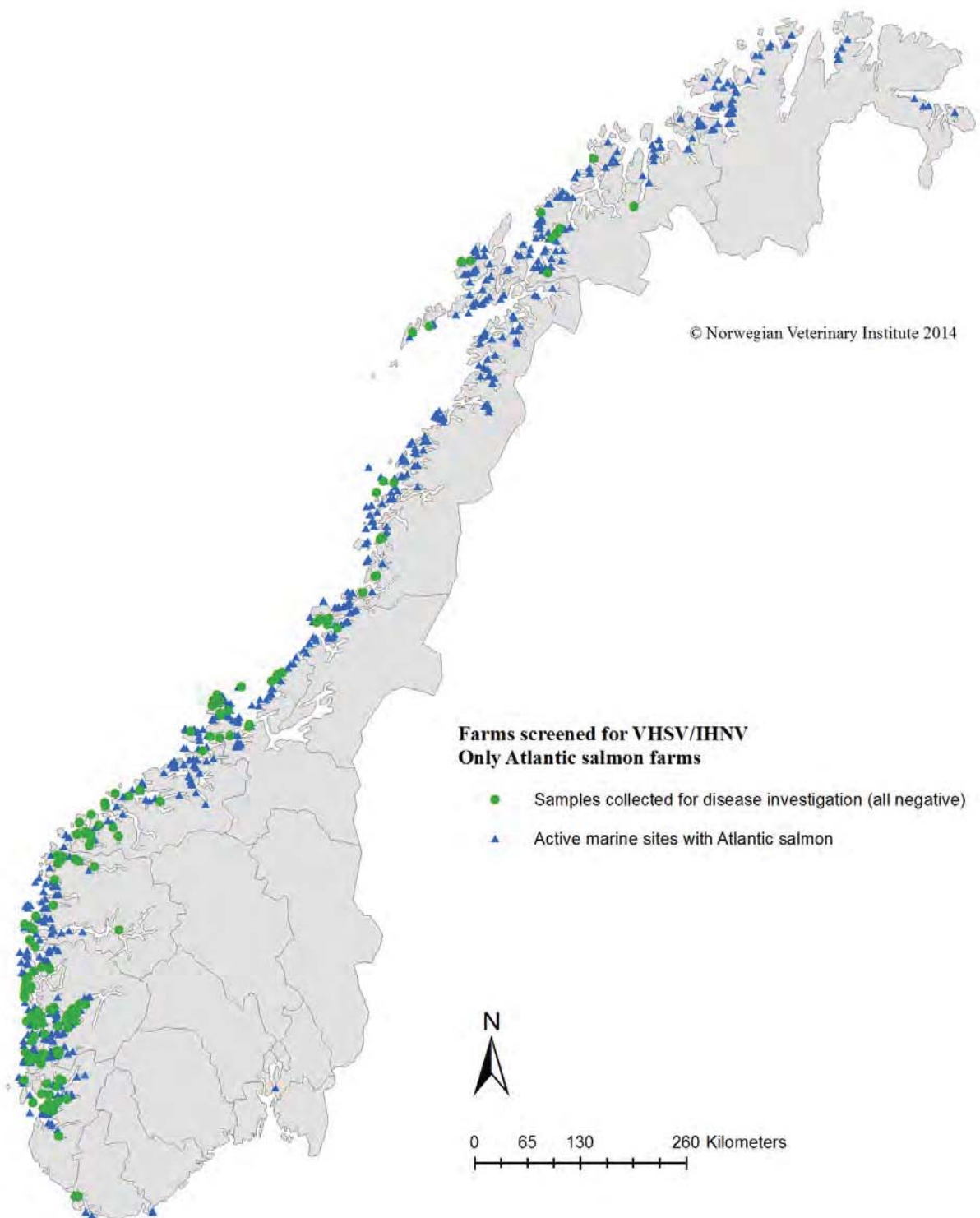


Figure 2. Map of active marine sites with Atlantic salmon in 2014. Active freshwater sites are not shown (data not available). Green symbols indicate sites included in the 2014 surveillance programme.

## Discussion and conclusion

In the risk based surveillance programme, no VHSV- or IHNV-positive salmonids were detected during 2014.

The strategy for risk based surveillance has been optimized during the past three years, and a preliminary evaluation model indicates high probability of freedom from VHS by this strategy (11).

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The Norwegian Veterinary Institute (NVI) is a nation wide research institute in the fields of animal health, fish health, and food safety. The primary mission of the NVI is to give research-based independent advisory support to ministries and governing authorities. Preparedness, diagnostics, surveillance, reference functions, risk assessments, and advisory and educational functions are the most important areas of operation.

The Norwegian Veterinary Institute has its main laboratory in Oslo, with regional laboratories in Sandnes, Bergen, Trondheim, Harstad og Tromsø, with about 360 employees in total.

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The Norwegian Food Safety Authority (NFSA) is a governmental body whose aim is to ensure through regulations and controls that food and drinking water are as safe and healthy as possible for consumers and to promote plant, fish and animal health and ethical farming of fish and animals. We encourage environmentally friendly production and we also regulate and control cosmetics, veterinary medicines and animal health personnel. The NFSA drafts and provides information on legislation, performs risk-based inspections, monitors food safety, plant, fish and animal health, draws up contingency plans and provides updates on developments in our field of competence.

The NFSA comprises three administrative levels, and has some 1300 employees.

The NFSA advises and reports to the Ministry of Agriculture and Food, the Ministry of Fisheries and Coastal Affairs and the Ministry of Health and Care Services.

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