

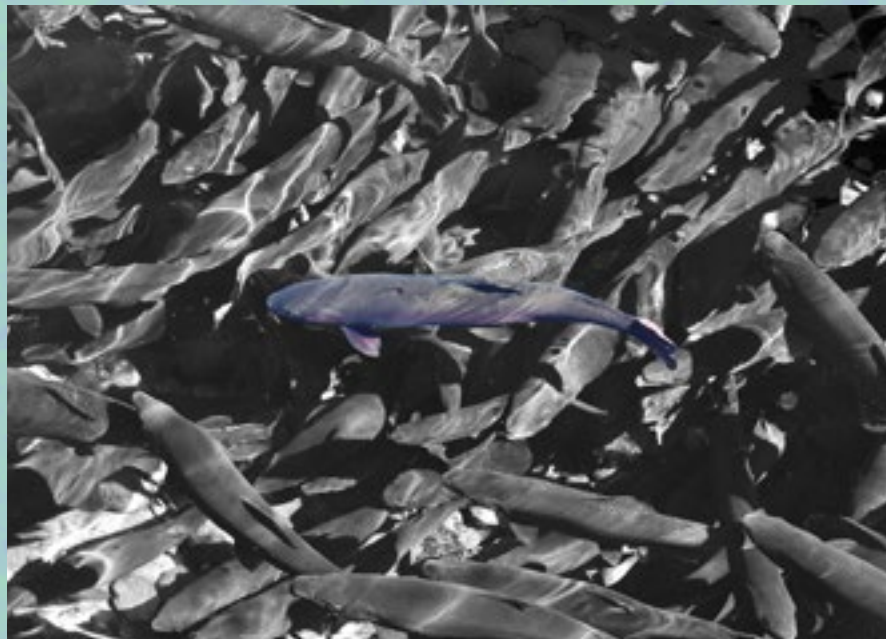
The surveillance and control programme for bacterial kidney disease (BKD) in Norway 2011

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Surveillance and control programmes for terrestrial and aquatic animals in Norway

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The surveillance and control programme for bacterial kidney disease (BKD) in Norway 2011

Hanne Nilsen, Britt Bang Jensen, Elin Bekvik Sunde, Sigrid Rørvik

Renibacterium salmoninarum was not detected on any of the sites tested in the 2011 surveillance programme. BKD was diagnosed during ordinary routine health inspections.

Introduction

Bacterial kidney disease (BKD) is a chronic disease of salmonid fish caused by *Renibacterium salmoninarum*, first diagnosed in Norway in 1980. *R. salmoninarum* can be transmitted vertically from one generation to the next inside the eggs, so monitoring of brood fish is a key element of the surveillance programme. In addition, wild stocks can be a reservoir of infection and testing of mitigation and cultivation hatcheries is included.

Aim

The surveillance and control programme started in 2005 and is designed to provide documentation of the BKD situation in Norway in order to establish standards regarding import of live material to Norway.

Materials and methods

The sampling is done by the Food Safety Authority, for the most part in conjunction with the sampling for VHS/IHN. Freshwater sites with salmonids and seawater sites with brood fish production have been selected for testing every other year (Table 1, 2, Fig 1). In 2011 few seawater sites with brood fish were tested, and two of these were sampled in December 2010. The tissues sampled are predominantly from kidneys with the addition of other internal organs from fingerlings. Extracts of the tissues are tested individually by a commercially available ELISA (BiosChile) utilising monoclonal antibodies specific for a bacterial surface protein (p57) (1, 2, 3). ELISA positive samples are then tested for the presence of the gene coding for this protein by an in-house real-time PCR.

Results

No BKD positive salmon were detected by the programme in 2011 (Table 1). A higher number of samples from small fish have been discarded in 2007-2011 compared to 2005 -2006 partly because no pooling of samples has been done (Table 3).

Table 1. Results from BKD surveillance programme in Norway 2011

Farm types	No. of sites sampled	No. of samples	Samples discarded*	Negative	Positive
Hatcheries for cultivation and mitigation purposes	10	302	10	292	0
Smolt producing farms	91	2873	325	2548	0
On-growing farms	5	149	0	149	0
Brood stock farms	3	145	0	145	0
Research facilities	-	-	-	-	-
Total	109	3469	335	3134	0

* Samples unfit for testing.

Table 2. Different categories of fish at the sites included in the BKD surveillance programme in Norway in 2011

Farm types	Atlantic salmon (<i>Salmo salar</i>)	Rainbow trout (<i>O. mykiss</i>)	Brown trout (<i>Salmo trutta</i>)	Arctic char (<i>Salvelinus alpinus</i>)	Positive
Hatcheries for cultivation and mitigation purposes	8	0	2	-	0
Smolt producing farms	81	9	5	1	0
On-growing farms	-	5	-	-	0
Brood stock farms	1	2	-	-	0
Research facilities	-	-	-	-	-
Total	89	16	7	1	0

* Some sites produce more than one species or category of fish.

Table 3. Accumulated result from the BKD surveillance programme in Norway 2005-2011

Year	No. of sites sampled	No. of samples	Samples discarded*	Negative	Positive
2005-2006	54	1,994	77	1,887	0
2007	150	4,943	841	4,102	0
2008	116	4,211	394	3,817	0
2009	130	4,209	508	3701	0
2010	113	3,724	264	3460	0
2011	109	3469	335	3134	0

* Samples unfit for testing.

Discussion

The programme did not detect any BKD positive salmonids through the 2011-testing. However, BKD was diagnosed in Atlantic salmon on one fresh water site and two on-growing sites, all in Northern Norway. The disease was detected through routine investigations by the local fish health service in association with the Norwegian Veterinary Institute.

This situation illustrates limitations of the BKD-surveillance programme itself in detecting low prevalence BKD. The complementary investigations done by the fish health services are therefore very important in order to increase the sensitivity of the total national surveillance.

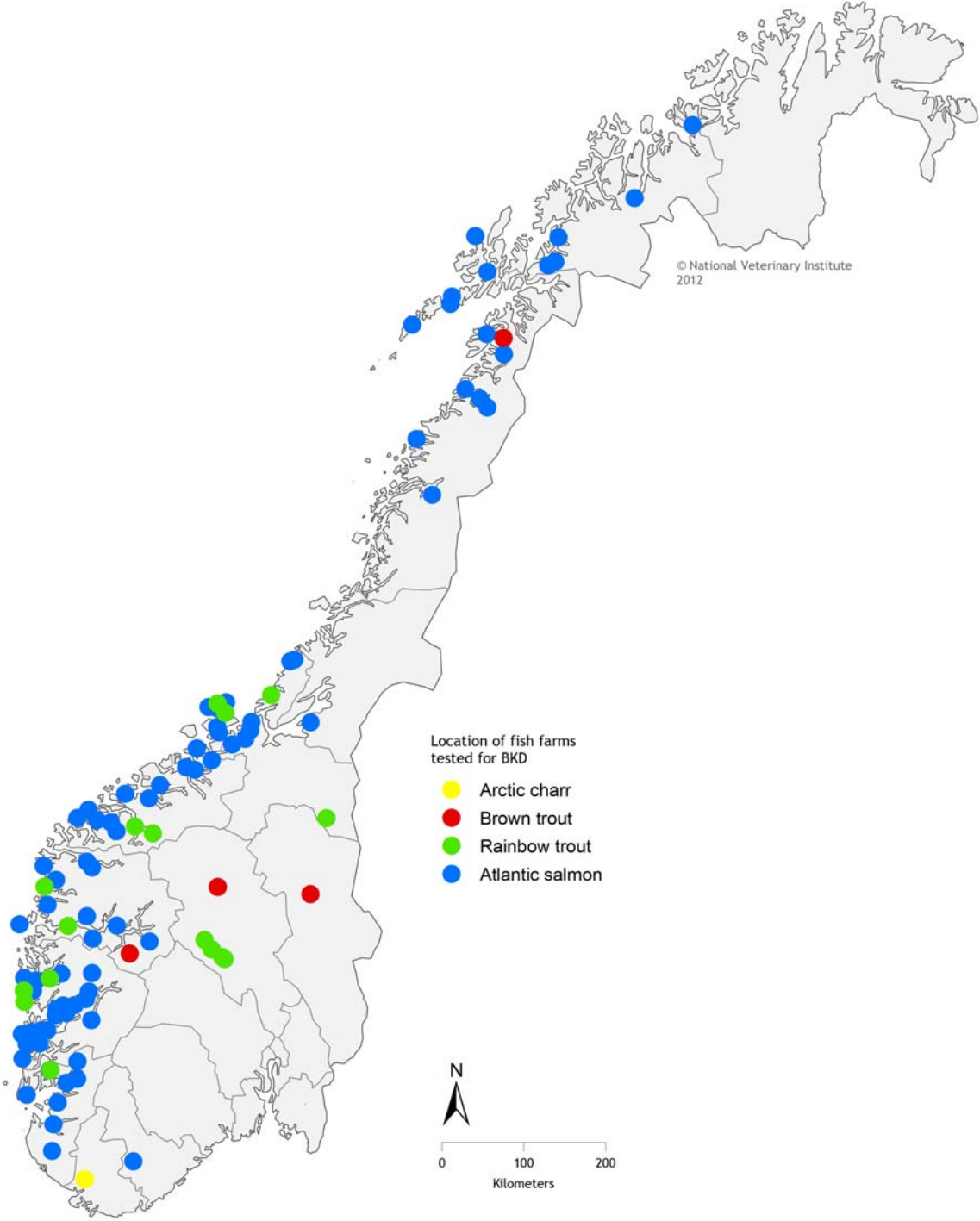


Figure 1. Geographic location of fish farms tested for BKD 2011.

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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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