Surveillance programmes for terrestrial and aquatic animals in Norway
Norwegian Veterinary Institute

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The surveillance and control programme for Bonamiosis and Marteiliosis in European flat oysters (*Ostrea edulis* L.) and the blue mussel (*Mytilus edulis* L.) in Norway 2014

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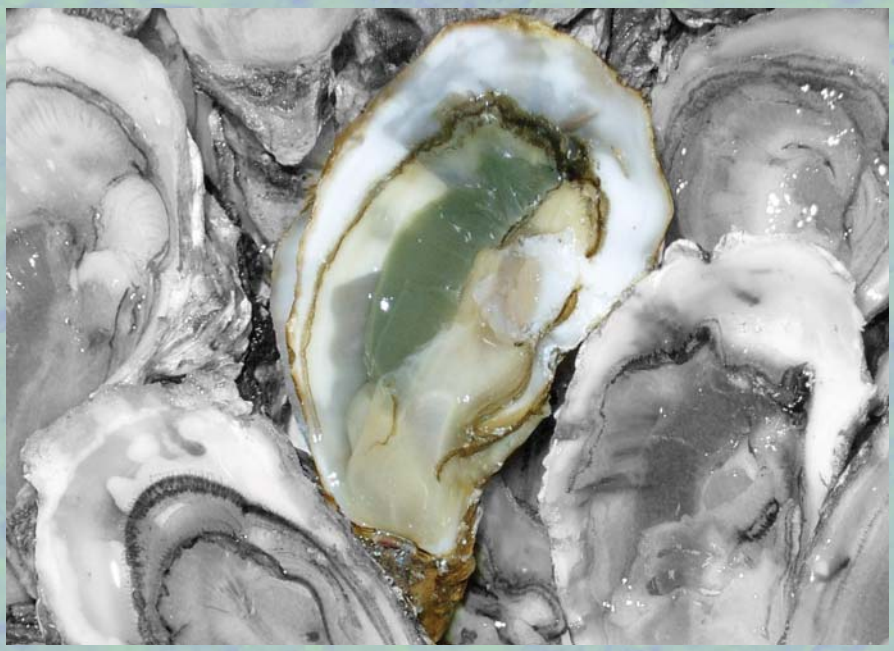

Veterinærinstituttet
Norwegian Veterinary Institute

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The surveillance programme for *Bonamia sp* and *Marteilia sp* in European flat oysters (*Ostrea edulis* L.) and the blue mussel (*Mytilus edulis* L.) in Norway *2014*

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Marteilia *sp. and* Bonamia *sp. were not observed in samples tested in 2014.*

Introduction

The protozoan parasites *Bonamia ostreae* and *Marteilia refringens* have been identified as the main threats to commercial flat oyster production in Europe, and bonamiosis and marteiliosis are classified as List II diseases by the European Union (1).

In 2004 Norway was recognized as an approved zone with regard to *B. ostreae* and *M. refringens* (2). *B. ostreae* was detected in samples from a wild flat oyster population in Arendal in 2008 (3). The Norwegian Food Safety Authority (NFSA) established a control zone to prevent further spread of the pathogen (4). Results indicated that the prevalence and intensity of infection was very low, and increased mortality has not been reported.

The blue mussel is also a susceptible species for marteiliosis and the parasite has been detected in these mussels in Sweden. Blue mussels were therefore included in the Norwegian surveillance programme in 2010.

Aim

The aim of the programme is to document the health status of Norwegian flat oysters regarding *Bonamia ostreae* and *Marteilia refringens* and blue mussels regarding *M. refringens*.

Materials and methods

The programme is designed according to Directive 2006/88/EC and Decision 2002/878/EC (1, 5). Sampling and inspection are carried out by the Norwegian Food Safety Authority District Offices. Flat oysters are sampled twice a year from each site, giving a total of 60 samples for general surveillance and 300 samples for extended surveillance. As from 2013 blue mussels are sampled once a year, in autumn, giving a total of 30 samples per site. All samples are shipped live to the Norwegian Veterinary Institute in Bergen for analysis. The oyster surveillance included four sites while one additional site was included for the blue mussel surveillance. The sample plan is summarized in Table 1.

Table 1. Sampling plan for 2014.

Sample site	Oyster			Mussel
	Spring	Autumn	Total	Total (Autumn)
Ytre Østfold, Hvaler	-	-	-	60
Vestfold, Tønsberg	30	30	60	30
Aust-Agder, Arendal	150	150	300	30
Sunnhordland, Bømlo	30	30	60	30
Midt-Rogaland, Kvitsøy	30	30	60	30
Total	**240**	**240**	**480**	**180**

Oysters and mussels were prepared for histological examination and analysed according to the current edition of OIE "Manual of Diagnostic Tests for Aquatic Animals" (6).

The screening for *Bonamia sp* and *Marteilia sp* consists of histological examination of the digestive systems and gills. In case of inconclusive findings, gill samples from oysters may be analysed for the

presence of *B. ostreae* by PCR-methods (7). Any putative positive samples are referred to the EU Community Reference Laboratory for mollusc diseases in France for confirmative analysis.

Results

In 2014, a total of 411 oysters from three sites (Table 1) were examined by histology. *M. refringens* and *B. ostreae* were not observed.

A total of 90 blue mussels from three sites were examined by histology. *M. refringens* was not detected. Occasional findings in blue mussels and flat oysters included neoplastic changes, rickettsia-like organisms and nematode parasites.

Table 2. Number of oysters and mussels tested for bonamiosis and marteiliosis in 2014.

Sampling site	Oyster			Mussel
	Spring	Autumn	Total	Autumn
Ytre Østfold, Hvaler	-	-	-	0
Vestfold, Tønsberg	0	0	0	0
Aust-Agder, Arendal	147	150	297	30
Sunnhordland, Bømlo	30	30	60	30
Midt-Rogaland, Kvitsøy	30	24	54	30
Total	**207**	**204**	**411**	**90**

In the table (-) denotes no received samples according to plan, (0) denotes no received samples.

Discussion

Bonamia ostreae and *Marteilia refringens* were not detected in samples analysed in the surveillance programme for *Bonamia sp* and *Marteilia sp* in 2014.

Since 2009 there has been extended surveillance of the Arendal area without any further detection of *Bonamia sp*.

Rickettsia-like organisms, nematodes and neoplastic changes have been observed in the surveillance programme since its start in 1995. The prevalence of neoplastic changes has been low, i.e. detected only in occasional individuals while RLO are more frequently observed. The findings have not been obviously associated with any other pathology and are considered of minor importance.

References

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7. Robert M, Garcia C, Chollet B, Lopez-Flores I, Ferrand S, Francois C, Joly JP & Arzul I. Molecular detection and quantification of the protozoan *Bonamia ostreae* in the flat oyster, *Ostrea edulis*. Molecular and Cellular Probes, 2009; 23: 264-271.

The Norwegian Veterinary Institute (NVI) is a nationwide 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 Affaires and the Ministry of Health and Care Services.

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