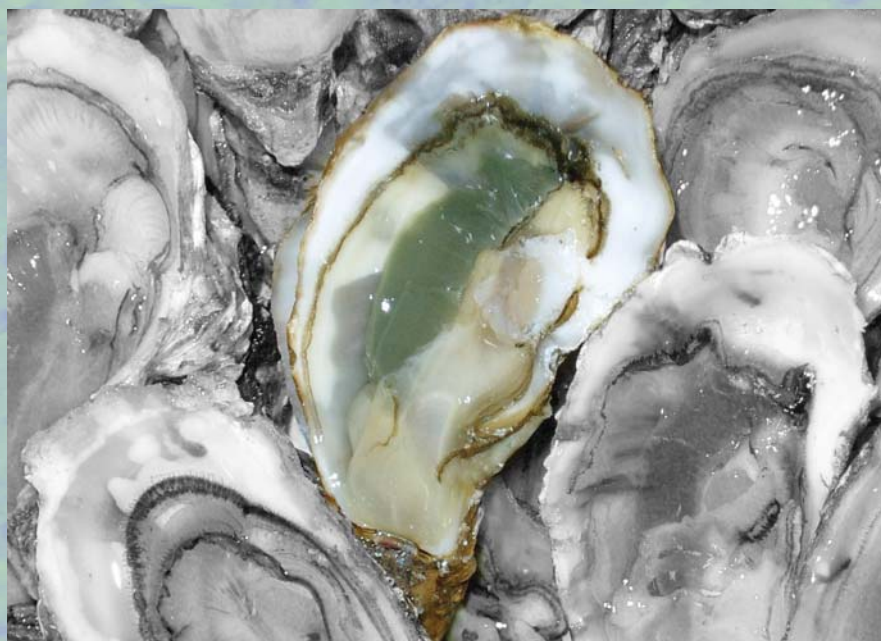


Annual Report · 2012

The surveillance and control programme for Bonamiosis and Marteilliosis in European flat oysters (*Ostrea edulis* L.) and the blue mussel (*Mytilus edulis* L.) in Norway 2012

*Agathe Medhus
Trude Marie Lyngstad
Hege Hellberg*



Surveillance and control programmes for terrestrial and aquatic animals in Norway

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Project managers at the Norwegian Veterinary Institute:

Ståle Sviland (Terrestrial animals)
Anne-Gerd Gjevre (Aquatic animals)
Mona Torp (Food safety)

Publisher

Norwegian Veterinary Institute
PO Box 750 Sentrum
N-0106 Oslo
Norway

Fax: + 47 23 21 60 01

Tel: + 47 23 21 60 00

E-mail: postmottak@vetinst.no

www.vetinst.no

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Authors:

Agathe Medhus, Trude Marie Lyngstad, Hege Hellberg

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The surveillance and control programme for *Bonamia sp* and *Marteilia sp* in European flat oysters (*Ostrea edulis* L.) and the blue mussel (*Mytilus edulis* L.) in Norway 2012

Agathe Medhus, Trude M Lyngstad and Hege Hellberg

Marteilia sp and *Bonamia sp* were not observed in samples tested in 2012.

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). *Bonamia 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. The Norwegian Veterinary Institute has more information on bonamiosis and marteiliosis at the following web addresses:

<http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Bonamia-og-bonamiose>

<http://www.vetinst.no/nor/Faktabank/Alle-faktaark/Marteiliose>

<http://www.vetinst.no/eng/Research/Publications/Surveillance-and-Control-Programs-annual-reports>

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

Sampling

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 twice a year for each sample site giving a total of 60 samples for general surveillance and 300 samples for extended surveillance. 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 2012

	Oyster			Mussel		
Sample site	Spring	Autumn	Total	Spring	Autumn	Total
Ytre Østfold, Hvaler	-	-	-	30	30	60
Vestfold, Tønsberg	30	30	60	30	30	60
Aust-Agder, Arendal	150	150	300	30	30	60
Sunnhordland, Bømlo	30	30	60	30	30	60
Midt-Rogaland, Kvitsøy	-	30	30	-	30	30
Total	210	240	450	120	150	270

Analysis

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 disease in La Tremblade, France for confirmative analysis.

Results

In 2012, a total of 220 oysters from four sites (Table 1) were examined by histology. *Marteilia refringens* and *B. ostreae* were not observed. A total of 240 blue mussels from five sites were examined by histology. *Marteilia refringens* was not detected. In flat oysters there were neoplastic changes in one individual, while rickettsia-like organisms were observed in occasional samples from two different sites. In blue mussels there were obvious neoplastic changes in two individuals from different sites and rickettsia-like organisms in one individual.

Table 2. Number of oysters and mussels per sample site tested for bonamiosis and marteiliosis in 2012.

	Oyster			Mussel		
Sampling sites	Spring	Autumn	Total	Spring	Autumn	Total
Ytre Østfold, Hvaler: 2 sites	-	-	-	60	60	120
Vestfold, Tønsberg	30	30	60	30	30	60
Aust-Agder, Arendal	100	0	100	30	0	30
Sunnhordland, Bømlo	0	30	30	0	0	0
Midt-Rogaland, Kvitsøy	-	30	30	-	30	30
Total	130	90	220	120	120	240

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

Discussion

There have been reported increased mortalities in 2012 due to low water temperatures in many bivalve populations during the last few winters. The most severe effect has been seen in the Arendal area where the flat oyster population is now protected against harvesting. It was therefore difficult to obtain sufficient amount of samples from that area.

Bonamia ostreae and *Marteilia refringens* were not detected in samples analysed in the surveillance and control programme for *Bonamia sp* and *Marteilia sp* in 2012.

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

Rickettsia-like organisms 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.

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 Affairs and the Ministry of Health and Care Services.

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